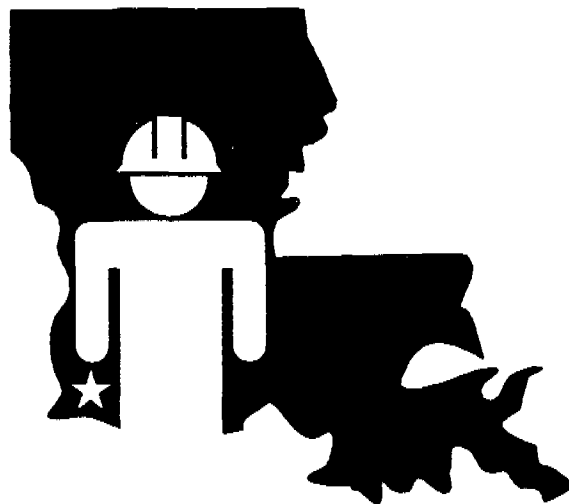


CONTRACTORS SAFETY ORIENTATION

INSTRUCTORS MANUAL



Safety Training Center a Division of Safety Council SW LA

CONTRACTOR SAFETY ORIENTATION

COURSE OVERVIEW:

This program was developed for contractor personnel who work in industrial facilities. This orientation program will involve classroom instruction, demonstrations, audio visuals and discussions. Quizzes will be used to check participants knowledge and understanding of the material presented. The program is modular in concept and allows the orientation to be presented in blocks, or segments.

GOALS:

Provide participants with a basic understanding of the hazards and safeguards associated with working in an industrial facility, including the associated emergency reporting and response procedures.

OBJECTIVES:

Upon completion of the first eight hours of the program, participants should be able to do the following:

- Recognize the hazards associated with an industrial facility.
- Use the necessary personal protective equipment, including gloves, boots, chemical resistant suits, respiratory protection and fall protection.
- Understand the hazards of flammable gases and vapors, oxygen deficient atmospheres, and toxic substances.
- Understand and incorporate site safety policies and procedures into their daily work activities.
- Understand basic emergency reporting and response procedures.

Course Overview

Page 2

Upon completion of the full twelve hours of the program, participants should also be able to do the following:

- Understand the basic requirements of hazardous waste operations.
- Select and use portable fire extinguishers.
- Understand basic safety and housekeeping requirements.
- Understand the need for medical programs and first aid programs.
- Understand the selection and use of hand and power tools.

METHODS OF PRESENTATION:

- Lecture and discussion.
- Slide / tape presentations and other audio visuals

METHODS OF EVALUATING PERFORMANCE:

- Written quizzes.

STUDENT HANDOUTS AND MATERIALS:

- Participant's Booklet

TRAINING AIDS:

- Assorted Personal Protective Equipment

Course Overview
Page 3

AUDIO VISUALS:

- "Hearing Protection: A Sound Practice" - Coastal Video
- "Personal Protective Equipment" - Coastal Video
- "Four Elements of Respiratory Protection" - 3M Video
- "Back Safety" - Coastal Video
- "Hooking Up" - Coastal Video
- "Hazard Communication" - Coastal Video
- "Lockout / Tagout" - Coastal Video
- "Confined Space Entry" - Coastal Video
- "Trenching and Shoring" - Coastal Video
- "Fire Extinguishers" - Coastal Video
- "HAZWOPER - Awareness Level" - Coastal Video

Page 3
Note to the Instructor

Introductory Comments: The purpose of the Introductory Comments (Introduction) at the Start of each session is to:

- State the session's goals and objectives and major content points.
- Suggest how this new information will be applied during actual job performance.
- State the benefit of the participant's personal safety when the safety procedures are followed on the job.

An introduction need not be lengthy. It should briefly cover the three points listed above. If you are not comfortable stating the information in your own words, you may read each session's goals and objectives to the group.

Closing Comments: The purpose of the Closing Comments at the end of each session is to:

- Review the session's goals, objectives, benefits, and major content points.
- Suggest how the new information can be translated into job performance.
- Link the participant's personal objectives to the content of the program.

There are two closing techniques from which to choose:

Leader's Close:

- **Advantage:** All points are covered; the leader is in charge and time is used efficiently.
- **Disadvantage:** Involvement of participants is limited and the clarity of the points is not always determined.

COMMUNICATIONS AND EFFECTIVE PRESENTATION SKILLS

1. Learning.

Learning is the process of acquiring:

- knowledge
- skills
- attitudes

Training is the process of giving or receiving:

- knowledge
- skills
- attitudes

for the purpose of CHANGING BEHAVIOR.

Learning is achieved through the senses:

- | | |
|-----------|-----|
| - Sight | 83% |
| - Hearing | 11% |
| - Touch | |
| - Taste | 6% |
| - Smell | |

Multisensory appeal programs assist learning:

- people learn faster
- and remember what they learned longer.

Adults learn best:

- when they want to learn
- when they feel an immediate need to learn
- by building on prior knowledge
- in an informal setting
- by doing (multisensory appeal)

2. Communication

Communication is:

- mutual exchange of facts, thoughts, opinions and/or emotions between two or more people.
- process of exchanging information (messages) to develop mutual understanding.

Purpose of communication:

- to understand
- to be understood

Feedback

- is the response we get from those receiving our message.
- is necessary to see if our message is understood the way we meant it to be understood.
- allows us the opportunity to alter or change later messages we sent, in order to assure mutual understanding.
- the "sender" of the message is responsible for obtaining feedback to insure his message has been received accurately.
- proper questions begin with: Where, When, What, Why, Who or How.

How to communicate:

- talking & listening
- written messages
- pictures & charts
- body language
- tone of voice
- silence

Communication barriers:

- individual differences
- jumping to conclusions
- insufficient feedback
- failure to listen
- abuse of language

Language abuse:

- use of words with different meanings (ambiguity)
- use of long/complicated/multiple syllable words
- use of jargon without explanation of the meaning

Differences in people:

- intelligence
- knowledge
- education
- attitude
- emotions & experience
- command of language

Reasons for not asking questions:

- they don't understand
- they don't want to look foolish

3. Effective presentation skills

Preparation:

The key to effective presentation is always through preparation. If you know what it is you want to achieve and the level of your audience's capabilities, and you have already prepared all the equipment you are going to use, then the presentation should flow smoothly. You will be able to concentrate on whether learning is taking place.

How do we get to this?

What's my audience?

- language level
- needs
- experience
- technical knowledge
- capabilities
- sensitivities/values

Some negative audience factors to consider:

- length of attention span
- poor listeners
- tripping/day dreaming
- no sweat attitude
- switching off

Work to hold the audience's interest. It will continually need to be recaptured. Techniques to bring them back:

- quick review (repetition reinforces the learning)
- get them to summarize (feedback)
- give a quick question & answer quiz (feedback)

Design:

Lesson plans, when properly prepared & utilized, can be very useful, particularly if the meeting will be repeated several times.

Finally, the presentation should be:

- | | |
|--------------|--|
| Cohesive - | it should fit together. |
| Reasonable - | in terms of language, concepts and ideas. |
| Memorable - | trainee should be able to summarize the main points, process, etc. |

To help them achieve this, remember a golden rule of presentations:

1. Introduction:
Tell them what you're going to tell them.
2. Body:
Tell them.
3. Conclusion:
Tell them what you told them.

Tools

35mm Projector synchronized with tape recorder:

- this slide/tape program is a presentation in itself.
- automatically advances & stops at preselected intervals.
- spare bulb.

Overhead Projector:

- maintains sightlines & eye contact between the presenter and audience.
- ease of relationship: control, notes on frames.
- from photocopy - kroy work.
- revelation techniques.

Equipment samples:

- If possible, have examples of the subject matter (ie. equipment, tools, objects, etc.) available for participants to see and handle.
- ? of size/visibility.
- distraction factor.

Chalkboard/Flip chart:

- spontaneous/prepared in advance.
- control: keep talking.

Video Camera:

- relatively low cost
- easy to use
- people like to see themselves

Purpose of visual:

- Assist the message will it help?
- Focus attention will it help?
- Clarification will it help?
- Demonstration will it help?

What makes a good visual?

- Visibility - to the audience's eye.
- Clarity - to the audience's mind.
- Simplicity - how much could be removed.
- Control - nothing should interfere with the presenter's relationship/control of the audience.

Delivery

- Be yourself: relaxed, conversational delivery.
- Notes: key words to remind you of the content & sequence you want to use.
- Attitude: show a desire and interest in teaching and confidence in your knowledge.
- Delivery: pay some attention to how you stand and gestures you make.
adjust the volume of your voice and speed of delivery to the location and audience. Vary speed and pitch to give variety and to stress significant items.
- Questions: use question & answer breaks for review and as transitions from section to section. Listen carefully to questions & seek clarification if necessary. Answer the question directly or questioner will not be satisfied. If you are not certain of the answer, arrange to find out and be sure to communicate it to the group.

Group Management

You the instructor are the trainee's role model and your behavior will set the example by example.

Always prepare your room, equipment and aids in advance.

Always start at the scheduled time -- even if some of the participants aren't present. If you fail to start on time you are giving control of the group to the group.

Have breaks, but keep them short and controlled.

During breaks consider noise levels -- remember other people are teaching and learning, too.

Meet inattentive behavior by varying the format of the presentation.

Take rolls. Absence should be noted -- also if participants leave during a class.

Require good housekeeping in the classroom.

A lot of group management depends on the effectiveness of the instructor. He must be prepared with sufficient material and techniques. He must also be timely and control breaks and requests to be away from the class. Never delegate control to the group.

Things to Look for in the Presentations

1. Handling the Material:
 - familiarity, confidence/unfamiliar, hesitant.
 - clear organization, easy to follow and understand/
unorganized, difficult to follow and understand.
2. Presentation Mannerisms:
 - composed, no distracting behaviors/nervous, distracting behaviors.
3. Use of Equipment and Aids:
 - well coordinated, appropriate/distracting, inappropriate.
4. Voice:
 - clear, audible/not clear, difficult to hear.
 - variety: pace, tone/too slow, too fast, monotonous.
5. Attitude:
 - confident, positive/too relaxed, too severe, careless.
6. Eye Contact:
 - with all the individuals in the group/avoids eye contact,
concentrates on notes, etc.
7. Questions:
 - stimulates feedback/assumes communication has taken place.

PET PEEVES ABOUT MEETING

- No Real Purpose for Meeting
- Unclear Objective
- Wrong Audience
- Presenter Not Prepared
- Starts Late and Ends Late
- Decisions Delayed
- No Decisions Made
- Poor Follow-up
- Bitch Session
- Presenter Does All the Talking
- One Person in the Group Does All the Talking
- No One Does Any Talking
- No Assignments Made
- All Talk and No Action

Practice the 5 P's for successful safety talks

Here is a tried and tested technique that will help you give better safety talks. It is simple, it is effective, it works. You will find that you can easily apply this technique not only to safety talks, but also to communication contacts or other vital subjects such as quality, productivity, service, job instruction and cost improvement.

Prepare> Think safety. Write things down for your idea-bank. Read safety materials selfishly. Listen to others' ideas and attitudes. Organize and outline your talks. Practice.

Pinpoint> Don't try to cover too much ground. Concentrate on one safety rule, one first aid hint, one unsafe practice, one main idea--a communication bull's eye.

Personalize> Establish common ground with your listener. Bring it close to home. Make it important in their minds. Make it personal and meaningful to them.

Picturize> Create clear mental pictures for your listeners. Appeal to both their ears and their eyes. Help them really "see what you mean." Use visual aids, like those suggested in this booklet.

Prescribe> In closing your safety talk, answer the question the listeners always have-- "So what?" Tell them what to do. Ask for special action. Give a prescription.

By applying the 5P approach diligently, you have much greater assurance that your people will know, understand, and retain the message you have communicated. Results will show in improved safety, quality and production, and you won't be the only one to notice the benefits; your men and your boss will, too.

*Taken from the International Safety Academy's booklet "Practical Safety Communication

"5-P" SAFETY TALK ANALYSIS SHEET

PREPARE

EVIDENCE OF PREPARATION: _____

PINPOINT

WAS IT PINPOINTED ☐ YES ☐ NO
IF "YES", STATE THE MAIN MESSAGE IN ONE SENTENCE: _____

SUGGESTIONS FOR IMPROVEMENT: _____

PERSONALIZE

HOW WAS IT PERSONALIZED? _____

SUGGESTIONS FOR IMPROVEMENT: _____

PICTURIZE

DID THE SPEAKER CREATE CLEAR MENTAL PICTURES?
☐ YES ☐ NO IF "YES", HOW? _____

SUGGESTIONS FOR IMPROVEMENT: _____

PRESCRIBE

WAS A CLEAR PRESCRIPTION (ACTION STEP)
GIVEN IN THE CLOSING PORTION OF THE TALK? ☐ YES ☐ NO IF "YES, WHAT WAS THE PRESCRIPTION? _____

SUGGESTIONS FOR IMPROVEMENTS? _____

P.S. -WHAT ONE THING WOULD DO THE MOST TO MAKE IT A BETTER TALK?

SPEAKER EVALUATION FORM

PRESENTER'S NAME: _____ AUDIENCE: _____

PRESENTATION TITLE: _____

DELIVERY: CIRCLE THOSE APPROPRIATE

Eye Contact:	On Audience	Aware of Cues	On-Notes
Other:	_____		
Style:	Conversational	Complicated/Flashy	Jargon
Gesture:	Natural	Inappropriate	Stiff
Distractions:	_____		
Voice Pitch:	Monotone	Conversational	Theatrical
Rate:	Too Slow	Right	Too Fast
Volume:	Too Soft	Right	Too Loud
Speaker Attitude:	Interested	Confident	Concerned
	Bored	Fearful	Superior
Feedback:	Seeks Questions	Stimulates Feedback	
Answers:	Clear	Direct	

VISUALS: CIRCLE THOSE APPROPRIATE

Visual Aids:	Visible	Clear	Simple	Controlled
Explanation for failure in one of the above: _____				

MESSAGE: COMPLETE (do NOT take notes)

The main ideas of the presentation were:

		Well Done	Help Needed
1.	Introduction	_____	_____
2.			
3.	Development	_____	_____
4.			
5.	Conclusion	_____	_____

SPEAKER EVALUATION FORM

PRESENTER'S NAME: _____ AUDIENCE: _____

PRESENTATION TITLE: _____

DELIVERY: CIRCLE THOSE APPROPRIATE

	Eye Contact:	On Audience	Aware of Cues	On-Notes
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Presentation were:

		Well Done	Help Needed
1.	Introduction	_____	_____
2.			
3.	Development	_____	_____
4.			
5.	Conclusion	_____	_____

GBRIMA CONTRACTOR SAFETY ORIENTATION

NOTE TO INSTRUCTOR

This program was developed to help satisfy some of the OSHA requirements and to improve contractor employee safety awareness and performance. It was designed for contractor personnel who work at petrochemical plants, refineries and other industrial facilities. The program was designed to be twelve hours in length with the option of not taking the last four hours. Recognizing that the majority may not have been in a classroom setting for many years, and may have limited formal education, the program was intentionally geared for personnel who have the equivalent of an eighth grade reading ability.

As an instructor, you should be aware of this, and take it into consideration as you present the material. If possible, try to determine, in advance, if any of the participants have reading difficulties. Repeat information on slides as some participants will not be able to read them. It may be necessary to give some participants oral quizzes. You should be prepared to do so. Be careful not to embarrass anyone.

Your job is to present the material in a timely fashion. In doing so, you must get feedback from the participants to be certain they understand what is being presented. Here are some tips for obtaining feedback:

ASK LEADING QUESTIONS:

- **Use why and how questions.** The best questions begin with who, what, when, where, why, and how.
- **Probe for more information.** After a participant's response, don't assume everything has been said. Ask if there is something more to add from any participant.
- **Puzzle things through.** Let difficult questions become puzzles and work through the puzzle with the group.
- **Ask only one question at a time.** More than one questions or topic at a time is confusing.

Note to the Instructor

- **Inquire rather than interrogate.** Ask questions that let participants know you are interested in their views. Questions that put participants on the defensive stifle their freedom and relaxation to think.
- **Encourage participants to ask question.** Questions from participants help clarify vague or misunderstood information and keep participants involved.
- **Work in some real life examples.** This add to your presentation. Some well timed humor may also be helpful.
- **Questions for discussion.** Sample questions are provided at the back of many of the sections that the instructor may use to obtain response from the participants.

DO NOT:

- **Use questions that can be answered "yes" or "no".** These types of questions do not lead to further discussion.
- **Use the phrases, "Do you think" or "Don't you think".** These questions only give the leader a chance to say what he or she thinks in question form and do not lead to honest responses from the participants.
- **Repeat Responses.** This mannerism interrupts the flow of discussion and makes participants feel uneasy.
- **Use vague questions.** Participants cannot easily respond to non-specific questions.
- **Use questions in paragraph form.** Long, indirect, heavily qualified questions used at news conferences are of little value in a training setting.

Getting Ready to Teach: Each segment of the program has a Course Overview and Lesson Plan. Materials Lists for the Instructor and Participants are also included. Review this material in advance and check the operation of all audio visual equipment. Be sure you have sufficient materials to teach the program, and check the arrangement of the classroom well before class is scheduled to start.

Page 3
Note to the Instructor

Introductory Comments: The purpose of the Introductory Comments (Introduction) at the Start of each session is to:

- State the session's goals and objectives and major content points.
- Suggest how this new information will be applied during actual job performance.
- State the benefit of the participant's personal safety when the safety procedures are followed on the job.

An introduction need not be lengthy. It should briefly cover the three points listed above. If you are not comfortable stating the information in your own words, you may read each session's goals and objectives to the group.

Closing Comments: The purpose of the Closing Comments at the end of each session is to:

- Review the session's goals, objectives, benefits, and major content points.
- Suggest how the new information can be translated into job performance.
- Link the participant's personal objectives to the content of the program.

There are two closing techniques from which to choose:

Leader's Close:

- **Advantage:** All points are covered; the leader is in charge and time is used efficiently.
- **Disadvantage:** Involvement of participants is limited and the clarity of the points is not always determined.

Participant's Close:

- **Advantage:** Participants are involved and thinking. Feedback is received on the basis of what has been learned and the leader may answer questions or clarify misunderstood information.
- **Disadvantage:** Some key points may be omitted and more time is required.

Quizzes: There are several quizzes administered throughout the program. Use them to your advantage. Inform participants at the beginning that quizzes will be administered. In order to do well on the quizzes, one must pay attention and get involved in the discussion. Encourage participants to ask questions. If you are not sure how to answer a question, let them know that you are not sure, but that you will research the issue and get back to them. Be sure to get back to them.

Since there may be participants that do not read well, the quizzes should be read aloud. Let the participants mark their answers. At the conclusion of each quiz, review the correct answers. This is your last chance to correct any misunderstood information. Do not miss the opportunity to do so.

Review the first set of quizzes carefully and early in the program. If you have someone with poor reading skills, you need to know as soon as possible. If the majority of the class does well on the quizzes, you are doing your job. If a significant number of participants miss the same question and have the same answer, you must identify and correct the problem. Ask yourself a few questions. Is it a poorly worded question? Did you forget to cover the information? How can you rectify the problem?

INSTRUCTOR REFERENCE MATERIAL

1. Booklets supplied with Video Tapes.

2. OSHA Publications:*

Hearing Conservation - 3074
Personal Protective Equipment - 3077
Respiratory Protection - 3079
Material Handling & Storage - 2236
Stairways & Ladders - 3124
How to Prepare for Workplace Emergencies - 3088
Hazard Communication Guidelines for Compliance - 3111
Chemical Hazard Communication - 3084
Ground - Fault Protection on Construction - 3007
Controlling Electrical Hazards - 3075
Electrical Standards for Construction - 3097
Excavations - 2226
All About OSHA - 2056
Construction Industry - 2202
Access to Medical & Exposure Records - 3110
Concepts & Techniques of Machine Safeguarding - 3067
Hand & Power Tools - 3080
Hazardous Waste & Emergency Response - 3114

3. National Safety Council Publications*

- Accident Prevention Manual; Administration & Programs
- Accident Prevention Manual: Engineering & Technology
- Fundamentals of Industrial Hygiene
- Introduction to Occupational Health & Safety

* These publications are not required but would be a valuable resource for the instructor. A Set of these publications will be available at the Safety Council Office. Instructors may wish to obtain all or some of these references for their personal use. Most of the OSHA Publications are available from the local OSHA office located at 2156 Wooddale Blvd., Baton Rouge, LA (telephone: 389-0474).

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CONTRACTOR SAFETY ORIENTATION

<u>TOPIC</u>	<u>TIME</u>
<u>DAY ONE</u>	
SECTION 1 - INTRODUCTION General Information - Facilities - Breaks, etc. Goals and Objectives Methods of Instruction & Evaluation	15 min.
PRE-QUIZ	35 min.
SECTION 2 - HEARING CONSERVATION What is Noise OSHA Standards for Exposure Methods of Control Hearing Protection Selection, Fit , Use and Care	30 min.
SECTION 3 - PERSONAL PROTECTIVE EQUIPMENT Head Protection & Source of Hazards Eye and Face Protection and Source of Hazards Hand Protection and Source of Hazards Foot Protection and Source of Hazards Other Personal Protective Requirements Fire Retardant clothing Heat Stress	35 min.
BREAK - - - - -	15 min.
SECTION 4 - RESPIRATORY PROTECTION Respiratory Hazards Measurement, Control and Standards Respiratory Protection Equipment Effect of Beards, Glasses, Etc.	35 min.
SECTION 5 - MATERIAL HANDLING AND EQUIPMENT Proper Lifting Material Handling and Storage Proper Rigging Motorized Vehicles and Power Equipment Welding, Cutting and Brazing	30 min.
QUIZ AND REVIEW; SECTIONS 1 - 5	30 min.
LUNCH BREAK AND PICTURE TAKING - - - - -	
SECTION 6 - SIGNS AND BARRICADES Types of Warning Signs / Tags Use of Barricades	10 min.

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<u>TOPIC</u>	<u>TIME</u>
SECTION 7 -ALCOHOL AND SUBSTANCE ABUSE	10 min.
Rules for Alcohol and Substance Abuse	
Rules for Contraband	
Rules for Personal Medication / Prescription	
Effects on Job Performance	
SECTION 8 - ELEVATED WORK	45 min.
Safe Use of Ladders	
Safe Practices for Elevated Work	
Aerial Platforms	
Safe Use of Scaffolds	
Personal Fall Protection Devices	
SECTION 9 - EMERGENCY REPORTING AND RESPONSE	15 min.
Emergency Action Plans	
Alarm Systems	
Reporting and Evacuation Procedures	
SECTION 10 - HAZARD COMMUNICATION	45 min.
Chemicals and Effects on Health	
Asbestos Hazards and Controls	
Radiation Hazards and Controls	
Hazard Communication Standard	
Need for Additional Site Specific Training	
BREAK - - - - -	10 min.
SECTION 11 - ELECTRICAL WORK PRACTICES	15 min.
Electricity - Effects on the Body	
Electrical Hazards and Control	
Protective Devices, Grounding, Bonding	
SECTION 12 - WORK PERMITS	60 min.
Types of Work Permits	
Excavation Hazards and Controls	
Hot Work	
Line Entry	
Confined Spaces	
Lockout - Tagout	
QUIZ AND REVIEW: SECTIONS 6-12	30 min.
PROGRAM REVIEW INCLUDING PARTICIPANT BOOKLET	15 min
- - - - - END OF DAY ONE (8 HOURS) - - - - -	

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CONTRACTOR SAFETY ORIENTATION

<u>TOPIC</u>	<u>TIME</u>
<u>DAY TWO (OPTIONAL)</u>	
SECTION 13 - INTRODUCTION TO OSHA Basic Information on OSHA Employer's Responsibilities Employee Rights and Responsibilities	15 min.
SECTION 14 - SAFETY RULES AND HOUSEKEEPING Safety Rules Risks and Hazards Housekeeping	15 min.
SECTION 15 - MEDICAL RECORDS / FIRST AID Medical Records First Aid	15 min.
SECTION 16 - HAND AND POWER TOOLS Selection and Inspection Proper Uses Mis-use and Alterations	30 min.
BREAK - - - - -	-15 min.
SECTION 17 - FIRE SAFETY Classes of Fire Types of Fire Extinguishers Proper Response to Fires	45 min.
SECTION 18 - HAZWOPER Awareness Level	30 min.
BREAK - - - - -	-15 min.
QUIZ AND REVIEW: SECTIONS 13-18	45 min.
- - - - - END OF DAY TWO (4 HOURS) - - - - -	

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES

SECTION 1: COURSE INTRODUCTION

LENGTH: 15 Minutes

MATERIALS:

1. Instructor's Manual
2. Participant's Manual
3. Name cards for participants and markers
4. Pencils for participants
5. Copies of Quizzes and answer sheets
6. Slides and Projector. Slide Tray No. 1,
Starts with Slide 1

PRESENTATION:

1. Welcome the participants.
Introduce yourself and have participants introduce themselves. Ask them to place their name cards in front of them.
2. Explain why we are here, and the purpose of the program.
 - Their personal safety and well being
 - To protect plant equipment and the environment.
 - To help satisfy State and Federal Safety, Health and Environmental regulations. Give brief discussion on OSHA.
3. Review the following:
 - Fire escape routes
 - Location of rest rooms
 - Smoking and non-smoking areas
 - Breaks, lunch, coffee, and soft drink machines, etc.

4. Stress the need to pay attention and to ask questions. Quizzes will be given. Methods of instruction include video tapes, slides, and other visual aids. There will also be lecture, discussion, and practice sessions.
5. Give brief run-down of topics to be covered.
6. **Contractor Safety In Industrial Facilities:** This program was developed to help contractor personnel recognize the hazards and safeguards associated with work in refineries, petrochemical plants and other industrial facilities.

After viewing this program, you should be better able to identify the potential hazards associated with work in these facilities and take the necessary precautions to protect you and your co-workers from personal injury.

7. **SLIDE:** **"GOAL:**
 Recognize the hazards
 Take necessary precautions"

It should be noted however, that no single training program can possibly cover every hazard that may exist. You should take the time to evaluate the potential hazards associated with the job you are about to perform. You can do this by taking a few minutes to ask yourself two questions:

- What could possibly happen to me while performing this job, and
- What can I do to protect myself and my co-workers from possible injury?

8. **SLIDE:** **"ASK QUESTIONS:**
 What might happen?
 What can I do?"

Some of the hazards and injuries typically associated with construction work include:

- Falls from elevated workplaces,
- Falls on the same elevation,
- Strains and sprains from handling heavy or bulky items,
- Electrical hazards and
- Cuts and abrasions from handling sharp objects.

The additional hazards often associated with industrial facilities include such things as:

- High noise levels,
- Intense heat or cold,
- Toxic gases, vapors and mists, or
- Oxygen deficient atmospheres.

You might also expect to find:

- Materials under high pressure,
- Confined spaces,
- Rotating or moving equipment and in some cases
- Radioactive sources.

When evaluating the potential hazards associated with a new job, you should keep one very important thing in mind. Workers who have been on the job one month or less have a much greater chance of getting hurt than workers who have been on the job a longer period of time. Yes, that's right. Statistics show that workers who have been on the job one month or less account for 25% of all construction accidents.

9. **SLIDE:** "New Workers are at Greatest Risk"

Now that you have a basic understanding of the hazards associated with work in industrial facilities, let's see what you can do to protect yourself and your co-workers from possible injury. The key to accident prevention is learning to:

1. Recognize the potential hazards associated with a job,
2. Following the prescribed safety procedures including the
3. Wearing of any necessary personal protective equipment and
4. Remaining alert for changing conditions.

10. **SLIDE:** "Key to Accident Prevention
- Recognize the Hazards
 - Follow Safety Procedures
 - Wear Proper P.P.E.
 - Remain alert"

11. Give Pre-Quiz.

Explain that the pre-quiz should help the participants recognize areas where they may need to focus more attention. Also, the results will help the instructors to know the areas where the greatest need may be.

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**CONTRACTOR SAFETY ORIENTATION
PRE-QUIZ**

DATE: _____ **NAME:** _____

Circle T if the statement is TRUE, and F if the statement is FALSE.

Circle the letter with the most correct answer.

SECTION 2 - HEARING CONSERVATION

1. T F Exposure to unwanted sound can be controlled.
2. T F It is not necessary to wear hearing protection when you only work in a noisy area for a short time.
3. You should wear hearing protection when you have to raise your voice to be heard by someone less than:
 - a. Eight feet away
 - b. Six feet away
 - c. Four feet away
 - d. Two feet away

SECTION 3 - PPE

4. T F Spray painting or modifying hard hats may damage them.
5. T F All personal protective equipment should be routinely inspected for damage or defects and repaired or replaced as necessary.
6. T F Drinking beer / alcohol causes the body to lose body fluids and increases the possibility of heat stress.

7. What are signs of heat related disorders?
- a. Red or flushed, hot dry skin and high body temperature.
 - b. Pale skin, profuse sweating and normal body temperature.
 - c. Being very hungry.
 - d. Both A and B
8. To reduce the chances of heat stress, it is better to:
- a. Drink plenty of beer and other alcoholic drinks
 - b. Drink extra amount of soda, tea, or coffee
 - c. Frequently drink moderate amounts of cool water
 - d. Any of the above are OK

SECTION 4 - RESPIRATORY PROTECTION

9. T F The two main respiratory hazards are oxygen deficient atmospheres and airborne contaminants.
10. T F Air-purifying respirators give protection against both oxygen deficiency and dusts or mists.
11. Respirator cartridges must be replaced when:
- a. Breathing becomes difficult
 - b. Odors can be sensed
 - c. Air becomes hot
 - d. Any of the above
12. Workers should have a _____ to assure they are physically able to wear a respirator ?
- a. Medical evaluation
 - b. Hearing test
 - c. Eyesight test
 - d. Urine test
13. Facial hair, stubble, moustache, sideburns, beards, low hairline or bangs that touch the sealing surface of a respirator can result in:
- a. A poor seal
 - b. A good seal
 - c. All of the above
 - d. None of the above

SECTION 5 - MATERIAL HANDLING & EQUIPMENT

14. T F The proper method of lifting is to bend at the knees and then let your legs do the most of the work.
15. To protect yourself from back problems you should:
- a. Never twist your back when moving an object; always turn with your feet
 - b. Follow proper lifting techniques
 - c. Stay in good overall physical condition
 - d. All of the above
 - e. Both A and B

SECTION 6 - SIGNS & BARRICADES

16. T F Barricade tape and guardrails provide the same amount of protection.
17. Barricades should be used for:
- a. Open excavations, floor openings, overhead work
 - b. Roadways with dangerous conditions
 - c. Test areas where hazards exist
 - d. All of the above

SECTION 7 - ALCOHOL & SUBSTANCE ABUSE

18. T F Alcohol and drug use can be a contributing cause of workplace accidents.
19. T F Many plants have strict contraband policies which may require that all workers submit to personal or vehicle searches.
20. Examples of contraband are:
- a. Firearms, weapons, and explosives
 - b. Prescription medication
 - c. Stolen property
 - d. Both A and C

SECTION 8 - ELEVATED WORK

21. T F If a scaffold has "safe for use tag" on it, there is no need for you to inspect it before using it.

22. Scaffolds should always:

- a. Have each leg on a solid base
- b. Be made of only scaffolding materials
- c. Be erected, moved, altered, or dismantled under the supervision of a competent person
- d. All of the above

23. When working at unprotected elevations, you should tie-off your lanyard so as to limit any possible fall to _____

- a. 4 feet
- b. 6 feet
- c. 8 feet
- d. 10 feet

24. To reduce the chances of injury when wearing a safety belt, where should you hook your lanyard to your belt?

- a. On the side
- b. In the front
- c. At the back
- d. All are OK

SECTION 9 - EMERGENCY REPORTING & RESPONSE

25. T F At any work place, you should know the type of fire hazards, the alarm systems being used, the evacuation routes, and the assembly areas.

26. You discover a fire. What is your first action?

- a. Try to smother the fire
- b. Locate a Class A rated fire extinguisher
- c. Sound an alarm
- d. Evacuate the area immediately

SECTION 10 - HAZARD COMMUNICATION

27. T F All pipes that contain hazardous materials must be labeled as to contents.

28. T F Each employee who might be exposed to hazardous materials is to be taught how to protect himself from exposure.
29. T F The fittings on steam, nitrogen, and water lines in one plant are always the same in other plants.
30. T F PEL (Permissible Exposure Level) is an exposure limit published and enforced by OSHA as a legal standard.
31. Ways to find out about hazards of chemicals are:
- a. Reading the labels on the container
 - b. Reading hazard warning signs
 - c. Material Safety Data Sheets
 - d. All of the above
32. Chemicals may enter the body by:
- a. Inhalation (Breathing)
 - b. Ingestion (Eating)
 - c. Absorption (Through the skin)
 - d. Injection (Puncture wound)
 - e. All of the above
33. If you are splashed with a hazardous material, what should you do first?
- a. Go immediately to the First Aid Room
 - b. Immediately wash the affected area with large volumes of water and remove the contaminated clothing.
 - c. Immediately wash the affected area with neutralizer
 - d. Go on about your business unless it starts to burn
34. If a vapor cloud is coming toward you, which way should you travel ?
- a. Down wind
 - b. Up wind
 - c. Cross wind and then up wind
 - d. It doesn't matter

SECTION 11 - ELECTRICAL WORK PRACTICES

35. T F If you receive only a mild electrical shock, there is no need to report it to supervision.
36. T F In a lockout, an energy isolating device is locked in the safe, or off, position.

37. T F Locking out the power switch will always remove all energy from powered equipment.
38. Electrical shock can be prevented by:
- a. Using a Ground Fault Circuit Interrupter (GFCI)
 - b. Circuit Breakers
 - c. An Assured Grounding Program
 - d. Both A and C

SECTION 12 - WORK PERMITS

39. T F In trenches over 4-feet deep, there must be a means of exit (ladder or steps) no more than 25 feet from any worker.
40. T F The Hole Watch/Attendant must have visual or voice communication at all times with persons in a confined space.
41. T F When doing confined space work, there should always be a preplan for emergency rescue.
42. T F A properly completed Confined Space Entry Permit must be obtained before entering a confined space.
43. Examples of work which may require a Hot Work Permit are:
- a. Cutting, welding, burning, brazing, or soldering
 - b. Grinding, battery powered tools, hammer and chisel
 - c. None of the above
 - d. Both A and B
44. When planning for line breaking you should consider:
- a. Roping off the work area
 - b. Wearing necessary Personal Protective Equipment
 - c. Breaking flange down-and-away and be prepared to close it if necessary
 - d. All of the above
45. Before personnel are permitted to enter a confined space, which two types of tests must be performed ?
- a. Acid and caustic
 - b. Odor and color
 - c. Oxygen and flammable
 - d. None of the above

46. If the standby person sees that the workers in a confined space appear to be in distress, what would be the proper response?
- a. Run so as not to become a victim
 - b. Call for help, put on personnel protective equipment (PPE) and enter confined space to rescue workers.
 - c. Rescue the workers and then call for help
 - d. Call for help, put on PPE, wait for and assist rescue personnel

SECTION 13 - OSHA

47. T F Failure to follow OSHA regulations can result in fines for the employer.
48. T F Under OSHA regulations, the employer is obligated to provide access to first aid for his employees.
49. OSHA requires employers to:
- a. Be familiar with standards that apply to their business.
 - b. Be sure employees have and use personal protective equipment
 - c. Furnish a place of employment free of recognized hazards.
 - d. All of the above.
50. As an employee, you should:
- a. Follow all employer safety and health rules
 - b. Read OSHA posters at the job-site, and comply with OSHA rules
 - c. Let your employer handle anything dealing with OSHA
 - d. Both A and B

SECTION 14 - SAFETY RULES & HOUSEKEEPING

51. T F Safety rules are the same at all work places. Once you learn them at one site there is no need to check the safety rules at a different site.
52. If you are not sure of a work place safety rule, you should:
- a. Get the job done as safely as you know how
 - b. Ask supervision about it
 - c. See if you can get someone else to do it
 - d. None of the above

SECTION 15 - MEDICAL RECORDS / FIRST AID

53. T F The employer is not required to allow the employee to see or copy their occupational medical records.
54. T F Employee Medical Records must be kept by the employer only for the duration of employment.
55. At any work place you must:
- a. Know where to go for first aid
 - b. Immediately report all injuries to supervision and obtain first aid
 - c. Treat minor injuries yourself
 - d. Both A and B are correct

SECTION 16 - HAND & POWERTOOLS

56. T F Hand tool injuries are often caused by not using the right tool for the job or using defective tools.
57. T F By-passing or modifying guards on tools is acceptable if you are careful and it helps to get the work done faster.
58. T F If the ladder is well secured, it is OK to carry tools in your hand when climbing the ladder.
59. It is OK to suspend your come-along from:
- a. Structures
 - b. Scaffolds
 - c. Small piping
 - d. Both A and C

SECTION 17 - FIRE SAFETY

60. T F Multipurpose dry chemical extinguishers can be used on Class A, B, and C fires.
61. Match the phrase on the right with the correct class of fire on the left.
- | | |
|----------------|---|
| ___ 1. Class A | a. Burning liquids and gases |
| ___ 2. Class B | b. Combustible metal fires |
| ___ 3. Class C | c. Energized electrical equipment fires |
| ___ 4. Class D | d. Ordinary combustible materials fires |

62. The correct way to operate most portable extinguishers is to:
- a. Direct the agent at the tip of the flames and move the stream up and down
 - b. Use a circular motion of the agent as you circle the fire
 - c. Keep the agent directed into the middle of the fire at all times
 - d. Aim the agent at the base of the fire while moving the stream in a side-to-side motion

SECTION 18 - HAZWOPER

63. T F You can always smell the presence of a hazardous gas in the air.
64. If you discover any release of hazardous material, your first concern should be:
- a. To rescue co-workers
 - b. For your own safety and notification of responsible persons
 - c. To stop the leak
 - d. To identify the substance
65. The HAZWOPER Standard requires emergency responders to be trained and certified at one of the five levels. Level 1: First Responders at the Awareness Level are workers who:
- a. Respond to stop the release of hazardous materials
 - b. Contain a release from a safe distance
 - c. Recognize a release and notify the proper authorities
 - d. All of the above
66. Some of the signs of over-exposure to hazardous materials that may be observed by others:
- a. Cramps and dizziness
 - b. Headaches and blurred vision
 - c. Skin discoloration, lack of coordination, slurred speech
 - d. All of the above

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 2: HEARING CONSERVATION

LENGTH: 30 minutes

REFERENCES:

1. OSHA Standard 1910.95
2. OSHA Pamphlet 3074, "Hearing Conservation"

AUDIOVISUALS:

1. Coastal videotape "Hearing Protection: A Sound Practice" (16 min.)
2. Hearing protection devices such as ear plugs, canal caps and ear muffs.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the basics of noise, how sound levels and other variables can cause hearing loss, and the requirements and elements of an employer's hearing conservation program.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. What noise is and what noise variables affect hearing.
2. How sound is measured, and examples of typical sound levels.
3. OSHA established standards for occupational noise exposure.
4. Methods of noise control.
5. Elements of the hearing conservation program.
6. The purpose of hearing protectors, the advantages, disadvantages and attenuation of the various types.
7. Selection, fit, use and care of personal hearing protection.
8. The purpose, procedures and frequency for audiometric testing. (Overview)

NOTE: Objectives in bold print are covered by the videotape.

PRESENTATION FOR SECTION 2:

1. State in your own words, or read the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the basics of noise, how sound levels and other variables can cause hearing loss, and the requirements and elements of an employer's hearing conservation program.

2. Introduce the video - "**Hearing Protection: A Sound Practice**".
3. Have discussion as necessary to assure the key "Specific Objectives" in the video were understood.
 - What noise is and what noise variables affect hearing.
 - How sound is measured, and examples of typical sound levels.
 - OSHA established standards for occupational noise exposure.
 - Methods of noise control.
 - Elements of the hearing conservation program.
 - The purpose of hearing protectors, the advantages, disadvantages and attenuation of the various types.
 - Selection, fit, use and care of personal hearing protection.
 - The purpose, procedures and frequency for audiometric testing.
(Overview)
4. Pass around samples of hearing protection.
5. Questions and answers.

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QUESTIONS FOR DISCUSSION - HEARING CONSERVATION:

1. What are some common causes of hearing loss?

- A build-up of wax which closes the ear canal.
- A foreign object lodged in the ear.
- Certain diseases like measles, rubella (or German measles), mumps, and middle and inner ear infections.
- Common medications like aspirin and some prescription drugs.
- Severe blows on the ear or to the head.
- The process of aging.
- Exposure to loud noise for prolonged periods.

2. Why is noise-induced hearing loss more common now than in the past?

- Noise surrounds us and is common in our modern society.

3. What kinds of controls can reduce noise exposure?

- Posting signs where there is a noise hazard to workers.
- Limiting the time workers can work in a particular area.
- Wearing ear plugs and/or muffs.

4. What are some types of hearing protective devices?

- Non-expandable ear plugs
- Foam ear plugs
- Ear muffs

5. What special consideration should be remembered concerning ear muffs?

- Ear muffs will only give you protection if the sealing surface lays flat against your head. So, bear in mind that temple bars on glasses may affect the efficiency of ear muffs, as may long hair or holes made by the wearer for ventilation. In fact, anything that interferes with the sealing surface will cause the muffs to give less protection than normal, and often no protection at all.

6. What considerations should be remembered concerning non-expandable ear plugs ?

- They must be properly sized to totally seal the ear canal.
- If you select a pair on comfort alone, you may be selecting a pair too small for your ear.
- Slight discomfort may be expected.

7. How should an expandable foam plug be inserted in the ear?

- Reach over the head and pull the ear outward to open the ear canal.
- While holding the end of the plug between the thumb and forefinger, roll the plug into as small a diameter as possible.
- Insert the rolled plug into the ear canal as quickly as possible.
- Hold it gently in place until it expands to fill the ear canal.
- Repeat the procedure for the other ear.

8. How should a non-expandable plug be inserted into the ear?

- Slide the stem holder over the stem of the ear plug.
- Reach over the head and pull the ear upward and outward to straighten the ear canal.
- Use the stem holder to push and twist the plug firmly into the ear.
- Repeat the procedure for the other ear.

9. What is the purpose of audiometric testing?

- An audiometric test indicates your present hearing ability. If there is no significant change from past hearing tests, it is a good indication that you are properly wearing your hearing protection.

10. Why do many people falsely believe that they have developed a special tolerance to a particular noise?

- Many people reason that because a particular noise no longer bothers them, it is not adversely affecting their hearing. But, it is not true. The reason they're not uncomfortable is that they have experienced a temporary reduction in their ability to hear.

11. What is important to remember if you continue to use the same ear plugs or ear muffs?

- If you are using reusable ear plugs, remember that they must be washed after each use. To prevent the plugs from picking up dirt you should clean your hands prior to inserting the plugs into the ear canal. The continued use of ear muffs also required cleaning the sealing surface.

12. What should you do if you experience a sudden change in your hearing?

- Don't wait for your next check-up. Inform your supervisor of your problem. It could be the result of a variety of causes and should receive immediate medical attention.

13. Why is employee awareness such an important part of the Hearing Conservation Program?

- The success of the entire Hearing Conservation Program depends on your understanding of the program and knowing what you can do to protect your hearing. Our Hearing Conservation Program training includes instruction in the proper use of hearing protection and an explanation of the reason why it is important to have your hearing tested on a regular basis.

14. What causes hearing loss off the job?

- Lawn mowers, tools
- Hunting, shooting
- Loud music, rock bands, etc.

**CONTRACTOR SAFETY ORIENTATION COURSE
SECTION OBJECTIVES**

SECTION NO. 3: PERSONAL PROTECTIVE EQUIPMENT

LENGTH: 30 minutes

REFERENCES: 1. OSHA Standards
2. OSHA Pamphlet 3077,
"Personal Protective Equipment"

AUDIOVISUALS: 1. Coastal videotapes "Personal Protective Equipment"
(16 min.)
2. Slide Tray No. 1, Starts with Slide 5

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of potential hazards, hazard control methods, OSHA requirements, and the selection, use, care and limitations of personal protective equipment.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. General chemical, physical, biological and ergonomic health hazards.
2. Routes of entry including inhalation, absorption and ingestion and injection.
3. Wear clean clothing, no shorts, long sleeve shirt. No rings or jewelry.
4. Personal Hygiene, food, tobacco, cosmetics and medicine.
5. Head protection including sources of hazard, types of protection and requirements of standards. Hard hats vs bump hat. No modifications.
6. Eye and face protection including sources of hazard, types of protection and requirements of standards.
7. Signs, symptoms, and first for heat-related illnesses. Methods of prevention.

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SECTION NO. 3 (CONTINUED)

8. **Foot protection including sources of hazard, types of protection and requirements of standards. No canvas or tennis shoes. No open toed sandals. Specific jobs required protection. Some sites may require steel-toed shoes with well defined heels.**
9. **Hand protection including sources of hazard, types of protection and requirements of standards. Stress types of gloves, impervious vs cotton or leather.**
10. Discuss barrier cream questions.
11. Specialty job assignments (caustics, acids, chemicals) and additional personal protection requirements. Good place to summarize impervious gloves and suits, decontamination and rain gear vs chemical-resistant clothing.
12. Point out that some jobs or facilities may require personnel to wear fire retardant clothing such as Nomex.

NOTE:Hearing and Respiratory Protection is addressed in a separate section.

NOTE:Fall Protection is addressed in a separate section.

NOTE:Objectives in bold print are covered by the videotape.

PRESENTATION FOR SECTION 3:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of potential hazards, hazard control methods, OSHA requirements, and the selection, use, care and limitations of personal protective equipment.

2. **SLIDE: KEYS TO ACCIDENT PREVENTION**

- **RECOGNIZE THE HAZARDS**
- **FOLLOW SAFETY PROCEDURES**
- **WEAR PROPER PPE**
- **REMAIN ALERT**

We mentioned earlier the keys to accident prevention is learning to:

- Recognize the potential hazards associated with a job,
- Following the prescribed safety procedures including the
- Wearing of any necessary personal protective equipment and . . .
- Remaining alert for changing conditions.

In this section we will discuss the use of personal protective equipment.

3. **SLIDES: "PHOTOS OF WORKER WITH PROPER DRESS / PPE" (2 SLIDES)**

- First, being properly dressed for the job is very important.
- You should wear a suitable shirt and long pants.
- Tank top shirts at plants are not permitted. Some facilities require personnel to wear long sleeve shirts which must be buttoned at the wrist.
- Cotton or wool blended fabrics usually offer better chemical resistance than polyester fabrics.

- Some chemicals will actually melt polyester fabrics.
- Button up shirts should be worn when working around chemicals rather than a pull over shirt. Should a pullover shirt have any chemicals sprayed on it, you then risk getting the chemicals on your face when you remove it.
- An ANSI approved non-conductive hard hat is required in most plants as are safety glasses. The wearing of contact lenses in petrochemical facilities is not recommended and is prohibited in many facilities.
- The wearing of sturdy footwear is very important. Safety shoes or boots are strongly recommended. In most cases, shoes or boots with leather uppers and chemical-resistant soles will hold up best. The wearing of sandals, canvas, or athletic type shoes is not permitted. When wearing high top shoes or boots, your pants legs should be on the outside of the boots, not tucked inside.

4. **SLIDE: "PHOTO OF WORKER WEARING JEWELRY"**

- When you come to work leave your jewelry at home.
- Rings, bracelets, necklaces, and other loose or dangling items can be caught on or in tools and machinery resulting in serious injury.
- Loose-fitting clothing, unbuttoned shirt sleeves and long hair can create similar problems.

5. Introduce the video such as:

The video we are about to see will cover:

- Various types of PPE.
- When PPE should be used.
- Proper use and fit.
- Proper care and storage.

6. Show the video "**Personal Protective Equipment**"

The length of this video is about 15 minutes.

7. Answer any questions on the video and review/discuss the following:

- There are many types of PPE.
- You need the right PPE for the job. If you are not certain - ask your supervisor.
- PPE must be used properly to be effective.
- PPE must fit properly.
- There are limitations to PPE protection.
- PPE must be maintained - get participants to give examples.
- Hard hats vs. bump hats.

Other forms of personal protective equipment than shown in the video may be needed depending on the job. If you are in doubt about the need for some form of personal protective equipment, ask your supervisor. Likewise, if you are not sure how to use or wear a specific piece of safety equipment, check with your supervisor.

8. **SLIDE: EFFECTIVE PPE PROGRAMS**

- **EMPLOYER SPECIFIES NECESSARY PPE**
- **EMPLOYER TRAINS EMPLOYEES IN PROPER USE**
- **EMPLOYEES USE PPE WHERE AND AS INTENDED**
- **PPE IS PROPERLY TESTED & MAINTAINED**

For the PPE portion of a safety program to be effective, the employer must specify the required protective gear and provide training in its use. Personal protective equipment can be effective only if employees use it as intended and maintain it properly.

9. **SLIDES:** "PHOTOS OF WORKER IN CHEMICAL-RESISTANT CLOTHING" (2 SLIDES)

Specialty job assignments such as working around caustics, acids and hazardous chemicals may require additional personal protective clothing shown in these slides. Chemical-resistant clothing must be made of a material which will protect you from the specific chemical hazard. Different types of chemical hazards will require different types of chemical-resistant suits and you should also have special training about the hazards and precautions to be taken. RAIN GEAR IS NOT TO BE USED AS CHEMICAL-RESISTANT CLOTHING!!!

Some jobs or facilities may require personnel to wear fire retardant clothing such as Nomex.

When working around or with hazardous chemicals be sure you wear impervious gloves. Cloth or leather gloves may absorb the chemicals and therefore increase the level of exposure to your hands. The question often is raised about "Barrier Creams". Barrier cream is the least effective way to protect your skin. There may be some special instances where it may be useful and it may be used as a supplement to, but not a replacement of, personal protective equipment.

10. **SLIDE:**

**HEAT STRESS MAY CAUSE
HEAT ILLNESS**

**PART I
RECOGNITION
AND FIRST AID**

ARTWORK BY: RICHARD CARLSON
SCIENTIFIC CONSULTANT: FRANCIS N. DUKES - DOBOS, M.D.



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Heat stress can affect us all and wearing protective clothing such as a chemical-resistant suit can increase the heat stress problem. Working in hot, humid places can affect even the young and healthy so it is important to understand this hazard and the ways to deal with it. In addition to the medical hazards, workers also make more mistakes that result in accidents in

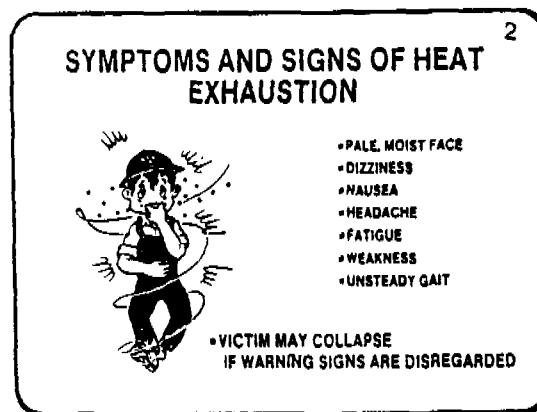
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a hot environment. Some of the heat stress-contributing causes of accidents include:

- Fogged glasses
- Sweat in the eyes
- Slippery hands
- Dizziness
- Physical discomfort and fatigue
- Irritability and poor judgement
- Slower reactions
- Diverted attention

11. **SLIDE:**

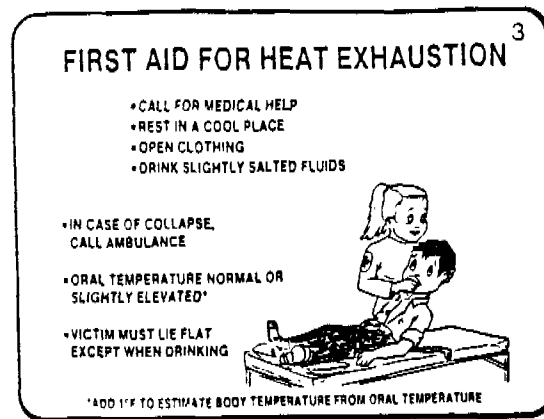


When working in the heat and humidity you will have some level of heat stress that you can handle. This slide shows the symptoms of a heat stress disorder. A worker with heat exhaustion will generally be sweating profusely and have some of the symptoms listed on the slide. (Review symptoms on slide)

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12. SLIDE:

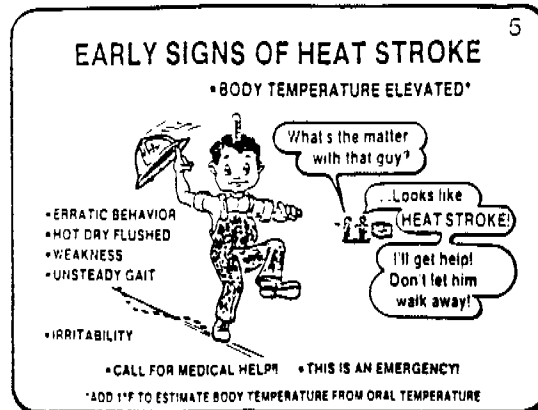


The First Aid Treatment for a victim of heat exhaustion would be:

- Move the victim into the shade or improvise shade.
- Loosen or remove clothing and boots.
- Cool the victim as fast as possible.
- Fan the victim.
- If necessary, pour water on the victim. But not ice water.
- Elevate the victim's legs and massage limbs.
- Have the victim drink water -- with salt, if available.
- Stay with the victim until medical aid arrives.

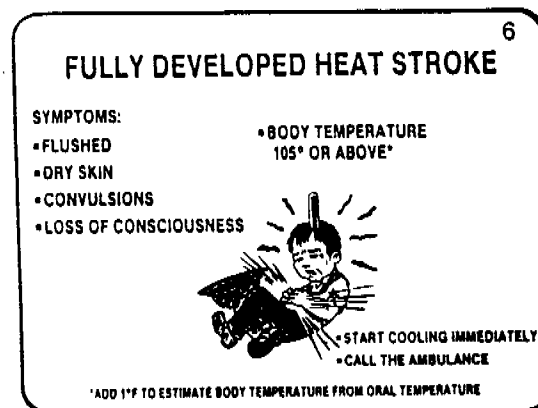
Victims of heat exhaustion should be examined by a qualified medical practitioner and should not participate in strenuous activity for the rest of the day. Rest and restoration of body water and salt usually are all the treatment needed.

13. **SLIDE:**



Do not be misled by this slide. HEAT STROKE IS A SERIOUS HEAT STRESS DISORDER. IT IS A MEDICAL EMERGENCY REQUIRING IMMEDIATE ATTENTION. It is considered a catastrophic illness and has a high death rate.

14. **SLIDE:**



Early symptoms of heat stroke include:

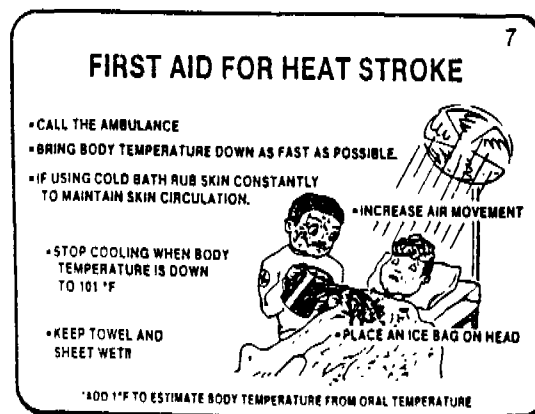
- High body temperature -- above 103°F
- Absence of sweating -- in most cases
- Hot, red or flushed, dry skin
- Rapid pulse

- Difficult breathing
- Constricted pupils
- High blood pressure
- Headache or dizziness
- Confusion or delirium
- Bizarre behavior
- Weakness
- Nausea or vomiting

Advanced symptoms of heat stroke include:

- Seizure or convulsions
- Collapse
- Loss of consciousness
- Deep coma
- No detectable pulse
- Body temperature over 108°F.

15. **SLIDE:**



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The most important step is prompt recognition of heat stroke symptoms and immediate treatment. Follow the same steps as for heat exhaustion, but start the cooling process without delay.

- The victim's body temperature must be lowered as fast as possible.
- Run water over him to cool him. Do not use ice water.
- Ice packs, if used, should be wrapped in wet towels.
- Don't give liquids to unconscious victims.
- Call an ambulance and take the victim to a hospital.

Heat stroke is even more deadly because its true symptoms can be masked. For example, in heat stroke caused by exertion, the victim may still be sweating. Also, cool skin may hide a high core body temperature. On the job, collapse from heat stroke is often mistaken for heart attack or head injury.

16. **SLIDE:**

**HEAT STRESS MAY CAUSE
HEAT ILLNESS
PART II PREVENTION**



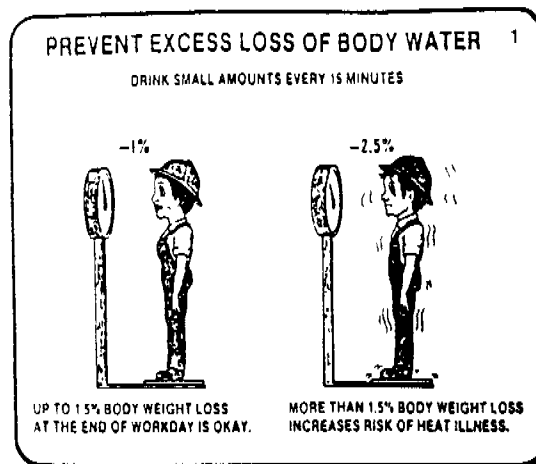
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OF GOVERNMENTAL
INDUSTRIAL HYGIENISTS, INC.
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Heat stress can cause accidents and physical disorders. You owe it to yourself and your fellow workers to recognize the signs of heat stress and to take the proper precaution to minimize or prevent heat disorders:

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17. **SLIDE:**



It is important to have fluid intake throughout the day to make up for fluid loss. This would typically be several cups per hour. It is better to drink cool water rather than ice water.

18. **SLIDE:**



Most people have enough salt in their normal diet. If your job causes a lot of sweating, you may wish to add some salt to your food. Taking too much salt can cause other health problems so it is suggested you check with your doctor before taking salt tablets or adding large amounts of salt to your food.

19. **SLIDE:**

ACCLIMATION TO HEAT 3

INCREASES HEAT TOLERANCE WHILE DECREASING THE RISK
OF HEAT ILLNESS INTRODUCE NEW WORKERS
TO HEAT EXPOSURE GRADUALLY

HEY, IT'S HOT HERE!



JUST TAKE IT EASY
TIL YOU'RE
USED TO IT!



AN ACCLIMATED WORKER CAN SWEAT MORE,
HAS LESS INCREASE OF PULSE RATE AND
TEMPERATURE

% RECOMMENDED EXPOSURE	50	60	70	80	90	100
NO. OF DAYS ON THE HOT JOB	1	2	3	4	5	6

You cannot always control temperature or humidity in your workplace, so you must become acclimatized to it. Acclimatization is the ability to perform strenuous work in the heat by gradually getting yourself used to the climate you work in.

Physical work in the heat should consist of increasing longer work periods each day, alternating with rest or lighter work.

Most workers reach full acclimatization within a week. But if you go on vacation, remember that you will start losing your resistance to heat after one week and you'll lose it completely in a month.

20. **SLIDE:**

KEEP YOUR BODY FIT 4

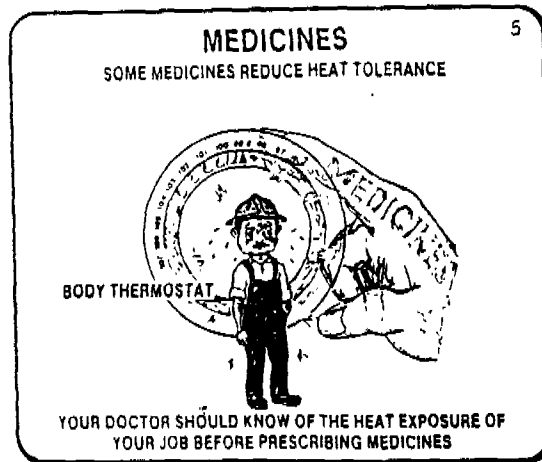
- IF YOU WANT TO BEAT THE HEAT, TRY NOT TO OVEREAT
- FAT LAYER ACTS AS AN INSULATOR AND SLOWS THE BODY ABILITY TO REMOVE HEAT
- KEEP YOUR BODY FIT
- SLEEP 8 HOURS A NIGHT
- EAT A BALANCED DIET, WITH LOTS OF VEGETABLES AND FRUITS
- IF YOUR JOB IS NOT DEMANDING INTENSE PHYSICAL WORK, MAINTAIN FITNESS BY EXERCISING REGULARLY




YOUR HEART WORKS HARDER WHEN YOUR BODY IS CARRYING
AROUND EXTRA WEIGHT

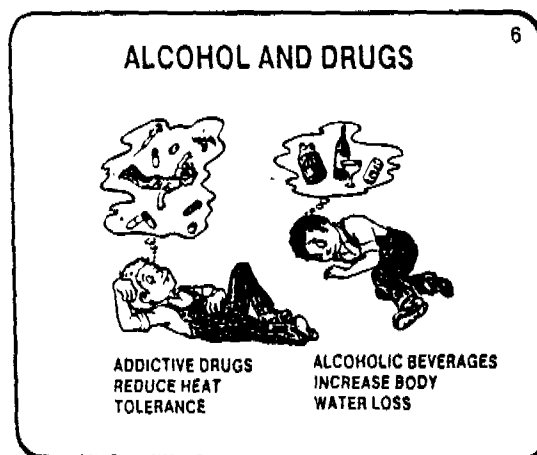
To reduce the effects of heat stress you need to keep yourself in good condition. This includes the items on this slide. (Review information on slide)

21. **SLIDE:**



This slide speaks for itself. Some medicines reduce the body's ability to deal with heat. If you are on medication, find out if there is an effect. Some examples are Medications that inhibit sweating, such as antihistamines, cold medicines, diuretics and some tranquilizers.

22. **SLIDE:**



Illegal drugs or alcohol both reduce the body's ability to deal with heat. Drinking beer to replace fluids is not the thing to do since alcohol actually dehydrates the body.

23. Questions and answers on this section.

QUESTIONS FOR DISCUSSION - PPE:

- 1. What can harm the eyes and face if they're not protected?**
 - The eyes and face can be harmed by flying chips, splashing liquids, glare, dusts, fumes, and vapors.
- 2. What types of personal protective equipment (PPE) offer protection against these hazards?**
 - Safety glasses, goggles, and face shields offer protection against these hazards.
- 3. How can additional protection from flying particles be provided?**
 - Safety glasses with side shields provide additional protection from flying particles.
- 4. What do goggles protect against?**
 - Goggles provide additional protection from debris, such as dust, flying chips, or splashing liquids.
- 5. What type of goggles should you wear when working around toxic or corrosive chemicals?**
 - When working around toxic or corrosive chemicals, wear chemical splash goggles.
- 6. What does the face shield protect against?**
 - The face shield is used to protect the face from flying objects during operations like grinding. When you're working with hazardous chemicals, a face shield also protects the eyes from splashing liquids. Also, protects face from chemical irritants.
- 7. Should a face shield be worn alone?**
 - A face shield alone is not intended to be used as primary eye protection. Wear it only in conjunction with safety glasses or appropriate goggles.

8. What do helmets protect against?

- Helmets protect the head from impact and penetration by falling and flying objects, as well as electric shock or burns.

9. How should the suspension be adjusted?

- The suspension should be adjusted to fit the head and provide a minimum of 1 and 1/4 inches between the top of the head and the shell.

10. What is the purpose of the bump cap?

- The bump cap is used where workers may be subject to lacerations or bumps of the head, but not to injury from falling or flying objects.
- Although bump caps are fine for some applications, they are not a substitute for helmets.

11. What hazards do gloves protect your hands against?

- The proper type of glove will protect your hand if it strikes or is struck by an object, when it's rubbed or penetrated by an object, or, when it comes in contact with something harmful, such as a chemical or excessive heat or cold.
- Various types of rubber, neoprene, or synthetic gloves are used to provide protection from acids, caustics, or solvents.
- Linemen or electricians who work on energized high-voltage equipment must wear specially made rubber gloves. Leather over-gloves may be required to help protect the rubber gloves from wire punctures and cuts.

12. When should safety-toe shoes be worn?

- When handling heavy objects that can roll or fall, safety-toe shoes should be worn. They also provide protection against the hazard of accidentally kicking a sharp object.

13. Should shoes have well defined heels?

- Yes, boots/shoes without well defined heels can cause workers to slip/fall when climbing ladders.

14. What should you do to maintain your PPE?

- Before each use inspect the equipment for damage, and report any problems. Replace items no longer serviceable and store your equipment properly.
- Keep the equipment clean.

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**CONTRACTOR SAFETY ORIENTATION COURSE
SECTION OBJECTIVES**

SECTION NO. 4: RESPIRATORY PROTECTION

LENGTH: 40 minutes

REFERENCES: 1. OSHA Standards
2. OSHA Pamphlet 3078, "Respiratory Protection"

AUDIOVISUALS: 1. 3M audiovisual "Four Elements of Respiratory Protection"
2. Slide Tray No. 1, Starts with Slide 27

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of potential respiratory hazards, hazard control methods, OSHA requirements, and the selection, use, care and limitations of respirators.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. **Respiratory hazards including oxygen deficiency, particulates, gases, fumes, mists and vapors.**
2. **Measurement, control, and standards (PLV/TLV) for common respiratory hazards.**
3. **Respiratory protective equipment (masks, respirators, self-contained and air-supplied breathing apparatus) use, selection, care and requirements of standards.**
4. Need for a medical evaluation before wearing respiratory protection.
5. Need to be fit tested.
6. **How to perform a positive and negative pressure fit check.**
7. Review sample disposable and re-usable respirators and inspection points.
8. Color coding of cartridges.
9. Stress the need to clean & inspect respirators after each use.

NOTE: Objectives in bold print are covered by the videotape.

PRESENTATION FOR SECTION 4:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of potential respiratory hazards, hazard control methods, OSHA requirements, and the selection, use, care and limitations of respirators.

2. Introduce the video - **"Four Elements of Respiratory Protection"**.
3. Have discussion as necessary to assure the key "Specific Objective" in the video were understood.
 - Respiratory hazards including oxygen deficiency, particulates, gases, fumes, mists and vapors.
 - Measurement, control, and standards (TLV) for common respiratory hazards.
 - Respiratory protective equipment (masks, respirators, self-contained and air-supplied breathing apparatus) use, selection, care and requirements of standards.
 - Need to be fit tested.
 - How to perform a positive and negative pressure fit check.
4. Discuss the need for medical evaluation before wearing respiratory protection.
5. Discuss the fact that facial hair can cause a poor seal in the use of respirators.
 - On some jobs it may be necessary for you to wear various forms of respiratory protection.
 - To assure that you will have a good facial seal and avoid the inhalation of harmful gases and vapors, you need to be cleanly shaven.
 - Many petrochemical facilities have beard or facial hair policies which require workers to be cleanly shaven.

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- Side burns, mustaches, beards, and goatees must be trimmed so that they do not interfere with the facial sealing areas of the respirator.

6. **SLIDES:** **"PHOTOS OF TYPES OF RESPIRATORS"**
 (9 SLIDES)

Review and discuss:

- Disposable type.
- Re-usable type and inspection points.
- Color coding of cartridges. (See table at end of this section)
- Need for maintenance and cleaning.

7. Questions and answers.

QUESTIONS FOR DISCUSSION - RESPIRATORY PROTECTION:

1. What do respirators protect against ?

- Respirators protect against inhaling dusts, mists, fumes, smoke, gases, and vapors.

2. What are the two broad categories of respirators ?

- Air-purifying
- Atmosphere-supplying

3. How do air-purifying respirators control exposures to harmful substances ?

- Air-purifying respirators control exposures to harmful substances by cleaning the air with mechanical filters or with chemical cartridges that remove specific gases or vapors.

4. What should you remember when using air-purifying respirators ?

- The respirator must be matched to the specific hazard it was designed to protect against.
- It can only be used in areas where there is an adequate oxygen concentration and where the air contaminant level is within the specified concentration limits of the respirator.
- Because the respirator filter or cartridge can become saturated, it must be periodically replaced.

5. What are two types of atmosphere-supplying respirators ?

- Air-line
- Self-contained breathing apparatus (SCBA)

- 6. What are the advantages and disadvantages of the two types of atmosphere supplying respirators ?**
- Air-line respirators have the advantage of being lightweight and they can provide breathing air for an extended period of time. However, the hose can limit your mobility, pose a tripping hazard, or become tangled or crimped.
 - Self-contained breathing apparatus (SCBA) increases your mobility, but it is heavier and its air supply is limited
- 7. What must you do before you choose or wear respiratory protection ?**
- Do not attempt to choose or wear respiratory protection unless you have received proper medical evaluation, training, and fit testing.
- 8. What must you do each time you put on a respirator ?**
- A negative or positive pressure leak test
- 9. When should the cartridges be changed on an air-purifying respirator?**
- At site specified dates, or intervals.
 - When the air becomes hot for no obvious reason.
 - When it is difficult to breath through the filter.
 - When you can smell or taste the chemicals.
 - When the canister is damaged.

TABLE I-1

Atmospheric contaminants to be protected against	Colors assigned ¹
Acid gases.....	White.
Hydrocyanic acid gas.....	White with 1/2-inch green stripe completely around the canister near the bottom.
Chlorine gas	White with 1/2-inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black.
Ammonia gas.....	Green.
Acid gases and ammonia gas.....	Green with 1/2-inch white stripe completely around the canister near the bottom.
Carbon monoxide.....	Blue.
Acid gases and organic vapors	Yellow.
Hydrocyanic acid gas and chloropicrin vapor	Yellow with 1/2-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases.....	Brown.
Radioactive materials, excepting tritium and noble gases	Purple (Magenta).
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors.	Canister color for contaminant, as designated above, with 1/2-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants.....	Red with 1/2-inch gray stripe completely around the canister near the top.

¹ Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

(Approved by the Office of Management and Budget under control number 1218-0099)
 [39 FR 23502, June 27, 1974, as amended at 43 FR 49748, Oct. 24, 1978; 49 FR 5322, Feb. 10, 1984; 49 FR 18295, Apr. 30, 1984]

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 5: MATERIAL HANDLING AND EQUIPMENT

LENGTH: 30 minutes

REFERENCES:

1. OSHA Standards
2. OSHA Pamphlet 3067, "Concepts and Techniques of Machine Safeguarding".
3. OSHA Pamphlet 2236, "Materials Handling and Storage".

AUDIOVISUALS:

1. Coastal Video, "Back Safety" (10 min.)
2. Slide tray No. 1, Starts with Slide 38

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the basic hazards associated with and proper safety precautions for: (1) materials handling and storage; (2) light craftsman's rigging; (3) motorized vehicles and powered equipment; (4) welding, cutting and brazing, and (5) proper lifting techniques.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with basic knowledge of:

1. **Manual lifting techniques. Get help for heavy/bulky objects.**
2. General guidelines on selection, inspection, maintenance and use of slings including chains, wire rope, and synthetic web, including methods, procedures and application for rigging safe working loads. Discuss rated capacity, barricading work area, and rigging to structures, not piping. Required training.
3. Hazards and general precautions for using hooks, shackles, beam clamps, chokers, chain falls, hoists and come-a-longs.
4. Requirement for trained, certified and authorized operators to operate powered industrial trucks. OSHA requirements.
5. Requirement for designated personnel to operate overhead or gantry cranes.

**CONTRACTOR SAFETY ORIENTATION COURSE
SECTION OBJECTIVES**

SECTION NO. 5:(CONTINUED)

6. Placement and storage of materials for stability and safety from sliding, shifting, spreading or collapse.
7. General hazards and safety requirements for using cranes, derricks, hoists, elevators and conveyors including overturning, spillage of load, capacity limits, over-reach, positioning, leveling, firm footing and clearance (overhead, adjacent and personnel).
8. Motor vehicle and motorized equipment hazards, operations, and safe use requirements including parking, visibility, backing up and personnel transport.
9. Basic welding and cutting safety including qualifications, fire watch requirements and responsibilities, personal protective equipment, grounding, cylinder care and storage, and inspection, care and storage for welding leads, clamps, hoses, torches, gauges, and machines.

NOTE: Objectives in bold print are covered by the videotape.

PRESENTATION FOR SECTION 5:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the basic hazards associated with and proper safety precautions for: (1) materials handling and storage; (2) light craftsman's rigging; (3) motorized vehicles and powered equipment; (4) welding, cutting and brazing, and (5) proper lifting techniques.

2. Introduce the video:

Material handling and the use of motor vehicles / powered equipment is common to all job sites. The most common injury is a back injury. To avoid back injuries keep in good physical condition and practice proper lifting techniques. This video will show the right and wrong lifting techniques.

3. Show the video "**Back Safety**". This video is about 10 minutes in length.
4. Answer any questions on the video. Review and discuss the key points including:

- Lifting and twisting vs. pivoting with your feet.
- Have the load close to the body.
- Generally, back problems develop over a period of time and not because of one instance.
- Back-belts may be helpful for some activities, not a cure-all.
- Pushing a hand cart is easier on the back than pulling it. But pull on a wrench, don't push on it.
- Remember:

B - Balance
A - Alignment
C - Center and Close
K - Knees

5. **SLIDE:** **LIGHT RIGGING ABUSES**

- **IMPROPER SELECTION**
- **POOR CONDITION**
- **RIGGING OFF PROCESS PIPES**
- **LACK OF SOFTENERS**

Poor rigging practices can also create potential problems. Here is a partial listing of abuses of materials handling equipment which could result in accidents and/or injuries:

- Improper selection and sizing of chain falls and slings or chokers,
- Use of damaged or defective rigging equipment,
- Attaching the lifting device to a piece of piping as opposed to a structural member, and...
- Failure to use softeners to protect against sharp bends or edges.

Chain falls, come-a-longs, and chokers can be invaluable to the craftsman when handling or lifting heavy materials, but only if they are used correctly.

- Take the time to select the right equipment for the job.
- Make sure the lifting device and all the associated slings and chokers are capable of safely supporting the intended load.

Suspend your lifting device from a properly sized structural member, not a piece of process piping. If the piping failed, you could be injured by the contents of the pipe.

Take care to protect your slings and chokers from sharp bends or edges. Softeners can be used for this. Don't fail to use them.

And when you are finished, take the equipment down and store it properly. Don't leave it out in the elements.

6. **SLIDES:** **"PHOTOS OF RIGGING ABUSE"**

- These are examples of improper rigging.

7. **SLIDE:** SLINGS

- WIRE ROPE
- CHAIN
- SYNTHETIC WEB

- Wire rope slings are made of extra improved plow steel grade of rope which is the strongest available.
- Chains are used because of their strength and ability to adapt to the shape of the load. They are best used for very hot loads.
- Web slings are useful for lifting loads when protecting the surface of the object is important. Examples are painted, polished and highly machined materials.

8. **SLIDE:** SLING INSPECTION

- DAILY
 - DO NOT EXCEED RATED CAPACITIES
 - DO NOT SHORTEN
 - ANGLES
 - CHECK CLEARANCE
- Slings should be inspected at least daily and before each use. Factors such as abrasion, nicking, distortion, corrosion, and other such factors of use will affect the load rating and must be given consideration when lifts are planned.
 - Rated capacities should be posted on the sling. Slings should never be loaded in excess of their rated capacities.
 - Slings should not be shortened with knots or bolts or other items.
 - As the angle formed by the sling leg and the horizontal decreases, the rated capacity of the sling also decreases. In other words, the smaller the angle between the sling leg and the horizontal the greater the stress on the sling leg, and the smaller the load the sling can support. Larger loads can be safely moved if the weight is distributed among more sling legs.

- Sufficient clearances should be allowed for at aisles, loading docks, doorways and wherever turns or passage must be made. Permanent aisles and passage ways shall be marked and kept clear of obstructions.
9. **SLIDE:** **HOISTS, COME-A-LONGS, HOOKS, SHACKLES, BEAM CLAMPS, CHOKERS, AND CHAIN FALLS.**
- **SUPPORT SHOULD EXCEED CAPACITY**
 - **USED ONLY BY TRAINED PERSONNEL**
 - **SAFE LOAD CAPACITY**
 - **NEVER TRANSPORT PEOPLE**
- The structure used to support the hoist, come-a-long, etc., should exceed the rated capacity of the equipment.
 - Only trained persons should install and operate equipment.
 - Safe load capacities should be posted and observed.
 - Hoists, come-a-longs, and hooks should not be used to lift, support or transport people.
10. **SLIDES:** **"PHOTOS OF PROPER RIGGING STORAGE"**
 (2 SLIDES)
- Here are two examples of the proper way to store rigging equipment.
11. **SLIDE:** **ONLY DESIGNATED PERSONNEL SHOULD OPERATE OVERHEAD AND GANTRY CRANES**
- Only designated and trained personnel should operate overhead and gantry cranes.
12. **SLIDE:** **CRANE, DERRICK, HOIST, ELEVATOR AND CONVEYOR SAFETY**
- **SMOOTH OPERATION**
 - **CENTERED**
 - **ROPES SHOULD BE VERTICAL**
 - **OBSERVE CAPACITY**
 - **PROPER DRESS**
 - **PERSONNEL SAFETY**

- Controls should be operated smoothly and gradually to avoid abrupt, jerky movements of the load.
- The load should be centered before starting operation.
- On hoisting devices the ropes should be kept vertical. Hoists, cranes, and derricks should not be used for side pulls.
- The rated capacity of equipment should never be exceeded.
- Personnel should wear closely fitting clothing to avoid being caught by equipment.
- All personnel in the area should be clear of the load and aware that a load is being moved. These personnel should know the proper methods to alert operators of an emergency and where the emergency shut off devices are located on automatic equipment.

13. **SLIDE: "PHOTO OF CRANE IN USE"**

- This is a picture of a crane in use. Note the barricade tape.

14. **SLIDE: WELDING AND CUTTING SAFETY**

- **QUALIFIED PERSONNEL**
- **HOT WORK PERMITS**
- **FIRE WATCH REQUIREMENTS**
- The hazards generally associated with welding and cutting are hot sparks, radiation, air contamination, electrical shock, chipping slag, and the handling and use of compressed gases.
- Only qualified and authorized personnel should perform welding and cutting operations.
- It is desirable, especially in hazardous locations, to require hot work permits before welding or cutting is performed. This permit is usually issued by plant operations personnel in charge of the area.

- A fire watcher with a suitable fire extinguisher should be stationed at welding operations to ensure sparks do not lodge in floor or pass through openings. The fire watch should be continued for at least 30 minutes after the job is completed.

15. SLIDE: WELDING AND CUTTING SAFETY (cont'd)

- **PERSONAL PROTECTION**
- **RESPIRATORY PROTECTION**
- **EYE PROTECTION**
- **PROTECTIVE CLOTHING**
- During welding and cutting gases and metallic dust and fumes may present inhalation hazards if adequate ventilation is not maintained. If gas, dust and fume concentrations can not be maintained below the PEL's, welders should wear respirators certified for the exposure by NIOSH.
- Goggles, helmets, and shields that give maximum eye protection for each welding or cutting process should be worn by operators, welders and their helpers. Goggles or spectacles should have side shields.
- Protective clothing needed by welders includes flame resistant gauntlet gloves, aprons of flame resistant material, fire resistant leggings, high top safety shoes or boots, hard hats, and for overhead work capes or shoulder covers, skull caps to be worn under helmets and in some cases, ear protection may be required in heavy work.

16. SLIDE: WELDING AND CUTTING SAFETY (cont'd)

- **CYLINDER CARE AND STORAGE**
- **SAFE, DRY, VENTILATED AREA**
- **OXYGEN 20 FEET AWAY**
- **ACETYLENE - VALVE END UP**
- **EMPTY/FULL STORED SEPARATELY**
- Cylinders should be stored in a safe, dry, well ventilated area designated for cylinder storage. They should not be stored in areas where they can be knocked down or damaged.

- Cylinders of oxygen should not be stored within 20 feet of cylinders containing flammable gases or highly combustible materials. If they must be stored closer, cylinders should be separated by a fire resistive wall.
- Acetylene and liquified fuel gas cylinders should always be stored with the valve end up. Never lay an acetylene cylinder on its side.
- Empty cylinders should be stored separately from full cylinders. Empty cylinders should be marked "empty" or "MT" with chalk to avoid confusion.

17. SLIDE: WELDING AND CUTTING SAFETY (cont'd)

- **EQUIPMENT CARE AND USE**
- **PROTECT CABLES AND HOSES**
- **RED-FUEL, GREEN-OXYGEN**
- **TORCHES SHOULD BE APPROVED**
- **TEST HOSE AND CONNECTIONS**
- Hoses and cables should be protected from sharp corners, traffic and other severe abuse. Damaged hoses and cables should be taken out of service immediately.
- Red colored equipment is used to designate fuel gas equipment; green is used for oxygen. Never try to force oxygen regulators onto fuel gas cylinders or vice versa.
- Torches should be able to withstand rough handling and should be listed or approved by an agency such as Factory Mutual or Underwriters Laboratory.
- Hoses and connections should be tested frequently for leaks and worn places. Hoses should be tested by immersing the hose under normal working pressure in water. Connections should be tested using a soapy solution.
- Ground the frames of welding units in accordance with the National Electric Code. Never change electrodes with bare hands, wet gloves, or when standing on wet floors or ground surfaces.

18. **SLIDES:** "PHOTOS OF WELDING" (7 SLIDES)

- Here are several examples of various welding operations. Note the use of PPE and protective barriers.

19. **SLIDE:** PLACEMENT AND STORAGE OF MATERIALS

- **SECURE STORAGE**
- **HOUSEKEEPING**
- **CLEARANCE**
- **SEPARATE NON COMPATIBLES**
- Storage of materials must not create hazards. Bags, containers, bundles, etc., stored in tiers must be stacked, blocked, interlocked and limited in height to prevent sliding or collapse.
- Keep storage areas free from accumulations of materials that could cause tripping, fires, explosions, or harbor pests.
- Storage must not obstruct or adversely affect clear passageways or means of exit. Clearance of at least 36 inches must be maintained between top of stored material and the sprinkler deflectors.
- Incompatible materials such as acids and bases must be separated and stored separately.

20. **SLIDE:** "PHOTOS OF PLACEMENT AND STORAGE"
(9 SLIDES)

- Briefly discuss how this is proper placement and storage.

21. **SLIDE:** "PHOTO OF CLUTTER"

- This is an example of how not to do it.

NOTE: END OF TRAY ONE. START OF TRAY TWO.

22. **SLIDE:** **SAFE USE OF MOTOR VEHICLES AND
MOTORIZED EQUIPMENT**

- **ONLY APPROVED OPERATORS**
 - **BACKING**
 - **PARKING**
 - **VISIBILITY**
 - **PERSONNEL TRANSPORT**
-
- Motor vehicles and motorized equipment should only be operated by trained and authorized personnel.
 - All equipment should be equipped with backup lights and an audible back-up signal. The operator should ensure that the area is clear for backing and use a spotter if necessary.
 - Any time the operator is away from the vehicle, controls should be disengaged, parking brake set, power shut off, and load engaging means should be fully lowered.
 - The driver should be aware of limited visibility and should slow down and sound the horn at locations where visibility is limited.
 - Personnel should only ride in equipment designed for personnel transport. The vehicle should not be moved until all personnel are off the vehicle or are properly seated.

23. **SLIDES:** **"PHOTOS OF PROPER AND IMPROPER USE OF
FORKLIFTS" (17 SLIDES)**

Briefly discuss what is right or wrong with the use of the forklift in each slide. Included are:

- OSHA requires forklift operators to be certified and certification renewed annually.
- Do not operate equipment with slippery hands or feet.
- If the vehicle is **tagged out** do not operate it.
- Do not ride with the forks raised. They should be six inches off the ground.

- Do not ride with the forks slanted. They should be parallel to the ground.
- Keep hands and feet inside the cage.
- Watch out for co-workers.
- Never allow personnel to walk under a load.
- Only operated on stable surfaces and watch following distances.
- Riders are not permitted.
- Do not ride over obstacles. Move them or go around.
- Never operate controls unless you are seated in the vehicle.
- Never work with unstable loads. Adjust the load until it is stable before you attempt to move it.
- Loads should be stacked evenly and properly before they are moved.
- Do not use forklifts to push anything. Only use them for their intended purpose.
- Do not lift people unless it is with an approved carrier.
- Allow time for eyes to adjust when going from light to dark areas.

24. **SLIDES:** "PHOTOS OF PROPER AND IMPROPER USES OF MANLIFTS" (9 SLIDES)

Briefly discuss what is right or wrong with the use of manlifts in each slide.
Included are:

- OSHA requires manlift operators to be certified and certification renewed annually.
- Never operate a manlift on unstable surfaces.

- Equipment should not stick out of the manlift.
- Be aware of power lines and stay at least 10 feet away from them.
- Do not overload the manlift beyond its rated capacity.
- Do not climb out of the manlift.
- Do not stand on the handrails or otherwise try to increase working height.
- Personnel should not be allowed to walk under manlifts.
- Do not walk on the boom.

25. SLIDES: "PHOTOS OF PROBLEMS WITH PERSONNEL AROUND EQUIPMENT" (2 SLIDES)

Each week three to four people in the U.S.A. lose limbs due to accidents involving forklifts and similar industrial equipment. Eight out of every ten of these accidents involve co-workers - not the operator. If you are not needed in the area of forklift truck activity -- leave. Do not put yourself at risk as the worker in these slides is doing.

- 26. Have final question and answer period on Section 2 - 5.
- 27. Give Post-Quiz on Sections 2 - 5.
- 28. Collect the first page of the Post-Quiz from the participants.
- 29. Go over Post-Quiz on Sections 2 - 5 by reading each question and giving the correct answer. Clear up any misunderstanding that participants may have on any material covered in the Post-Quiz.
- 30. Collect the second page of the Post-Quiz from the participants.

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CONTRACTOR SAFETY ORIENTATION POST-QUIZ (2-5)

DATE: _____ NAME: _____

Circle T if the statement is TRUE, and F if the statement is FALSE.

Circle the letter with the most correct answer.

SECTION 2 - HEARING CONSERVATION

1. T F Exposure to unwanted sound can be controlled.
2. T F It is not necessary to wear hearing protection when you only work in a noisy area for a short time.
3. T F Noise induced hearing losses can be corrected with a hearing aid.
4. Continued exposure to noise levels above _____ will damage your hearing:
 - a. 65 decibels
 - b. 75 decibels
 - c. 85 decibels
 - d. All of the above
5. You should wear hearing protection when you have to raise your voice to be heard by someone less than:
 - a. Eight feet away
 - b. Six feet away
 - c. Four feet away
 - d. Two feet away
6. Your hearing can be protected from excessive noise by proper use of:
 - a. Ear plugs
 - b. Ear muffs
 - c. All of the above
 - d. None of the above

SECTION 3 - PPE

7. T F Spray painting or modifying hard hats may damage them.
8. T F All personal protective equipment should be routinely inspected for damage or defects and repaired or replaced as necessary.
9. T F Drinking beer / alcohol causes the body to lose body fluids and increases the possibility of heat stress.
10. A face shield should be used in addition to safety glasses when:
- a. There is a lot of glare
 - b. There is the possibility of flying objects, such as when grinding
 - c. There is the possibility of splashing liquids or working with chemicals
 - d. Both B and C
11. Which of the following is an example of when you should not wear gloves to protect your hands ?
- a. Handling materials with sharp edges or burrs
 - b. Working around rotating machinery
 - c. Working with or around chemicals
 - d. Working with hot materials
12. What are signs of heat related disorders?
- a. Red or flushed, hot dry skin and high body temperature.
 - b. Pale skin, profuse sweating and normal body temperature.
 - c. Being very hungry.
 - d. Both A and B
13. To reduce the chances of heat stress, it is better to:
- a. Drink plenty of beer and other alcoholic drinks
 - b. Drink extra amount of soda, tea, or coffee
 - c. Frequently drink moderate amounts of cool water
 - d. Any of the above are OK

SECTION 4 - RESPIRATORY PROTECTION

14. T F The two main respiratory hazards are oxygen deficient atmospheres and airborne contaminants.

15. T F Air-purifying respirators give protection against both oxygen deficiency and dusts or mists.
16. T F You should always inspect your respirator and perform a negative or positive fit test before entering a hazardous atmosphere.
17. Respirator cartridges must be replaced when:
- a. Breathing becomes difficult
 - b. Odors can be sensed
 - c. Air becomes hot
 - d. Any of the above
18. Workers should have a _____ to assure they are physically able to wear a respirator ?
- a. Medical evaluation
 - b. Hearing test
 - c. Eyesight test
 - d. Urine test
19. Facial hair, stubble, moustache, sideburns, beards, low hairline or bangs that touch the sealing surface of a respirator can result in:
- a. A poor seal
 - b. A good seal
 - c. All of the above
 - d. None of the above

SECTION 5 - MATERIAL HANDLING & EQUIPMENT

20. T F The proper method of lifting is to bend at the knees and then let your legs do the most of the work.
21. To protect yourself from back problems you should:
- a. Never twist your back when moving an object; always turn with your feet
 - b. Follow proper lifting techniques
 - c. Stay in good overall physical condition
 - d. All of the above
 - e. Both A and B

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 6: SIGNS AND BARRICADING

LENGTH: 10 minutes

REFERENCES: 1. OSHA Standard 1910.145

AUDIOVISUALS: 1. Slide Tray No. 2, Starts with Slide 35

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the special precautions identified by accident prevention signs and tags, signals or signal men, and barricades.

SPECIFIC OBJECTIVES: Completion of this section should provide the participant with knowledge of:

1. Requirements for posting signs and symbols.
2. The difference between danger, caution, and informational signs.
3. Appropriate use of signaling when signs, signals or barricades do not provide sufficient protection.
4. Barricading may be required for leaks, spills, excavations, overhead work, asbestos removal, floor and wall openings, etc.
5. Barricades vs guardrails - The first is a warning and the other is a protective device.
6. Control of vehicular and pedestrian traffic.
7. Use of flags including railroad blue flag requirements. Blue flags are required when working near, around or above railroad tracks. De-railers may also be used when hazardous chemicals are being loaded/unloaded.
8. Visibility concerns for signs, signals, flags and barricades.
9. The use of accident prevention tags as temporary means of warning for an existing hazard such as defective tools, equipment, etc.

NOTE: Tagout of energy sources is addressed in a separate section.

PRESENTATION FOR SECTION 6:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the special precautions identified by accident prevention signs and tags, signals or signal men, and barricades.

2. State the purpose of barricades which is:

To prevent unauthorized personnel or equipment from entering an area where a hazard may exist as the result of maintenance, construction, equipment failure, weather, or any other emergency condition.

3. **SLIDE: TYPES OF BARRICADES**

- **PERMANENT DIVIDERS, WALLS, FENCES, ETC.**
 - **TEMPORARY WALLS, FENCES, ETC.**
 - **PORTABLE ROPE, TAPE, CONES, ETC.**
-
- Permanent barricades usually consist of walls, dividers, and fence installations, and are used where hazards may exist for a prolonged period.
 - Temporary barricades usually consist of walls, dividers, or fences erected to serve as protection in connection with a hazardous job or project in progress, but intended to be demolished at the completion of same.
 - Portable barricades are the least effective and usually consist of horse barricades, rope barricades, traffic cones, and temporary fence installations.

4. **SLIDE: TYPICAL USES OF BARRICADES**

- **OPEN EXCAVATIONS, FLOOR OPENINGS**
- **OVERHEAD WORK, HAZARDOUS WORK, SPILLS**
- **ROADWAYS MADE DANGEROUS BY UNUSUAL CONDITIONS**
- **ROADS UNDER REPAIR OR WITH EXCAVATIONS**
- **TEST AREAS.**

Barricades should be used to isolate those areas where a hazard exists to control personnel or equipment travel. Examples of work that commonly require barricading are:

- Open excavations, floor openings.
- Overhead work, hazardous work, spills
- Roadways made dangerous by weather, fire, or other unusual conditions.
- Roads under repair or with excavations that vehicles or personnel could enter.
- Test areas.

5. **SLIDE: COLOR IDENTIFICATION**

- **RED**
 - **FIRE PROTECTION EQUIPMENT**
 - **DANGER SIGNS**
 - **STOP SIGNS, BUTTONS, ETC.**
- **YELLOW**
 - **CAUTION SIGNS**
- **ORANGE**
 - **DANGEROUS PARTS ON MACHINES**

There may be exceptions, but color identification is as shown on this and the next slide. (Review content of slide)

6. **SLIDES: "PHOTOS OF BARRICADE TAPE IN USE"**
(8 SLIDES)

These are examples of the use of barricade tape.

7. **SLIDE: COLOR IDENTIFICATION (cont'd)**

- **GREEN**
 - **SAFETY SIGNS**
 - **FIRST AID**

- WHITE/BLACK
- WARNING SIGNS

Review material on slide.

8. **SLIDES**: "PHOTOS OF DANGER SIGNS" (4 SLIDES)

These are examples of a danger sign.

9. **SLIDES**: "PHOTOS OF DANGER TAGS" (2 SLIDES)

These are examples of danger tags.

10. **SLIDES**: "PHOTOS OF CAUTION SIGNS" (4 SLIDES)

These are examples of caution signs.

11. **SLIDES**: "PHOTOS OF WARNING SIGNS" (6 SLIDES)

These are examples of warning signs.

12. **SLIDES**: "PHOTOS OF BLUE FLAGS/BLUE LIGHTS"
(3 SLIDES)

These slides shows a blue flag/blue light. Blue flags (or lights) are required when working near, around or above railroad tracks.

13. **SLIDES**: "PHOTOS OF DE-RAILERS" (2 SLIDES)

De-railers may also be used when hazardous chemicals are being loaded/unloaded. The purpose is to protect personnel and equipment from unauthorized movement of railcars.

14. **SLIDE**: CONCERNS WITH SIGNS & BARRICADES

- MUST BE VISIBLE, EASY TO SEE
- MUST NOT BE USED IN PLACE OF GUARDRAILS

It is important that signs and barricades be visible and easy to see. Also signs and barricades should not be used in places where guardrails are needed.

Remember:

- Guardrails are protective devices.
- Signs/barricades only provide a warning.

15. **SLIDES: "PHOTOS OF TAGGED - TOOLS" (3 SLIDES)**

These slides show warning tags that you should have available to you and use when necessary.

16. Questions and answers.

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 7: ALCOHOL, SUBSTANCE ABUSE AND CONTRABAND POLICY

LENGTH: 10 minutes

REFERENCES:

AUDIOVISUALS: 1. No. 2, Starts with Slide 73

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the general rules for alcohol, substance abuse and contraband usually associated with work at a plant site.

SPECIFIC OBJECTIVES: Completion of this section should provide the participant with knowledge of:

1. Safety is a primary reason for substance abuse programs as well as compliance with Federal Laws for a drug free workplace.
2. The possession, use, mis-use, sale, consumption or distribution of any prescription or non-prescription drugs, alcoholic beverages, or other forms of contraband is prohibited. Prohibited are firearms, weapons, explosives, stolen property, etc. in the plant, parking lots and vehicles.
3. Many plants have strict substance abuse policies which may require the contractor employee submit to drug screens. (Pre-employment, periodic, random, post accident and for cause.)
4. Many plants have strict contraband policies which may require the contractor employee submit to personal or vehicle searches.
5. Discuss illegal drugs, prescription and over the counter. Supervisor should be notified of required medication. Medical alert information should be available.
6. Personal medications/prescriptions should be in worker's name, have the name of the doctor and not be over a year old. Only enough medication for two shifts should be brought to work.
7. Discuss the effects of drugs on safety and job performance.

PRESENTATION FOR SECTION 7:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the general rules for alcohol, substance abuse and contraband usually associated with work at a plant site.

2. **SLIDE: WORK PLACE CONCERNS ABOUT ALCOHOL & SUBSTANCE ABUSE:**

- SAFETY
- INJURIES
- LOSSES
- COMPLYING WITH LAWS

Avoiding accidents and losses is the main concern for having alcohol and drug policies. A good percentage of accidents and losses are caused by employees with alcohol or drug problems. There are also Federal laws which employers must comply with concerning alcohol and drug abuse. Earlier in the program it was noted that one of the keys to accident prevention was to remain alert at all times. To do this you must be physically and mentally fit for the job. Alcohol and drugs (both legal and illegal) can affect your physical and mental capabilities.

Also drinking beer/alcohol increases the possibility of heat stress.

3. **SLIDE: CONCERNING ALCOHOL & DRUGS AT THE WORK PLACE, THE FOLLOWING IS NOT ALLOWED:**

- POSSESSION
- USE OR CONSUMPTION
- SALE OR DISTRIBUTION
- PRESCRIBED MEDICATION SHOULD BE FOR YOUR USE ONLY

The possession, use, sale, consumption, or distribution of any prescription or non-prescription drugs, alcoholic beverages is prohibited.

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SL 060091

4. **SLIDE: ALSO PROHIBITED AT THE WORK PLACE:**

- FIREARMS OR WEAPONS
- EXPLOSIVES
- STOLEN PROPERTY

Firearms, weapons, explosives and stolen property is referred to as contraband and is also prohibited at the work place.

This applies in the plant, parking lots and in vehicles.

5. **SLIDE: THIS APPLIES**

- IN THE PLANT
- IN PARKING LOTS
- IN VEHICLES

**MANY PLANTS REQUIRE PERSONNEL TO SUBMIT
TO PERSONAL OR VEHICLE SEARCHES**

Repeat information on slide.

6. **SLIDE: "PHOTO OF A PLANT'S SEARCH POLICY"**

You should also be aware that many facilities have strict Drug, Alcohol & Contraband Policies which may require you to submit to personal or vehicle searches.

7. **SLIDE: MANY PLANTS REQUIRE DRUG SCREENING WHICH
MAY INCLUDE:**

- PRE-EMPLOYMENT
- PERIODIC
- RANDOM
- POST ACCIDENT
- FOR CAUSE

You should also be aware that many facilities require drug screening and testing including pre-employment, periodic, random, post accident and for cause. For cause could be unusual or unsafe behavior. These strict Drug, Alcohol & Contraband Policies are not meant to be discriminatory; they are intended to protect you and your co-workers from possible injury.

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8. **SLIDE:** **PRESCRIPTION AND
OVER-THE-COUNTER MEDICATION:**

- **ADVISE SUPERVISOR OF MEDICATION USE**
- **MEDICAL ALERT INFORMATION SHOULD BE AVAILABLE**

If you are on prescription medication, you should inform your supervisor. If you must take medication at work, you should have it in a current prescription bottle with your name on it as well as that of your physician.

9. **SLIDE:** **PRESCRIPTION AND
OVER-THE-COUNTER MEDICATION:**

- **PRESCRIPTION MEDICATION MUST BE FOR THE WORKER**
- **ONLY ENOUGH MEDICATION FOR TWO SHIFTS**

The prescription must be for the worker and only enough medication should be with you at the work place for the shift or shifts you are expected to work.

10. Conclude this section by discussing the following points:

- a. Depending on the drug being used, the safety and job performance can be affected because of:
 - Extreme mood swings
 - Severe depression, irritability
 - Impaired judgement, coordination, vision
 - Sleepiness, dizziness
 - Over confidence

- b. The impaired performance of a worker on drugs greatly increases the risk of an accident resulting in injury to them or co-workers. Many employers have an Employee Assistance Program (EAP) that can help workers or family members with addiction problems. Health insurance plans may cover the cost of treatment. Also there are many community programs and support groups also offering help to those with alcohol or drug problems.
- c. It is best that a worker with an addiction to alcohol or drugs obtain advice and help. The drug problem is estimated to be costing U.S. business over 30 billion dollars a year plus numerous personal injuries and deaths. If you need help or know someone who does, obtain it or encourage them to obtain it. Avoid the temptation to "cover" for someone who has a substance abuse problem. The accident they cause may affect you or your co-workers.

11. Questions and answers.

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SL 060094

QUESTIONS FOR DISCUSSION:

1. What are some behavioral effects of substance abuse?

- Bad temper
- Exaggerated sense of well being
- Aggression
- Hostility
- Decreased productivity on the job

2. How much does substance abuse cost American businesses each year?

- Substance abuse costs American businesses over 100 billion annually.

3. What should you do if you suspect a co-worker of substance abuse?

- Do not confront the worker directly
- Report the actions of co-worker to your supervisor, who can refer the employee for the proper treatment

4. Why is it important for workers to assume responsibility for each other?

- It's important to make sure a substance abuser receives proper treatment. Covering up for the worker just enables him/her to continue with the destructive behavior.

5. What programs are available for substance abusers?

- Employee Assistance Programs (EAP)
- Alcoholics Anonymous (AA)
- Narcotics Anonymous (NA)
- Hospital/psychiatric programs

6. How can you help a recovering co-worker?

- Encourage the co-worker to continue with the treatment. Do not invite the person out to party or to have one last drink.

6/1/92

SL 060096

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 8: ELEVATED WORK

LENGTH: 45 minutes

REFERENCES: 1. OSHA Standards 1910.25-1910.29, 1910.67, 1910.68 and 1910.178.
2. OSHA Pamphlet 3124, "Stairways and Ladders".

AUDIOVISUALS: 1. Coastal Video's "Hooking Up" (15 min.)
2. Slide Tray No. 3, Start with Slide 1

GENERAL OBJECTIVE: Upon completion of this section, the participants should have a basic understanding of the safe use of ladders and scaffolds, the hazards involved and safe practices for elevated work, floor and wall openings, stairways, and walking/working surfaces. They will also understand protective work practices for aerial platforms, and the selection, use, care and limitations for personal fall protection devices.

SPECIFIC OBJECTIVES: Completion of this section should provide the participants with knowledge of:

1. The basic hazards associated with and proper safety precautions for use and storage of ladders including safe placement, proper ascent and descent, and ladder inspection. Carrying tools or material is not allowed. A bucket and rope should be used. Review types of ladders. Stress new ladder standard.
2. The basic hazards associated with and proper safety precautions for using scaffolds.
3. Requirements for supervision of competent personnel to erect, move, alter or dismantle scaffolds. Do not move, alter, or dismantle a scaffold without instructions from supervision and then only if you are qualified to do so.
4. Scaffold placement. Consider other hazards in close proximity to the scaffold. The scaffold should provide safe access to and from the work areas as well as a safe work platform.

SECTION NO. 8 (CONTINUED)

5. Requirements for handrails, toeboards and decking. If the work is such that all scaffold components are not in place, additional fall protection may be required. Discuss rope-off vs toe boards.
6. Scaffold inspection before each use.
7. Scaffold types including tubular, moving, suspended and decking. (Information only.) Mixing of scaffold components of different manufacturers is not allowed.
8. Ramp, runway, stairway, aisle and pathway hazards and protective work practices. (Stress requirements of new standard.)
9. Some plants use scaffolding tags/permits: Know the procedures where you work. Do not rely solely on the tag - - be your own final inspector.
10. Safe use of mobile and suspended working platforms including manlifts, bucket trucks and boatswains chairs. This type of equipment requires specific training and fall protection. Rolling scaffolds must not be moved with personnel on it and casters must be locked after moving.
11. **Selection, fit, inspection, use and care of safety harnesses, belts, lifelines and lanyards, including requirements of the standards. Discuss six foot fall hazards and six foot lanyards. Don't use until you have been properly trained. Some plants will have specific requirements, learn them.**
12. When 100% tie-off is required it may be necessary to use two lanyards.
13. Many falls occur when moving from one position to another. Traverse lines and multiple lanyards may be required.
14. In some cases belts and harnesses may not be sufficient and safety nets may be required.
15. **Anchor points must be overhead and a suitable anchor point which can support a 5400 lb. stress. Do not use cable trays, light hand rails, etc. for anchor points. When in doubt, check with supervision.**
16. Throwing materials/tools/equipment from one level to another is not allowed.

NOTE: Objectives in bold print are covered by videotapes.

PRESENTATION FOR SECTION 8:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have a basic understanding of the safe use of ladders and scaffolds, the hazards involved and safe practices for elevated work, floor and wall openings, stairways, and walking/working surfaces. They will also understand basic protective work practices for aerial platforms, and the selection, use, care and limitations for personal fall protection devices.

2. Introduce the video:

In jobs involving potential fall hazards, safety belts, lifelines, body harnesses and/or lanyards must be used. The ropes, lanyards and anchor points must be capable of a 5400 lb. stress. All fall protection equipment should be inspected regularly to assure they are in proper condition. The video we are about to see covers the selection, fit, inspection, use and care of fall protection equipment.

3. Show the video "**Hooking Up**". This video is about 15 minutes in length.
4. Have questions and answers on the video:

Review and discuss key points including:

- Stress requirement of life line and anchor point of 5400 lb.
- Possible falls should be limited to six feet or less.
- "Roll out" possibility of single action latches.
- Lanyard should be hooked at the back.
- Some jobs may also require safety nets. (Working more than 25 feet above a surface may require a safety net.)
- Many falls occur when the worker is unhooked to move to another position. Traverse lines and multiple lanyards may be needed on some jobs.

- When 100% tie-off is required, it may be necessary to use two lanyards.
- Inspection and maintenance of fall protection equipment. Do not tie knots in lanyards.

5. **SLIDE: USE OF LADDERS**

- **USE AS INTENDED**
- **KEEP CLEAN**
- **INSPECT BEFORE USE**
- **4 TO 1 PITCH**
- **EXTENSION OF 36 INCHES**

There are tens of thousands of injuries and dozens of deaths at construction sites each year due to falls. Many of these are from ladders and could have been avoided by following safe work practices. These include:

- Using the ladder for its intended purpose and rated capacity. For example, don't use a step ladder where an extension ladder is needed.
- Keep ladders clean, free of oil, grease and other slipping hazards.
- Inspect ladders before using them. Do not use ladders with broken or missing rungs or steps, broken or split side rail, or with other faulty or defective construction. When ladders with such defects are discovered, they shall immediately be tagged "DO NOT USE" and be withdrawn from service.
- Portable ladders should be used only on stable and level surfaces. The surface should not be slippery. The pitch of the ladder should be 4 to 1. For each 4 feet of height, the base of the ladder should be out one foot.
- There should be clearance and good access at the top and bottom of portable ladders, and they should extend a minimum of 36 inches above the landing, or where not practical, be provided with grab rails and be secured against movement while in use. This means the ladder should be tied-off at the top.

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SL 060100

6. **SLIDE:** **USE OF LADDERS (cont'd)**
- **USE "NONCONDUCTIVE" AROUND ELECTRICAL EQUIPMENT**
 - **JOB-MADE LADDERS**
 - **FACE LADDER WHEN USING**
 - **DON'T CARRY MATERIALS OR TOOLS**
 - **INSPECTION PROGRAM**

Additional ladder safety includes:

- Ladders must have nonconductive side rails if they are used where the worker or the ladder could contact exposed energized electrical equipment. Don't use metal ladders around electrical equipment.
- Job-made ladders are allowed by OSHA regulations for specific uses. They should be made of sturdy material and have cleats or filler blocks. OSHA regulations should be referenced for details.
- When ascending or descending a ladder, you should face the ladder and have at least one hand grasping the ladder.
- Don't carry materials or tools when on a ladder. Use a rope and bucket to move materials and tools from one level to another. **DO NOT THROW THEM! !**
- There should be an established ladder inspection program. Ladders must be inspected by a competent person for visible defects on a periodic basis and after any incident that could affect their safe use.

7. **SLIDES:** **"PHOTOS OF TYPICAL LADDERS ON JOB-SITES"**
 (9 SLIDES)

Discuss each slide briefly.

8. **SLIDES:** **"PHOTOS OF MISUSES OF LADDERS" (9 SLIDES)**

Discuss each slide briefly.

9. **SLIDES:** **"PHOTOS OF CORRECT USE OF LADDERS"**
 (2 SLIDES)

Discuss each slide briefly.

10. **SLIDE:** **SCAFFOLD SAFETY**

- **INSPECTION**
 - **FRAMES & BRACES**
 - **COUPLING PINS & LOCKS**
 - **WALKBOARDS**
 - **GUARDRAILS & TOEBOARDS**

Every piece of scaffolding is only as safe as the person using it. Many accidents could be avoided by inspection before and during use and by following safe work practices. Pre-use inspections include:

- Inspect frame for visible damage, broken or cracked welds, missing or bent studs and pins.
- Braces should be checked for bent or broken ends and removed from service permanently if defects are found.
- Replace any bent or damaged coupling pins.
- All locks should be clean and in good working order.
- Walkboards should be free of holes, cracks and splinters. Replace any bent or cracked hooks. Do not attempt to straighten them. Remove any surface build-up such as paint, dirt and grease. Ensure all boards are rated and their capacity is readable.
- Check all guardrail posts, rails and chains for structural integrity. Toeboards should be in place.

11. **SLIDE:** **SCAFFOLD SAFETY (cont'd)**

- **CHECK JOB SITE**
- **CONTINUOUS INSPECTION**
- **KEEP CLEAN**
- **NEVER EXTEND WORKING HEIGHT**
- **DO NOT RIDE**
- Check the job site for safety concerns such as power lines, types of surfaces, possible falling objects, weather concerns, and traffic patterns. Barricades may be required below scaffolds.
- Never use any equipment that is damaged in any way. Stop work and replace any equipment that becomes damaged during use.

- Clean up any spills immediately. Keep scaffolds clean and free of debris. Only tools and materials needed for the job should be on the scaffold.
- Never use ladders, boxes, or other objects to increase working height.
- Never ride mobile scaffolds. Remove all materials prior to moving the scaffold. Check for obstructions before moving a mobile scaffold. Wheels should be locked except when scaffold is being moved.

12. **SLIDE:** **SCAFFOLD SAFETY (cont'd)**

- **CLIMB SAFELY**
- **AVOID OVERLOAD**
- **COMPETENT SUPERVISION**
- **DO NOT INTERCHANGE COMPONENTS**
- **TYING, GUYING, & BRACING**
- Do not climb on cross members or bracing, use only the ladders provided on the scaffolding. Face the rungs as you climb. Use both hands, do not carry materials as you climb. Be sure of footing before you let go with your hands.
- Never overload a scaffold. Know its intended working load.
- Scaffolds must be erected, moved, dismantled or altered only under the supervision of competent personnel.
- OSHA requires that when scaffolding height exceeds 4 times the smallest base dimension, the scaffold should be restrained from tipping. OSHA also requires anchoring every 25 feet of height and 30 feet of length. Some companies and other government agencies require stricter standards. Check them before you start work.

13. **SLIDE:** **SCAFFOLD SAFETY (cont'd)**

- **GUARDRAILS, MIDRAILS AND TOEBOARDS**
- **10 FEET OR GREATER**
- Guardrails, midrails, and toeboards are required on all open sides and ends of platforms greater than 10 feet above the working floor. Some plants require guardrails when the working surface is 6 feet above the floor or ground.

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SL 060103

14. **SLIDE:** **SCAFFOLD SAFETY (cont'd)**

- **GUARDRAILS**
 - **36 - 42 INCHES HIGH**
 - **SUPPORTED EVERY 8 FEET**

- Guardrails should be a minimum of 36 inches and a maximum of 42 inches high
- Supports for guardrails should be placed at intervals no greater than 8 feet.

15. **SLIDE:** **SCAFFOLD SAFETY (cont'd)**

- **TOEBOARDS**
 - **4 INCH MINIMUM HEIGHT**
 - **SCREENS REQUIRED?**

- Toeboards should be a minimum of 4 inches high.
- If people will be required to work or pass under the scaffold, a screen of 18 gage 1/2 inch wire mesh should be installed between the toeboard and guardrail extending along the entire opening.

16. **SLIDE:** **SCAFFOLD SAFETY (cont'd)**

- **PLANKING**
 - **1500 FIBER CONSTRUCTION GRADE LUMBER**
 - **12 INCH MINIMUM OVERLAP**
 - **EXTEND 6 TO 12 INCHES**
 - **8 FEET WORK SPANS**

- All planks must be of scaffold grades or equivalent.
- All planking of platforms must be overlapped a minimum of 12 inches or be secured from moving.
- Planks must extend over end supports from 6 inches, when cleated, to 12 inches when not cleated.
- The maximum permissible spans for 2 x 12 inch planks is 8 feet for normal work activities.

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SL 060104

17. **SLIDES:** "PHOTOS OF TYPICAL SCAFFOLDS" (X EACH)

These slides show typical scaffolds which may be encountered in industrial settings.

18. **SLIDES:** "PHOTOS OF SCAFFOLD MIS-USE" (X EACH)

These slides show examples of things not to do on a scaffold.

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SL 060105

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 9: EMERGENCY REPORTING & RESPONSE

LENGTH: 15 minutes

REFERENCES:

1. OSHA Standards 1910.38, 1910.156, and 1910.165.
2. OSHA Pamphlet 3088, "How to Prepare for Workplace Emergencies"

AUDIOVISUALS: 1. Slide Tray No. 3, Starts with Slide 60

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the existence, nature and general content of facility Emergency Action Plans.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. The OSHA requirements for a written site Emergency Action Plan and the required elements of such a plan. (Stress the need to ask questions.)
2. Alarm systems typically employed at a plant site. (Stress this point.)
3. Evacuation requirements and procedures including the concepts of assembly areas and safe havens. (Stress this point.)
4. General procedures for reporting emergencies and recognition of specific plant site procedures the individual must learn. (Stress this point.)
5. The concepts, training requirements and application of designated Fire Brigades. (General information only)

PRESENTATION FOR SECTION 9:

1. State in your words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the existence, nature and general content of facility Emergency Action Plans.

2. **SLIDE: PREPARE FOR THE UNEXPECTED
PLAN FOR EMERGENCIES**

Earlier in this program it was noted that one of the keys to accident prevention was remaining alert for changing conditions. This means that you should be prepared for the unexpected, including emergencies. Most industrial facilities have very good emergency reporting and response procedures.

3. **SLIDE: "PHOTO OF PLANT SIGN ON
EMERGENCY PROCEDURES"**

Make sure you know what to do in an emergency. Take the time to familiarize yourself with the facility's emergency reporting and response procedures. Failure to react quickly and responsibly in an emergency situation could result in serious personal injury.

4. **SLIDE: OSHA REQUIRES A PLANT HAVE AN EMERGENCY
ACTION PLAN**

SPECIFIC PORTIONS YOU SHOULD KNOW:

- HAZARDS LIKELY TO BE ENCOUNTERED
- SPECIFIC PLANT SITE PROCEDURES

OSHA requires facilities to have Emergency Action Plans. Before you begin work at any facility you should know what hazards may likely be encountered at that facility and what are the specific site procedures.

5. **SLIDE: SPECIFIC PORTIONS YOU SHOULD KNOW:**

- MEANING OF ALARM SIGNALS
- HOW TO ACTIVATE ALARMS
OR REPORT EMERGENCIES
- EVACUATION ROUTES
- ASSEMBLY AREAS

Find out about the facility's emergency notification procedures. How can you report an emergency? Likewise, how will you be notified of an emergency that could affect you or your co-workers. Most facilities have some type of emergency alarm or signal. They are not all the same.

Find out what you should do and where you should go if you hear an emergency alarm. Most plants have emergency assembly areas and evacuation routes. Make sure you know where the emergency assembly areas are located and what routes you should take to reach them. Some plants may have you go to a building which would be a "safe haven" during a spill.

6. **SLIDES:** "PHOTOS OF ASSEMBLY AREAS" (3 SLIDES)

Most facilities identify assembly areas as shown here.

7. **SLIDE:** PLANT SITES SHOULD HAVE FIRE BRIGADES THAT:

- HAVE FIRE FIGHTING EQUIPMENT
- HAVE TRAINED AND EDUCATED MEMBERS
- HAVE REQUIRED PERSONAL PROTECTIVE EQUIPMENT
- KNOW THE SPECIAL HAZARDS AND PROCEDURES

Repeat what is on the slide and add:

You should be aware of each facilities policies about your response, if any, to extinguishing fires if they are small or just starting.

8. **SLIDE:** EMERGENCY NOTIFICATION AND RESPONSE

- CALL FOR HELP
- PUT ON THE PROPER PPE
- WAIT FOR HELP TO ARRIVE
- CONTROL THE EMERGENCY

While it is not possible to cover every emergency situation that may arise, there are certain basic guidelines which should be followed. Should you witness an emergency such as a fire or chemical spill, you should do the following:

- Call for help or assistance,

- If you have been trained and instructed to do so, put on the proper personal protective equipment and wait for back-up personnel to arrive.
- When properly equipped backup personnel arrive, try to control the emergency to the extent that you can safely do so. If you are not involved in the emergency response effort, follow plant procedures and leave the area.

9. **SLIDE: WHEN EMERGENCY ALARM SOUNDS**

- STOP ALL HOT WORK
- EXIT CONFINED SPACES
- CHECK WIND DIRECTION
- EMERGENCY ASSEMBLY AREAS

When an emergency alarm sounds or you otherwise learn of a fire or chemical spill you should:

- Stop all hot work and shut down all sources of ignition in the area,
- If personnel are working inside confined spaces, have them come out to a safe area,
- Check the wind direction and....
- Travel to the nearest safe emergency assembly area. Keep in mind that the closest emergency assembly point could be blocked or involved in the emergency in which case you would have to go to one of the alternate areas. Make sure you know where they are located. You should walk, not run, to the assembly areas.

10. **SLIDES: "PHOTOS OF WINDSOCKS" (3 SLIDES)**

Check one of these to know which way the wind is blowing or observe movement of smoke, steam, etc.

11. **SLIDE: VAPOR CLOUD / GAS RELEASE**

- DO NOT ENTER
- STAY UP WIND
- TRAVEL AT A RIGHT ANGLE

If there is a gas cloud, try to stay upwind. If you are downwind of the gas release, check the wind direction and travel at a right angle to the wind direction. Never enter a vapor cloud. If the material is flammable, it could ignite at any time.

12. **SLIDES:** "PHOTOS OF SAFETY SHOWERS / EYE WASHES"
(4 SLIDES)

Most facilities have safety shower and eye wash stations in areas where hazardous materials are processed or handled. Before starting a job in an area where hazardous materials may be present, locate the nearest safety shower and make sure it works. Should you or your clothing be contaminated or splashed with a potentially harmful substance, promptly remove the contaminated clothing and wash the affected area with large volumes of water for at least 15 minutes.

13. **SLIDE:** "PHOTO OF POOR HOUSEKEEPING & SAFETY SHOWER"

Remember to keep the areas around safety shower clear of any materials. This is a very unsafe condition shown here.

14. Questions and answers.

QUESTIONS FOR DISCUSSION - EMERGENCY REPORTING AND RESPONSE:

- 1. Who should be notified in case of fire, chemical spill, or some other type of emergency ?**
 - Any company employee
 - Section or plant supervisors
 - The Contract Coordinator
- 2. What procedures should be followed when the facility's emergency alert system is activated ?**
 - Stop all work
 - Turn off all machines, power tools, heavy equipment and motor vehicles. (This includes electrical scooters.)
 - Proceed on foot to the gate you used to enter the facility. Do not return to work until you receive notification from the Contract Coordinator or other authorized plant personnel, or, until you hear the all clear signal
- 3. What precautions should be taken when walking towards the entrance gate during an emergency ?**
 - Look for smoke, vapors, or steam to determine the wind direction
 - Be sure to proceed up wind or cross-wind from the emergency site while walking towards the gate
- 4. What should you do if you're driving a vehicle or operating equipment when the emergency alert signal is activated ?**
 - Pull the vehicle or equipment to the side of the road
 - Shut the engine off and leave the keys in the ignition
 - Proceed on foot to the entrance gate
 - Remain at the gate until you receive official notification to return to work or you hear the all clear signal

**CONTRACTOR SAFETY ORIENTATION COURSE
SECTION OBJECTIVES**

SECTION NO. 10: HAZARD COMMUNICATION

LENGTH: 45 minutes

REFERENCES:

1. OSHA Standards 1910.1200, 1910.120, 1910.96 and 1910.1001.
2. OSHA Pamphlet 3084, "Chemical Hazard Communication"
3. OSHA Pamphlet 3111, "Hazard Communication Guidelines for Compliance".

AUDIOVISUALS:

1. Coastal Videotape "Hazard Communication" (16 min.)
2. Slide Tray No. 4, Starts with Slide 1

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of (1) OSHA's Hazard Communication Standard including requirements for hazard evaluation, labeling and other forms of warning, Material Safety Data Sheets, written hazard communication plans, and site-specific training requirements; (2) hazard evaluation and appropriate safety and health practices for asbestos, and; (3) hazard evaluation and appropriate safety and health practices for working in areas where radioactive materials are used.

SPECIFIC OBJECTIVES: Completion of this section should provide the participant with knowledge of:

1. Physical and health hazards associated with chemicals.
2. The purpose and key provisions of the OSHA Hazard Communication standard.
3. The requirement for written hazard communication programs at the plant site, and the contents and availability of such.
4. Methods and observations that may commonly be used to detect the presence or release of a hazardous chemical in a work area.
5. The measures employees can take to protect themselves from these hazards.

SECTION NO. 10 (CONTINUED)

6. The labeling and other forms of warning required for materials received from a manufacturer, produced at a manufacturing site, and for portable containers used within the plant site.
7. The contents, meaning and use of material safety data sheets (MSDS) and the availability of such.
8. The requirements for site specific training (stress this point) in Hazard Communication and what the contractor employee will be trained in such as specific methods of observation, protective practices, physical and health hazards of the chemicals in the plant, the areas where hazardous chemicals are present, and the location of site specific hazard communication program details.
9. Chemicals used on the job such as paints, thinners, solvents, etc. must be disposed of properly, check with supervision.
10. The key provisions of standards for asbestos handling. Stress need for training and asking questions.
11. What asbestos is, where it can be found in a plant site, and the health effects associated with exposure. Note: This hazard is not always obvious.
12. The nature of operations which could result in exposure to asbestos. Show example of warning signs. Personnel who handle asbestos need specialized training.
13. Where workers may encounter radiation hazards in the plant site, and the safety and health effects associated with exposure to such materials.
14. The signs and barricades used to indicate a radiation area. The precautions needed to minimize radiation exposure. Show example of warning signs.
15. The need for additional site-specific training.

NOTE: General information on objectives 10 - 14

NOTE: Objectives in bold print are covered by videotapes.

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PRESENTATION FOR SECTION 10

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of (1) OSHA's Hazard Communication Standard including requirements for hazard evaluation, labeling and other forms of warning, Material Safety Data Sheets, written hazard communication plans, and site-specific training requirements; (2) hazard evaluation and appropriate safety and health practices for asbestos, and; (3) hazard evaluation and appropriate safety and health practices for working in areas where radioactive materials are used.

2. Give some lead-in to this section such as:

Because chemical exposure may cause serious safety and health problems, and because many employers and employees know little or nothing about them, the Occupational Safety and Health Administration (OSHA) has issued a rule called "Hazard Communication". The basic goal of the standard is to be sure employers and employees know about work hazards and how to protect themselves. This should help to reduce the incidence of chemical source illnesses and injuries. This rule is also referred to as "The Employee Right to Know" law.

The Hazard Communication Standard establishes uniform requirements to make sure that the hazards of all chemicals imported into, produced, or used in U.S. workplaces are evaluated, and that this hazard information is transmitted to affected employers and exposed employees.

3. Get some discussion from participants on their experience with Hazard Communication. Ask questions such as:

- What is a MSDS?
- Who here have read a MSDS?
- What kind of information is in a MSDS?
- What are other sources of information on chemicals?
- What is meant by PEL?

4. Introduce the video "**Hazard Communications**" key points they should watch for in the video include:
 - Types of physical hazards & health hazards.
 - Who is required to identify and list hazardous chemicals?
 - Where can you find MSDS's?
 - What training is required?
 - What is the employee's responsibilities?
 - What kind of information should be on container labels?
 - What type of information is covered in a MSDS?
 - How do chemicals enter the body? (Routes of exposure.)
 - What is a CHRONIC or ACUTE health hazard?
 - What is a target organ?
5. Show the video "**Hazard Communications**". This video is about 16 minutes in length.
6. Have questions and answers on the video. Review and discussion on key points. Some key points to cover include:
 - Physical hazards associated with chemicals.
 - Health hazards associated with chemicals.
 - Who must receive training.
 - Requirements of OSHA Hazard Communication Standard.
 - Common methods of detecting the presence of hazardous chemicals.
 - Ways to find out about chemical properties.
 - Meaning of Acute, Chronic, Carcinogen, etc.

- **Acute Effect** - Adverse effect which has severe symptoms developing rapidly and coming quickly to a crisis. (Compare "Chronic Effect".)
- **Chronic Effect** - An adverse effect on a human or animal body, with symptoms which develop slowly over a period of time or which recur frequently. (Compare with Acute.)
- **Carcinogen** - A substance or agent capable of causing or producing cancer in mammals, including humans. A chemical is considered to be a carcinogen if:
 - a) It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or
 - b) It is listed as a carcinogen or potential carcinogen in the Annual Report on carcinogens (latest edition), published by the National Toxicology Program (NTP); or
 - c) It is regulated by OSHA as a carcinogen.
- **Threshold Limit Value - TLV and PEL.** The Threshold Limit Value (TLV) is a safe exposure level set by the American Conference of Governmental Industrial Hygienists (ACGIH). A Permissible Exposure Limit (PEL) is a similar level set by OSHA. Both refer to airborne concentrations of substances and represent an exposure level under which most people can work constantly for 8 hours a day, day after day, with no harmful effects. Three categories of TLVs are specified:
 - **Time Weighted Average (TLV-TWA)** - This is the time-weighted average concentration for a normal 8-hour workday or 40-hour work week, to which all workers may normally be exposed day after day, without adverse affect.
 - **Short-Term-Exposure Limit (TLV-STEL)** - This is the maximum concentration to which workers can be exposed for a period up to 15 minutes continuously without suffering from (1) irritation, (2) chronic or irreversible tissue change, or (3) narcosis of sufficient degree to impair self-rescue or reduce work efficiency. No more than four 15-minute exposure periods per day are permitted with at least 60 minutes between those exposure periods.

- **Ceiling (TLV-C)** - The concentration that should not be exceeded even momentarily.
7. Stress the point that site-specific training in Hazard Communication is required and important. Keep a questioning attitude. For example, some welding rods release hazardous chemicals when used. You should know about this and other not so obvious chemical hazards. Things to remember include:
- Labelling requirements
 - How to use MSDS's
 - How to protect yourself from exposure to chemicals.
 - How chemicals enter the body .
 - Must piping be labelled?
 - Do all plants mark utility stations the same?
8. Remind participants that chemicals must be disposed of properly to avoid creating a hazard to someone else or the environment. This includes paints, thinners, solvents and similar chemicals used on the job -- or at home.
9. Pass out the **NFPA** and **HMIS** pocket cards. Review the following:
- **NFPA** - This applies under fire conditions. It does not take into account "chronic" health effects. It does not have a PPE code.
 - **HMIS** - This applies under all conditions. It does take into account "acute" and "chronic" health effects.
 - Color code is the same on each
 - Blue - Health Hazard
 - Red - Fire Hazard
 - Yellow - Reactivity
 - White - Specific Hazards
 - Zero is least or no hazards.
 - Four is greatest hazard.
 - The letter code on the HMIS card indicates the personal protective equipment required when working around that chemical.

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10. **SLIDES**: "PHOTOS OF LABELS ON CANS / CONTAINERS"
(3 SLIDES)

These are examples of the types of labelling on containers that may be found at a workplace.

11. **SLIDES**: "PHOTOS OF CHEMICAL WARNING SIGNS"
(3 SLIDES)

Here are examples of the types of warning signs to watch for when working in a chemical facility.

12. **SLIDES**: "PHOTOS OF DOT WARNING SIGNS" (2 SLIDES)

Here are examples of DOT warning signs.

13. **SLIDE**: "PHOTO OF HMIS WARNING SIGN"

This is an example of a HMIS warning sign. Look at your pocket cards. What are the hazards of this material? How severe are hazards? What PPE should be worn?

14. **SLIDES**: "PHOTOS OF HMIS WARNING SIGNS" (2 SLIDES)

This is another example. (Go through same questions as #13.)

15. **SLIDES**: "PHOTOS OF NFPA DIAMOND SIGNS" (2 SLIDES)

These are examples of an NFPA warning sign. What are the hazards and how severe are they?

16. **SLIDE**: "PHOTO OF NFPA DIAMOND SIGN"

Here is an explanation of NFPA warning sign.

17. **SLIDES**: "PHOTOS OF 50-GAL. BARRELS WITH LABELS"
(6 SLIDES)

This is an example of the labelling found on 50-gal. drums.

Note there is no label required on small containers when a worker is using the chemical, knows what it is and keeps it in his control. If this is not the case, it should be labelled.

18. **SLIDES:** "PHOTOS OF UTILITY STATION" (6 SLIDES)

These are examples of utility stations. Not all facilities use the same color codes, types of fittings, types of hoses, hose colors, etc. BE CERTAIN YOU KNOW THE STANDARDS FOR UTILITY STATIONS AT YOUR WORK-SITE. WHEN IN DOUBT - ASK YOUR SUPERVISOR OR A PLANT REPRESENTATIVE.

19. **SLIDE:** "PHOTO OF NITROGEN SERVICE"

Never use nitrogen for air movers, pneumatic tools or air supply. Many people have died because nitrogen was mistakenly used and normal breathing air was displaced by it. Be very cautious in the use of nitrogen.

20. **SLIDES:** "PHOTOS OF SAFETY SHOWERS/EYE WASHES" (3 SLIDES)

These are examples of safety showers/eye washes. Here again, not all facilities will identify them the same. BE CERTAIN YOU KNOW WHERE THEY ARE AND THAT THEY ARE OPERATING PROPERLY BEFORE BEGINNING WORK.

21. **SLIDES:** "PHOTOS OF ASBESTOS WARNING SIGNS" (2 SLIDES)

Exposure to asbestos can lead to chronic health problems and warning signs such as this should alert you to know more about the hazard if you are working in the area. Asbestos has been used for various types of insulation and the hazard may not always be obvious. OSHA has specific requirements for personnel working asbestos to insure their safety. Remember, if you work with or around asbestos, you may need special training and personal protective equipment. Check with your supervisor. Asbestos is most hazardous in an air-borne or dust state which would allow it to be deposited in the lung tissues. Asbestos fibers in the lung can cause tissue growth which causes narrowing of air ducts. This can limit the effectiveness of the lungs.

22. **SLIDES:** "PHOTOS OF RADIATION WARNING SIGNS"
(2 SLIDES)

These are examples of ionizing radiation hazard signs. You can not see, hear, taste, feel or smell radiation so you must be alert to warning signs and barricades. Exposure to radiation may produce a variety of effects in man. Damage is a function of the type of radiation, the dose, tissue or organs exposed, age etc. The human body, apparently, can tolerate a certain amount of exposure to ionizing radiation without impairing its overall functions. We are continuously exposed to ionizing radiation from natural sources such as radiation from outer space and from radioactive materials in the earth and materials around us and in us. This "background radiation" is part of our normal environment. We should however avoid any unnecessary exposure and anyone working around ionizing radiation should receive specific training.

23. **SLIDE:** **PERSONAL HYGIENE**
- **WASH THOROUGHLY BEFORE EATING**
 - **PROPER HANDLING OF FOOD, MEDICINE & COSMETICS**
 - **DECONTAMINATION PROCEDURES**
 - **SAFETY SHOWERS / EYE WASH**

Good personal hygiene is also very important when working in plants.

- Always wash your face and hands thoroughly before eating, drinking, smoking, or after using the restroom,
- Keep food, drinks, medicine, and cosmetics out of the work area, and .
- Never wear contaminated clothing home. Should you or your clothing be contaminated or splashed with a potentially harmful substance, promptly remove the contaminated clothing and wash the affected area with large volumes of water. Check with your supervisor regarding the proper procedure for decontamination or disposal of contaminated clothing.

24. Questions and answers.

**CONTRACTOR SAFETY ORIENTATION COURSE
SECTION OBJECTIVES**

SECTION NO.11: ELECTRICAL WORK PRACTICES & GROUNDING

LENGTH: 15 minutes

REFERENCES:

1. OSHA Standards 1910.304 and 1910.332.
2. OSHA Pamphlet 3007, "Ground-Fault Protection on Construction Sites".
3. OSHA Pamphlet 3075, "Controlling Electrical Hazards".
4. OSHA Pamphlet 3097, "Electrical Standards for Construction".

AUDIOVISUALS: 1. Slide Tray No. 4, Starts with Slide 37

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of electrical hazards and the protection requirements available to avoid or eliminate electrical hazards.

SPECIFIC OBJECTIVES: Completion of the section should provide the participants with knowledge of:

1. Effects of electricity on the body.
2. Sources of electrical hazards include electrical tools, overhead or underground power lines, temporary power sources, cords, light stands or close proximity to power lines (less than ten feet).
3. Examination, installation and use of electrical tools and equipment to prevent electric shock.
4. Use Ground Fault Circuit Interrupters or an Assured Grounding Program. Know which is used and what the color codes are.
5. Concepts of grounding and bonding and the requirements for doing so.
6. Differences of and applications for low voltage equipment and explosion proof equipment. Explosion proof is for fire hazards and low voltage is for shock hazards. Low voltage is not necessarily explosion proof.
7. Walking/working in cable tray is not allowed.

NOTE: Lockout/tagout of energy sources is addressed in a separate section.

PRESENTATION FOR SECTION 11

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of electrical hazards and the protection requirements available to avoid or eliminate electrical hazards.

2. **SLIDE: ELECTRICAL HAZARDS**

- **SHOCK TO PERSONNEL**
- **POTENTIAL FIRE SOURCE**

Electrical hazards on or off the job are:

- Shock to personnel and
- Potential fire source

3. **SLIDE: EFFECTS OF ELECTRIC CURRENT ON THE BODY**

- **CONTRACTION OF MUSCLES - CAN BREAK BONES, INTERFERE WITH BREATHING, ETC.**
- **TEMPORARY PARALYSIS OF NERVE CENTERS - MAY CAUSE FAILURE OF RESPIRATION**
- **INTERFERES WITH NORMAL RHYTHM OF THE HEART - FIBRILLATION, POSSIBLE DEATH**

The effect of an electric shock to a person depends on the amount of the current and the length of time that current passes through the body. Effects may include:

- Contraction of muscles to the extent that bones may be broken or breathing is restricted.
- If the electrical current passes through the head or chest, breathing may stop.
- Current passing through the chest area can interrupt the normal rhythm of the heart (called fibrillation) causing loss of blood flow and possible death.

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4. **SLIDE: EFFECTS OF ELECTRIC CURRENT ON THE BODY**
(cont'd)

- SUSPENSION OF HEART ACTION
- HEMORRHAGES AND DESTRUCTION OF TISSUES, NERVES AND MUSCLES DUE TO HEAT CAUSED BY HEAVY CURRENT
- FALLS, CAUSED BY REACTION TO THE SHOCK

Higher levels of electric current in the body can cause:

- The heart to stop
- Burns from heat caused by heavy current may result in hemorrhages, tissue destruction and damaged nerves, muscles, etc.

Reaction to electric shock also often cause a fall and injury from the fall. Anyone receiving an electric shock should report to first aid since all effects may not be obvious at first and there are sometimes delayed effects.

5. **SLIDE: ELECTRICAL SHOCK CAN CAUSE DEATH - -**

- WITH A CURRENT OF ONE AMPERE (OR LESS)
- A SHOCK OF ONE SECOND (OR LESS)

PROMPT CPR CAN OFTEN SAVE A VICTIM SINCE MOST ELECTRICAL SHOCK DEATHS ARE DUE TO BREATHING FAILURE.

An electrical shock which effects the heart and or breathing can cause death with as little current as one ampere -- or less for a period of time of one second --or less. The amount of electrical current required to light a 15 watt light bulb is enough to kill a person. Prompt CPR may save a victim of an electrical shock since interruption of normal breathing is the most common cause of death. BE CERTAIN THE VICTIM IS FREE OF THE ELECTRICAL POWER SOURCE BEFORE COMING IN CONTACT WITH THEM.

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6. **SLIDE; PREVENTING ELECTRICAL SHOCK**

- **HEAVY DUTY ELECTRICAL CORDS**
- **PORTABLE ELECTRIC TOOLS, DOUBLE INSULATED OR GROUNDED AND PROTECTED BY A GFCI**

It seems clear that it is very important to prevent electrical shock. Here are some of the ways we can do that:

- Use only industrial quality, heavy duty electrical cords. They get rough treatment so inspect them prior to use.
- Use portable electric tools that are double-insulated or grounded and protected by a Ground Fault Circuit Interrupter (GFCI)

The trend in portable tools is towards double-insulation; however, some drawbacks exist, such as:

- Double-insulated tools are designed so that the inner electrical parts are isolated physically and electrically from the outer housing. The housing is non-conductive. Particles of dirt and other foreign matter from drilling and grinding operations may enter the housing through the cooling vents and become lodged between the two shells thereby voiding the required insulation properties.
- Double-insulation does not protect against defects in the cord, plug, and receptacle.
- Using double-insulated tools with wet hands or in wet or in high humidity can also be dangerous.

You may work at a facility which has an assured equipment grounding conductor program. An assured equipment grounding conductor program covers all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. OSHA requires that a written description of the assured equipment grounding conductor program, including the specific procedures adopted, be kept at the jobsite. This program should outline the employer's specific procedures for the required equipment inspections, tests, and test schedule.

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The employer is required to designate one or more **competent persons** to implement the program.

Electrical equipment noted in the assured equipment grounding conductor program must be visually inspected for damage or defects before each day's use. Any damaged or defective equipment must not be used by the employee until repaired. If you work at a facility with this type of program, you need to understand and follow the procedures.

7. SLIDE: PREVENTING ELECTRICAL SHOCK (cont'd)

- **ELECTRIC LIGHT CORDS PROTECTED BY A GFCI OR USING NO MORE THAN 12 VOLTS D.C.**
- **ALL LIGHT BULBS PROTECTED BY GLOBES, SHIELDS, OR GUARDS**

A ground fault circuit interrupter (GFCI) is a fast acting device that ~~senses~~ the leakage of current from an electrical circuit and in a fraction of a second, shuts off the electrical supply, thus interrupting the flow of electricity. GFCI's are required by OSHA on construction sites where installation of electrical equipment is not permanent. It is important to note that GFCI's do not protect a person in the event of a line-to-line contact and do not take the place of an equipment grounding conductor.

- Electric light cords should be protected by a GFCI or be no more than 12 volts D.C. low voltage equipment should be used in confined spaces and wet areas where it may be difficult to achieve grounding protection for normal power.

REMEMBER: LOW VOLTAGE IS USED TO PROTECT AGAINST SHOCK HAZARDS - - - IT IS NOT MEANT TO BE EXPLOSION PROOF.

- All light bulbs should be protected by globes, shields or guards.

These are all methods to avoid electrical shock. Fuses and circuit breakers are not protective devices for electrical shock. Fuses and circuit breaker protect circuits from overloads which could damage equipment or present a fire hazard.

8. **SLIDES:** "PHOTOS OF INDUSTRIAL CORDS, LIGHTS, GFCI" (6 SLIDES)

These are examples of typical lights, cords, and GFCI's used in industrial settings.

9. **SLIDE:** IN FLAMMABLE / EXPLOSIVE ATMOSPHERES - ELECTRICAL EQUIPMENT MUST BE:

- EXPLOSION PROOF OR
- INTRINSICALLY SAFE

Explosion proof electrical equipment is arc producing equipment which have enclosures that are designed to withstand and internal explosion. This minimizes the risk of having an external explosion occur when a flammable gas enters the enclosure and is ignited by the arcs. Not only must the equipment be strong enough to withstand an internal explosion, but the enclosures must be designed to vent the resulting explosive gases. This venting must ensure that the gases are cooled to a temperature below the ignition temperature of the hazardous substance involved before being released into the hazardous atmosphere.

There are two common enclosure designs: Thread-joint enclosures and ground-joint enclosures. When hot gases travel through the very small openings in either of these joints, they are cooled before reaching the surrounding hazardous atmosphere.

Intrinsically safe equipment is not capable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific flammable or combustible atmospheric mixture in its most easily ignitable concentration. Equipment which may be approved as intrinsically safe is generally limited to instrumentation and other low energy equipment.

10. **SLIDE:** "DRAWING OF EXPLOSION PROOF ENCLOSURE"

This shows a typical explosion proof enclosure. The thread design is such that the escaping gases caused by an internal explosion are cooled to the point that they do not ignite any vapors or gases outside the enclosure.

11. **SLIDES:** "PHOTOS OF EXPLOSION PROOF LIGHTS"
(3 SLIDES)

These show examples of explosion proof lights compared to regular lights.

12. **SLIDE:** "PHOTO OF TEMPORARY WIRING"

This is an example of how temporary wiring should be run on a construction site.

13. **SLIDE:** "PHOTO OF TAGGED-OUT TOOL"

This is an example of what should be done with any tool, cord, etc. that is damaged or needs repair.

14. **SLIDES:** "PHOTOS OF MIS-USED CORDS" (5 SLIDES)

What problems do you see here? Discuss.

Never remove the ground prong from a plug or use a cord that has been altered.

15.. **SLIDE:** "DRAWING OF BONDING"

In bonding, two bodies have a conductor between them illustrated here. Bonding equalizes a charge between the two bodies; it does not remove the charge from them. Bonding controls static charge buildup to remove a possible source of ignition. Bonding is not a protection for electric shock.

16. **SLIDES:** "PHOTOS OF EQUIPMENT GROUNDING"
(2 SLIDES)

Grounding electrical circuits and electrical equipment is required to protect against shock, safeguard against fire, and protect against damage to electrical equipment. There are two types of grounding:

- Electrical Circuit Grounding (To protect electrical distribution systems)
- Electrical Current (equipment) Grounding

The equipment grounding conductor provides a path for dangerous fault current to return to the system ground should an insulation failure take place. The grounding conductor does not normally carry current, but will

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function as a current-carrying conductor due to a fault which allows equipment housing to become energized. Damaged or disconnected grounding cables remove the protection from possible shock. It is a good practice to be certain grounding connections are in place on any equipment you may be working around.

17. **SLIDES:** "PHOTOS OF CABLE TRAYS" (2 SLIDES)

Never use a cable tray as a walkway. They are not designed to support your weight. There is the risk of damaging the cables or being shocked because of a damaged cable.

18. Questions and answers.

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 12: WORK PERMITS

LENGTH: 60 minutes

REFERENCES: 1. OSHA Standards 1910.146, 1910.147 & 1926 Subpart P.

AUDIOVISUALS: 1. Coastal videotapes "Lockout/Tagout" (10 min.),
"Confined Space Entry" (10 min.) "Trenching and
Shoring" (6 min.)
2. Slide Tray No. 5, Starts with Slide 1

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the general requirements and procedures for performing work under a permit system including hot and safety (cold) work, excavations, line entry and work in a confined space, and isolation of energy sources (lockout/tagout).

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. The plant or facility responsibilities for the work permits such as preparing the area and equipment for work, establishing the conditions under which work must be performed, communicating the permit conditions and requirements, and monitoring area conditions as the work progresses.
2. The contractor personnel's responsibilities for the work permits such as mutual understanding of the conditions and limitations specified on the work permit, monitoring area conditions as the work progresses, clean up when the work is completed, and sign off or return of the permit.
3. The different types of work permits.
4. Examples of, and hazards associated with work to be performed under safe work permits. (Sometimes referred to as Cold Work Permits.)

SECTION NO. 12 (CONTINUED)

5. Examples of, and hazards associated with work to be performed under hot work permits. Give examples of spark producing work which may not be obvious, ie. battery powered tools, hammer and chisel, etc.
6. General provisions for line entry include roping off the work area, wearing necessary personal protective equipment and treating lines as "under pressure" until proven otherwise. Break flanges down and away. Be prepared to close the flange quickly, if necessary.
7. The purpose, applicability and key provisions of the OSHA trenching and excavation standard. (Stress awareness of hazard only.)
8. **Definitions, examples, hazard recognition and general protective requirements for excavations including considerations for egress, hazardous atmospheres, protection systems such as sloping and shoring, soil stability and inspections. (Covered key points - not details.)**
9. **What classifies a work space as "confined".**
10. **The hazards of confined space entry.**
11. **Safety precautions for confined space entry and work.**
12. **Purpose, need and responsibilities of the safety watch for confined space work.**
13. **The purpose, applicability and key provisions of the OSHA lockout/tagout standard.**
14. **The characteristics of energy sources to be controlled by lockout/tagout.**
15. **General procedures for installation and removal of energy isolating devices.**
16. **All equipment, machinery and systems involving energy isolating devices, which are capable of being locked out, must be locked out unless specifically exempted.**
17. **The contractor employee responsibility for compliance with lockout/tagout.**

**CONTRACTOR SAFETY ORIENTATION COURSE
SECTION OBJECTIVES**

SECTION NO. 12 (CONTINUED)

18. Additional training and instruction will be provided at the work site to further explain the specific details of plant lockout/tagout procedures. (Stress this.)
19. Follow and obey everything on Work Permits as well as signs, barricades, etc.

NOTE: Objectives shown in bold print are covered by the videotapes.

PRESENTATION FOR SECTION 12

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the general requirements and procedures for performing work under a permit system including hot and safety (cold) work, excavations, line entry and work in a confined space, and isolation of energy sources (lockout/tagout).

2. Give a brief lead in statement such as:

Now let's turn our attention to one of the cornerstones of any effective plant safety program, the work permit system. Various forms of work permit systems are used throughout industry. These permit systems are intended to reduce the likelihood of accidents and injuries to personnel who are working on or near plant equipment.

3. **SLIDE: TYPES OF PERMITS**

- HOT WORK
- COLD WORK
- CONFINED SPACE ENTRY
- LINE BREAKING

Depending on the facility you are in, work permits may be required before you can perform any type of:

- Hot Work such as welding, grinding, cutting, etc.
- Cold Work such as working with hand tools, moving material, etc.
- Confined space entry or
- Line breaking or entry.

4. **SLIDE: PERMITS (cont'd)**

- VEHICLE ENTRY
- ELECTRICAL HOT WORK
- EXCAVATING
- LOCKOUT / TAGOUT

Likewise, permits may be required before motor vehicles can be brought into an area or work on electrical equipment can be performed. Permits may also be required before digging or excavation operations may begin. You should also understand that most facilities have lockout/tagout procedures which mandate that the energy supplies to equipment be turned "off", reduced to a "zero energy state" and secured in the "off" position before work on the equipment can begin.

5. **SLIDE: WORK PERMITS**

- ISSUED BY OPERATIONS
- ACCEPTED BY MAINTENANCE
- VALID FOR ONE SHIFT
- SUSPENDED IN EMERGENCIES

In most cases, work permits are issued by operations, personnel in charge of the area where the work will be performed. Likewise, these work permits are usually accepted by maintenance or contractor employees who will perform the work. Permits are usually valid for only 1 shift and are revoked or suspended if conditions change or an emergency develops.

6. **SLIDE: PLANT RESPONSIBILITIES**

- IDENTIFY EQUIPMENT
- ISOLATE AND PREPARE EQUIPMENT
- SET CONDITIONS
- REVIEW WITH CONTRACTORS

When issuing work permits, operations personnel in charge of the area generally have the following responsibilities:

- Identify the equipment to be worked on as well as any affected or associated equipment,
- Isolate and prepare the equipment, you may assist at times to install, blinds, disconnect pipes, etc.
- Set the conditions under which the work must be performed and . . .
- Review the permit conditions and requirements with personnel who will perform the work.

7. **SLIDE: PLANT RESPONSIBILITIES (cont'd)**

- **ISSUE PERMITS**
- **MONITOR AREA CONDITIONS**
- **STOP WORK IF NECESSARY**
- **CHECK JOB UPON COMPLETION**

After issuing the permits, operations personnel will monitor the area and job conditions to assure that it is safe to continue working. If the conditions of the permit are violated or plant operating conditions change creating a potentially hazardous situation, operations personnel have the responsibility to stop the work until the problem is resolved. Upon completion of the work, they are responsible for checking the area to assure that the work is indeed complete, that all craftsmen's lock and tags have been removed and that it is safe to return the equipment to service.

8. **SLIDE: CONTRACTOR RESPONSIBILITIES**

- **VERIFY EQUIPMENT ISOLATION AND PREPARATION**
- **ABIDE BY PERMIT CONDITIONS**
- **FOLLOW SAFE PRACTICES AND PROCEDURES**

Maintenance or contractor personnel accepting the permits have the responsibility to:

- Verify that the equipment has been properly prepared and isolated. This is a very important step as your well being depends upon it.
- Abide by the conditions of the permit, and
- Follow safe work practices and procedures.

9. **SLIDE: CONTRACTOR RESPONSIBILITIES (cont'd)**

- **BE ALERT FOR POTENTIAL PROBLEMS**
- **CLEAN UP THE WORK AREA**
- **SIGN OFF PERMIT UPON COMPLETION**

In addition, maintenance and contractor personnel must constantly remain alert for changing conditions which could adversely effect the work being performed and alert operations personnel if potential problems arise.

Upon completion of the work, you are responsible for cleaning up the work area, notifying operations personnel that the work has been completed and signing off the permits. Likewise; if the work is not complete at the end of the day or shift, craftsmen should notify operations as to the status of the work before leaving. In most cases, a new permit will be required before work may be resumed. Know the site-specific rule about this. Don't take for granted that the equipment is still isolated and safe. Conditions may have changed. Double check the area and equipment to make certain it is still isolated and safe to resume work. Do this before you accept a new permit.

10. **SLIDE:** **HOT WORK PRECAUTIONS**
- **WORK SITE INSPECTION**
 - **PROTECT COMBUSTIBLE MATERIALS**
 - **COVER SEWERS**
 - **PERFORM A GAS TEST**

When the work being performed could provide a source of ignition, some form of hot work permit will generally be required. Some of the jobs which usually require a hot work permit include but are not limited to: welding, grinding, burning, or the use of non-explosion proof equipment. Other ignition sources might be automobiles, trucks, battery powered drills, radios, etc.

Before a hot work permit is issued, the following precautions should be taken:

- Operations and contractor personnel make a joint inspection of the work area to assure that no flammable or combustibles are present. This inspection includes the areas above and below where the work will be performed as well as the surrounding area.
- Any combustible materials that cannot be moved are covered with a fire resistive blanket or material. In some cases they may also be wet down with water.
- Open sewers in the area are covered and sealed.
- A gas test is performed to be sure no flammable gases or vapors are present.

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11. **SLIDE:** **HOT WORK PRECAUTIONS (continued)**
- **CHECK FIRE SUPPRESSION EQUIPMENT**
 - **USE FIRE BLANKETS / WELDING BOXES**
 - **ROPE-OFF AREA BELOW OVERHEAD WORK**
 - **FIRE WATCH / EXTINGUISHERS**

It is very important that you know the site-specific hazards and the proper precautions for these hazards:

- Fire suppression equipment in the area should be checked to see that it is in good condition and readily available for immediate use.
- Fire blankets or welding boxes should be used to control the spread of sparks and slag.
- If the work is being done overhead, the area below should be roped off,
- And in some cases a fire watch with a charged fire hose and/or extinguisher should be posted.

12. **SLIDE:** **CONFINED SPACE**
- **LIMITED ACCESS**
 - **POORLY VENTILATED**
 - **HAZARDOUS ATMOSPHERE**
 - FLAMMABLE**
 - TOXIC**
 - OXYGEN DEFICIENT**

Another type of work which usually requires a permit is work that involves entry into a confined space. A confined space is generally defined as any enclosed area which is difficult to enter or leave, is difficult to ventilate and may contain toxic, flammable or oxygen deficient atmospheres.

Tanks, sewers, pits, sumps, process equipment and excavations are just a few examples of confined spaces.

13. **SLIDE: LINE ENTRY - OPERATIONS DUTIES**

- ISOLATE AND DRAIN LINE
- CLEAN LINE IF NECESSARY
- LOCKOUT / TAGOUT ISOLATION VALVES
- OPEN DRAINS AND BLEEDERS

Day in and day out, maintenance and contractor personnel have to open piping and process equipment which may have contained hazardous materials. To assure that the line to be opened has been properly isolated, drained and vented (so far as practical) and that personnel are wearing the proper personal protective equipment, line entry permits are often required.

Lines are generally taken out of service by operations personnel. Isolation valves are usually tagged and are often locked in the closed position. Drains and bleeders are opened to assure, so far as practical, that the line and associated equipment has been drained and vented.

14. **SLIDE: LINE ENTRY - CONTRACTOR'S DUTIES**

- VERIFY ISOLATION
- DETERMINE POSSIBLE CONTENTS
- DON PERSONAL PROTECTIVE EQUIPMENT
- CHECK BLEEDERS

Before attempting to open the line, you should do the following:

- Verify that the line has indeed been taken out of service by physically checking the position of isolation valves or devices as well as the drains and bleeders.
- Determine what product or material may be in the line and then put on the appropriate personal protective equipment and . . .
- Verify that the drains and bleeders are open by carefully inserting a rod or stiff piece of wire.

When opening a line always consider that it is under pressure. When opening the flange, crack the bolts on the opposite side so that any material trapped in the line will vent down and away from you. Crack open only one or two of the bolts and be prepared to re-tighten the flange should the line be under pressure. This step is vitally important and should not be omitted.

15. **SLIDES:** "PHOTOS OF LOTO PRACTICES" (2 SLIDES)

These are examples of Lockout/Tagout practices and devices used.

16. Introduce the video or "Trenching & Shoring". Tell participants that video cover requirement in the OSHA standard on trenching and shoring. They should specific understand the following key points.

- Types of soil
- Types of shoring and sloping
- Need for inspections
- What are the hazards
- What protects against these hazards
- What is a "competent" person
- Emergency Plans

17. Show the video: "Trenching & Shoring". This is about 10 minutes in length.

18. Have question and answers on video and discussion on key points. Some items to cover may include:

- Types of soil (mostly type C in Louisiana)
- Know depth of excavation / trench.
- What might be in the excavation?
- What does "red" concrete mean?

- What does yellow tape mean?
 - Review benching, sloping, shoring
 - What is a "competent" person?
 - What about changed conditions?
 - Access ladders - no more than 25 feet.
 - Pre-planning for emergencies.
19. Introduce the video on "Lockout/Tagout". Tell participants that LOTO will vary from one facility to another and it is important they understand the site-specific procedures. The important things about any LOTO procedure are:
1. There is a procedure
 2. The procedure is understood
 3. The procedure is followed
 4. There are periodic audits.

When viewing the video, watch for the six steps and keep in mind the key points in LOTO are:

1. Lock
 2. Tag
 3. Try - verify by trying the start/stop controls.
20. Show the video: "**Lockout/Tagout**".

This video is about 11 minutes in length.

21. Have questions and answers on the video and discussion on key points. Some key points to cover may include:

- Possible energy sources - electrical, steam, air, mechanical, stored, etc.
 - Know energy isolation points
 - Attach lock/tags - OSHA says locks are preferred.
 - OSHA prefers one worker/one lock although other procedures may be used.
 - **TRY ALL LOCAL & REMOTE START/STOP CONTROLS!!!**
 - Do the work
 - Clean up & remove Locks/Tags.
 - Sign off work permit.
22. Introduce the video on "Confined Space Entry". Tell participants that the video closely follows the OSHA standard on confined space entry. Important things to watch for in the video include:
- What is a confined space?
 - What are the possible hazards?
 - What precautions should be taken?
 - What are assigned responsibilities?
 - Need for emergency planning

23. Show the video **"Confined Space Entry"**.

This video is about 11 minutes in length.

24. Have question and answers on video and discussion on key points. Some key points to cover include:
- Disconnecting/blinding piping or duets
 - Purging or cleaning
 - Atmospheric tests
 - Isolated energy sources
 - Equipment/tools safe to use in space
 - Proper ventilation
 - Personal protective equipment
 - Properly trained personnel
 - Positive means of communication
 - Emergency and rescue procedures
25. Have final question and answer period on Sections 6 - 12.
26. Give Post-Quiz on Sections 6 - 12.
27. Go over Post-Quiz on Sections 6 - 12 by reading each question and giving the correct answer. Clear up any misunderstanding that participants may have on any material covered in the Post-Quiz.

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**CONTRACTOR SAFETY ORIENTATION
POST-QUIZ (6-12)**

DATE: _____ **NAME:** _____

Circle T if the statement is TRUE, and F if the statement is FALSE.

Circle the letter with the most correct answer.

SECTION 6 - SIGNS & BARRICADES

22. T F Blue flags or blue lights are used to warn railroad personnel that work is being done near, around, or above railroad tracks.
23. T F Barricade tape and guardrails provide the same amount of protection.
24. Barricades should be used for:
- a. Open excavations, floor openings, overhead work
 - b. Roadways with dangerous conditions
 - c. Test areas where hazards exist
 - d. All of the above
25. Write the letter for the color generally used for the following:
- | | |
|--|------------------|
| _____ Fire equipment, Danger | A. Green |
| _____ First Aid, Safety Equipment | B. Red |
| _____ Hazards | C. Yellow |
| _____ Traffic Marking, Informational signs | D. Black / White |

SECTION 7 - ALCOHOL & SUBSTANCE ABUSE

26. T F Alcohol and drug use can be a contributing cause of workplace accidents.
27. T F Many plants have strict contraband policies which may require that all workers submit to personal or vehicle searches.
28. Examples of contraband are:
- a. Firearms, weapons, and explosives
 - b. Prescription medication
 - c. Stolen property
 - d. Both A and C

SECTION 8 - ELEVATED WORK

29. T F If a scaffold has "safe for use tag" on it, there is no need for you to inspect it before using it.
30. T F Anchor points for lanyards should be overhead and able to support a 5400 pound load.
31. Scaffolds should always:
- a. Have each leg on a solid base
 - b. Be made of only scaffolding materials
 - c. Be erected, moved, altered, or dismantled under the supervision of a competent person
 - d. All of the above
32. When working at unprotected elevations, the best fall protection is _____.
- a. A properly tied off tool belt
 - b. A properly tied off safety belt/harness
 - c. Non-slip shoes
 - d. A good sense of balance
33. When working at unprotected elevations, you should tie-off your lanyard so as to limit any possible fall to _____.
- a. 4 feet
 - b. 6 feet
 - c. 8 feet
 - d. 10 feet
34. Which type of snap hooks are more likely to have the lanyard "roll out" of the hook?
- a. Non-locking
 - b. Locking
 - c. None of the above
 - d. It is best to tie the lanyard to the structure with a slip knot.
35. To reduce the chances of injury when wearing a safety belt, where should you hook your lanyard to your belt?
- a. On the side
 - b. In the front
 - c. At the back
 - d. All are OK

SECTION 9 - EMERGENCY REPORTING & RESPONSE

36. T F At any work place, you should know the type of fire hazards, the alarm systems being used, the evacuation routes, and the assembly areas.
37. You discover a fire. What is your first action?
- a. Try to smother the fire
 - b. Locate a Class A rated fire extinguisher
 - c. Sound an alarm
 - d. Evacuate the area immediately

SECTION 10 - HAZARD COMMUNICATION

38. T F Anyone working with asbestos must be trained as to the hazards and safe work practices.
39. T F All pipes that contain hazardous materials must be labeled as to contents.
40. T F Each employee who might be exposed to hazardous materials is to be taught how to protect himself from exposure.
41. T F All hazardous materials are corrosive.
42. T F The fittings on steam, nitrogen, and water lines in one plant are always the same in other plants.
43. T F PEL (Permissible Exposure Level) is an exposure limit published and enforced by OSHA as a legal standard.
44. T F The effects of an "ACUTE" Hazard are usually immediate.
45. T F The effects of a "CHRONIC" Hazard are usually delayed and occur over a long period of time.
46. Asbestos is most hazardous when:
- a. It is sprayed with water
 - b. Asbestos particles are airborne
 - c. It is in a compressed form
 - d. All of the above

47. Ways to find out about hazards of chemicals are:

- a. Reading the labels on the container
- b. Reading hazard warning signs
- c. Material Safety Data Sheets
- d. All of the above

48. Chemicals may enter the body by:

- a. Inhalation (Breathing)
- b. Ingestion (Eating)
- c. Absorption (Through the skin)
- d. Injection (Puncture wound)
- e. All of the above

49. Mark if the statement describes a health or physical (fire, explosion, etc.) hazard:

	<u>HEALTH</u>	<u>PHYSICAL</u>
a. A chemical explodes on contact with water	_____	_____
b. A chemical produces blisters on contact with the skin	_____	_____
c. A chemical causes cancer	_____	_____
d. A substance catches fire easily	_____	_____
e. A chemical that cannot be stored next to other chemicals because they react together	_____	_____
f. A chemical causes lung damage when inhaled	_____	_____
g. A chemical causes the eyes to burn and water	_____	_____

50. A material labelled as "CORROSIVE" is likely to:

- a. Damage tissue at the site of contact
- b. Be combustible
- c. Only be harmful if ingested (eaten)
- d. None of the above

51. If you are splashed with a hazardous material, what should you do first?

- a. Go immediately to the First Aid Room
- b. Immediately wash the affected area with large volumes of water and remove the contaminated clothing.
- c. Immediately wash the affected area with neutralizer
- d. Go on about your business unless it starts to burn

52. If a vapor cloud is coming toward you, which way should you travel ?

- a. Down wind
- b. Up wind
- c. Cross wind and then up wind
- d. It doesn't matter

53. A material is a "carcinogen" if it:

- a. Is a caustic and causes burns
- b. Is capable of causing cancer
- c. Causes a chemical reaction
- d. All of the above

SECTION 11 - ELECTRICAL WORK PRACTICES

54. T F A worker usually has plenty of warning that he is about to receive an electrical shock.

55. T F If you receive only a mild electrical shock, there is no need to report it to supervision.

56. T F In a lockout, an energy isolating device is locked in the safe, or off, position.

57. T F Locking out the power switch will always remove all energy from powered equipment.

58. T F All plants use the same methods for Lockout / Tagout.

59. T F A worker may use any sturdy lock to apply a lockout.

60. T F If a worker is not present to remove their lock, any co-worker may remove it as long as they first make sure it is safe.

61. Electrical shock can be prevented by:

- a. Using a Ground Fault Circuit Interrupter (GFCI)
- b. Circuit Breakers
- c. An Assured Grounding Program
- d. Both A and C

SECTION 12 - WORK PERMITS

62. T F In trenches over 4-feet deep, there must be a means of exit (ladder or steps) no more than 25 feet from any worker.
63. T F For lines breaking/opening work, the lines should be treated as "under pressure" until proven otherwise.
64. T F The Hole Watch/Attendant must have visual or voice communication at all times with persons in a confined space.
65. T F When doing confined space work, there should always be a preplan for emergency rescue.
66. T F A properly completed Confined Space Entry Permit must be obtained before entering a confined space.
67. Once an excavation has been inspected and approved by a competent person:
- a. It does not ever need to be re-inspected
 - b. It should be re-inspected before each shift and any time conditions change which could affect the excavation
 - c. Weekly, if time permits
 - d. None of the above
68. Examples of work which may require a Hot Work Permit are:
- a. Cutting, welding, burning, brazing, or soldering
 - b. Grinding, battery powered tools, hammer and chisel
 - c. None of the above
 - d. Both A and B
69. When planning for line breaking you should consider:
- a. Roping off the work area
 - b. Wearing necessary Personal Protective Equipment
 - c. Breaking flange down-and-away and be prepared to close it if necessary
 - d. All of the above
70. Before personnel are permitted to enter a confined space, which two types of tests must be performed ?
- a. Acid and caustic
 - b. Odor and color
 - c. Oxygen and flammable
 - d. None of the above

71. Under normal circumstances, the air we breathe contains approximately ____% oxygen.
- a. 16%
 - b. 25%
 - c. 19.5%
 - d. 21%
72. Before personnel enter a confined space, there should be some type of approval or authorization. This authorization should be in the form of:
- a. Verbal OK
 - b. Notation in the foreman logbook
 - c. A confined space entry permit
 - d. A tag at the entrance to the space signed by the foreman
73. If the standby person sees that the workers in a confined space appear to be in distress, what would be the proper response?
- a. Run so as not to become a victim
 - b. Call for help, put on personnel protective equipment (PPE) and enter confined space to rescue workers.
 - c. Rescue the workers and then call for help
 - d. Call for help, put on PPE, wait for and assist rescue personnel

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 13: INTRODUCTION TO OSHA

LENGTH: 15 minutes

REFERENCES:

1. Occupational Safety and Health Act of 1970.
2. OSHA Pamphlet 2056, "All About OSHA".
3. OSHA Pamphlet "Recordkeeping Requirements under the Occupational Safety and Health Act of 1970".
4. OSHA Pamphlet 2019, "Publications and Audiovisual Programs".

AUDIOVISUALS: Slide Tray No. 5, Starts with Slide 21

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the origin of the OSHAct, the coverage of the act, the objectives of the act, the general parts of the act and the rights and responsibilities of the employer and the employee.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. The origin of the OSHAct and what prompted its enactment by Congress.
2. The rights and responsibilities of the employer under the Act.
3. Recordkeeping and reporting requirements.
4. The rights and responsibilities of the employee under the Act.
5. The four major categories under which OSHA issues standards, where standards can be obtained and the origin, source and development of standards.
6. The requirements for and definitions of competent person, qualified individual and designated employee.
7. How to communicate with OSHA, if needed or desired.

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PRESENTATION FOR SECTION 13:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the origin of the OSHA Act, the coverage of the act, the objectives of the act, the general parts of the act and the rights and responsibilities of the employer and the employee.

2. **SLIDE:** UNTIL 1970, THERE WAS NO UNIFORM AND COMPREHENSIVE PROVISION TO PROTECT AMERICAN WORKERS AGAINST WORKPLACE SAFETY AND HEALTH HAZARDS!!

Because job-related accidents were high and continued to increase and cause lost production, lost wages, medical expenses, disability compensation and burden the nation's commerce, Congress passed the Occupational Safety and Health Act of 1970.

3. **SLIDE:** OSHA ACT PROVIDES FOR:
 - INSPECTIONS
 - A. TARGET INDUSTRIES
 - B. RANDOM SELECTION
 - C. COMPLAINTS
 - CITATIONS WHICH MAY RESULT IN
 - A. CIVIL PENALTIES & FINES
 - B. CRIMINAL PENALTIES & FINES

The Act provided for selected inspection of industry and citations for violation which may result in fines.

4. **SLIDE:** 1970 OSHA ACT HOLDS THE EMPLOYER RESPONSIBLE FOR:
 - MAINTENANCE OF SAFE WORKING CONDITIONS
 - COMPLIANCE WITH MINIMUM SAFETY STANDARDS
 - INJURY/ILLNESS RECORDKEEPING & REPORTING
 - PROVIDING MEDICAL EXAMINATIONS
 - PROVIDING TRAINING

The Act requires the employer to:

- Maintain a workplace free of recognized hazards
- Comply with applicable OSHA Standards
- Provide specified medical examinations
- Provide specified training

5. **SLIDE:** OSHA REPORTING REQUIREMENTS:

NOTIFICATION WITHIN 48 HOURS ON ALL:

- FATALITIES
- CASES INVOLVING HOSPITALIZATION OF 5 OR MORE WORKERS

If an on-the-job accident occurs that result in the death of an employee or in the hospitalization of five or more employees, all employers, regardless of number of employees, must report the accident, in detail, to the nearest OSHA office within 48 hours.

6. **SLIDE:** OSHA RECORD KEEPING REQUIREMENTS:

OSHA LOG AND SUMMARY:

- MEDICAL CASES
- RESTRICTED DUTY CASES
- LOST TIME
- FATALITIES
- LOSS OF CONSCIOUSNESS

SUPPLEMENTARY RECORD:

All occupational illnesses must be recorded regardless of severity. All occupational injuries must be recorded if they result in:

- Death (must be recorded regardless of the length of time between the injury and death)
- One or more lost workdays;
- Restriction of work or motion;

- Loss of consciousness;
- Transfer to another job; or
- Medical treatment (other than first aid).

7. **SLIDE: OSHA REQUIRED POSTERS OR NOTICES:**

- OSHA EMPLOYEE RIGHTS
- OSHA 200 LOG (FEBRUARY EACH YEAR)

A copy of the totals and related information of OSHA No. 200 log for the year must be posted at each establishment wherever notices to employees are customarily posted. This copy must be posted no later than February 1, and kept in place until March 1. Even though there were no injuries or illnesses during the year.

8. **SLIDE: UNDER OSHA, THE EMPLOYER HAS THE RIGHT TO:**

- SEEK ADVICE FROM OSHA
- HAVE OSHA OFFICE IDENTIFY THEMSELVES AND GIVE REASON FOR INSPECTIONS

An employer has the right to:

- Seek advice and off-site consultation as needed by writing, calling or visiting the nearest OSHA office.
- Request and receive proper identification of the OSHA compliance officer prior to inspection.
- Be advised by the compliance officer of the reason for an inspection.

9. **SLIDE: UNDER OSHA, THE EMPLOYER HAS THE RIGHT TO:**

- SEEK ADVICE FROM OSHA
- HAVE OSHA OFFICE IDENTIFY THEMSELVES AND GIVE REASON FOR INSPECTIONS
- APPLY FOR VARIANCE FROM A STANDARD
- PARTICIPATE IN DEVELOPING STANDARDS
- HAVE CONFIDENTIALITY OF TRADE SECRETS

- Apply to OSHA for a temporary variance from a standard if unable to comply because of the unavailability of materials, equipment or personnel needed to make necessary changes within the required time.
- Apply to OSHA for a permanent variance from a standard because the facilities of method of operation provide employee protection at least as effective as that required by the standard.
- Take an active role in developing safety and health standards through participation in OSHA.
- Be assured of the confidentiality of any trade secrets observed by an OSHA compliance officer during an inspection.

10. **SLIDE:** OSHA DOES NOT CITE EMPLOYEES FOR VIOLATIONS OF THEIR RESPONSIBILITIES. HOWEVER, IT STATES THAT EACH EMPLOYEE SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH STANDARDS AND ALL RULES, REGULATIONS, AND ORDERS ISSUED UNDER THE ACT" THAT ARE APPLICABLE.

Repeat contents of slide.

11. **SLIDE:** AN EMPLOYEE SHOULD:

- READ OSHA POSTERS
- COMPLY WITH OSHA STANDARDS
- FOLLOW ALL EMPLOYER SAFETY AND HEALTH RULES

As an employee, you should:

- Read the OSHA poster at the job-site
- Comply with all applicable OSHA standards.
- Follow all employer safety and health rules and regulations, and wear or use prescribed protective equipment while engaged in work.

12. **SLIDE:** AN EMPLOYEE SHOULD:

- READ OSHA POSTERS
 - COMPLY WITH OSHA STANDARDS
 - FOLLOW SAFETY AND HEALTH RULES
 - REPORT HAZARDOUS CONDITIONS TO SUPERVISION
 - EXERCISE YOUR RIGHTS UNDER THE ACT IN A RESPONSIBLE MANNER
-
- Report hazardous conditions to the supervisor.
 - Report any job-related injury or illness to the employer, and seek treatment promptly.
 - Exercise your rights under the Act in a responsible manner.

13. **SLIDE:** UNDER OSHA, THE EMPLOYEE HAS THE RIGHT TO:

- SEEK SAFETY AND HEALTH ON THE JOB WITHOUT PUNISHMENT
 - HAVE ACCESS TO OSHA STANDARDS, RULES AND REGULATIONS
 - BE TRAINED ON WORK PLACE SAFETY AND HEALTH HAZARDS
-
- Employees have a right to seek safety and health on the job without fear of punishment. That right is spelled out in Section 11(c) of the Act, and
 - Review copies of appropriate OSHA standards, rules, regulations and requirements that the employer should have available at the workplace, and
 - Receive adequate training and information on workplace safety and health hazards.

14. **SLIDE:** UNDER OSHA, THE EMPLOYEE HAS THE RIGHT TO:

- REQUEST INFORMATION OR INVESTIGATIONS BY OSHA
- HAVE ACCESS TO HAZARDOUS MATERIAL INFORMATION AND YOUR MEDICAL RECORDS
- PARTICIPATE IN HEARING AND OTHER OSHA ACTIVITIES.

Employees have the right under OSHA to:

- Request information
- Observe any monitoring or measuring of hazardous materials and have the right to see these records, and your medical records, as specified under the Act.
- Participate in hearings conducted by the Occupational Safety and Health Review Commission.

15. **SLIDE:** CATEGORIES OF OSHA STANDARDS ARE:

- GENERAL INDUSTRY
- MARITIME
- CONSTRUCTION
- AGRICULTURE

Read the content of the slide.

The following are not covered under the Act:

- Self-employed persons;
- Farms at which only immediate members of the farm employer's family are employed; and
- Working conditions regulated by other federal agencies under other federal statutes.

16. **SLIDE:** DEFINITIONS OF:

- COMPETENT PERSON - ONE CAPABLE OF IDENTIFYING EXISTING AND PREDICTABLE HAZARDS
- QUALIFIED PERSON - ONE WHO POSSESSES A RECOGNIZED DEGREE, CERTIFICATE, OR PROFESSIONAL STANDING
- DESIGNATED PERSON (AUTHORIZED) - ONE ASSIGNED BY THE EMPLOYER TO PERFORM A SPECIFIC DUTY

The OSHA defines the following as:
(Read definitions on slide.)

17. **SLIDE:** TO OBTAIN OSHA INFORMATION BOOKLETS, PUBLICATIONS, POLICIES, ETC.:

- WRITE:
OSHA PUBLICATION OFFICE
200 CONSTITUTION AVE. NW, RM N-3101
WASHINGTON, DC 20210
- OR, CONTACT THE LOCAL OSHA OFFICE

Booklets, publications, information, etc. can be obtained from OSHA by writing to the address shown here or contacting the local OSHA office.

18. Questions and answers.

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 14: SAFETY RULES AND HOUSEKEEPING

LENGTH: 15 minutes

REFERENCES: OSHA Pamphlet 2202, "Construction Industry".

AUDIOVISUALS: Slide Tray No. 5, Starts with Slide 38

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the necessity to maintain a neat and orderly workplace for the safety and efficiency of the workers, the typical risks and hazards in an industrial facility and the general safety rules to be followed.

SPECIFIC OBJECTIVES: Completion of this section should provide the participants with knowledge of:

1. Typical Risks and Hazards in an Industrial Facility.
2. General Safety Rules.
3. Safety and productivity improve with good housekeeping.
4. Good work space means no clutter or trash.
5. Efficiency benefits resulting from good housekeeping.
6. Fire hazards associated with improper material and equipment storage and placement.
7. Proper disposal of waste and scrap materials including prompt removal, containers, identification, covering, etc.
8. Continuous housekeeping - not just at the end of the day.

PRESENTATION FOR SECTION 14:

1. State in your own words, or read the "General Objectives" of this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the necessity to maintain a neat and orderly workplace for the safety and efficiency of the workers, the typical risks and hazards in an industrial facility and the general safety rules to be followed.

2. **SLIDE: "PHOTO OF SIGN WITH SAFETY RULES"**

Adherence to jobsite safety rules and safe work practices is an integral part of any accident prevention program. So is good housekeeping. You should learn the job-specific or site specific safety rules but here are some of the more common industrial safety rules.

3. **SLIDE: GENERAL SAFETY RULES**

- **OBEY WARNING SIGNS**
 - **QUALIFIED PERSONNEL**
 - **FOLLOW INSTRUCTIONS**
 - **KEEP OUT OF RESTRICTED AREAS**
 - **AVOID PUDDLES, SPRAYS, OR DRIPS**
-
- Obey all posted warning signs and instructions given by supervision.
 - Operate only that equipment on which you have been trained, or certified,
 - Stay out of restricted areas. Do not walk through production or process areas. Stay on the main roads and
 - Stay clear of any drips, puddles, sprays, or vapor clouds as they may be hazardous.

4. **SLIDE: "PHOTO OF CHEMICAL SPILL"**

Because of things like this and in the interest of fire prevention, many plants require personnel to leave all matches, lighters, and smoking material outside the gate or in designated areas. Smoking, when permitted, is usually restricted to designated areas. Likewise, all hot work such as welding, cutting, burning, and etc. is usually controlled by some form of permit.

5. **SLIDE: GENERAL SAFETY RULES (cont'd)**

- NO HORSEPLAY / PRACTICAL JOKES
- REPORT ALL ACCIDENTS, INJURIES
& NEAR MISSES
- REPORT ALL UNSAFE ACTS OR CONDITIONS

Horseplay and practical jokes often result in accidents or injuries and are not permitted.

Report promptly to your supervisors all accidents, injuries or near misses so they can be investigated and action can be taken to prevent recurrence.

Likewise, any noted unsafe acts or conditions should be promptly reported to supervision.

6. **SLIDE: PERSONAL HYGIENE**

- WASH THOROUGHLY BEFORE EATING
- PROPER HANDLING OF FOOD,
MEDICINE & COSMETICS
- DECONTAMINATION PROCEDURES
- SAFETY SHOWERS / EYE WASH

Good personal hygiene is also very important when working in plants.

- Always wash your face and hands thoroughly before eating, drinking, smoking, or using the restroom,
- Keep food, drinks, medicine, and cosmetics out of the work area, and . .

- Never wear contaminated clothing home. Should you or your clothing be contaminated or splashed with a potentially harmful substance, promptly remove the contaminated clothing and wash the affected area with large volumes of water. Check with your supervisor regarding the proper procedure for decontamination or disposal of contaminated clothing.

7. **SLIDE:** **HAZARDS**

- **CONSTRUCTION HAZARDS**
- **PLANT HAZARDS**
- **NEW WORKERS ARE AT THE GREATEST RISK.**

Remember that:

- There are certain hazards associated with construction work.
- There are additional hazards associated with construction and maintenance work in plant facilities and
- You also know that employees who have been on the job 30 days or less are at the greatest risk.

Accidents and injuries can be prevented if you:

- learn to recognize the hazards,
- take the necessary precautions and . . .
- remain alert for changing conditions.

8. **SLIDE:** **HOUSEKEEPING:**

- **PICK UP, WIPE UP & SWEEP UP**
- **REMOVE SCRAP & WASTE**
- **A PLACE FOR EVERYTHING**
- **EVERYTHING IN ITS PLACE**

Good housekeeping is another way to reduce and control job site hazards. It includes picking up after yourself, wiping up and sweeping up. It also includes frequent removal of scrap and waste. A good way to look at

housekeeping is to "have a place for everything" and "everything in its place". Housekeeping is not to be left to the laborers or helpers but is a responsibility shared by all workers on a job site.

9. **SLIDE:** HOUSEKEEPING BENEFITS

- REDUCES JOB SITE HAZARDS
- IMPROVES EFFICIENCY
- REDUCES LOSSES
- SHOWS GOOD PLANNING WORK PRACTICE

Good Housekeeping is good business. It reduces job site hazards, especially fire hazards and fall hazards. Efficiency is better on a well kept job site and losses are less. Also the client will be impressed by the show of good planning and work practices.

10. **SLIDES:** "PHOTOS OF HOUSEKEEPING PROBLEMS".
(13 SLIDES)

Obtain participants discussion on the housekeeping problems shown in each slide. What should be done to correct each problem.

11. **SLIDES:** "PHOTOS OF GOOD HOUSEKEEPING' (5 SLIDES)

Comment briefly on each slide.

12. Make the point that housekeeping should be practiced continuously - - - -
not just at the end of the shift.

13. Questions and answers.

QUESTIONS FOR DISCUSSION - SAFETY RULES & HOUSEKEEPING:

- 1. Name the types of conduct which are generally prohibited at industrial work places.**
 - Possession and use of drugs or alcoholic beverages on the job or at the work site.
 - Horseplay or fighting
 - Gambling
 - Possession of firearms
- 2. Where are you allowed to smoke ?**
 - Only in designated and controlled areas.
- 3. What are the rules governing the use of contractor vehicles or equipment ?**
 - Your vehicle entry pass must be displayed at all times.
 - Obey all posted traffic control signs and speed limits.
 - The use of contractor vehicles and equipment in the facility must be approved by the Contract Coordinator.
 - Vehicles or equipment must only be operated by authorized and qualified personnel.
 - Equipment or vehicles should not block roads or intersections without permission from the Contract Coordinator.
 - Shut off the motor and set the brakes before leaving any vehicle.
 - Never leave a vehicle running while it is unattended
 - Vehicles with hazardous materials on board must be attended during loading and unloading.
 - Assign a guide when a driver's visibility is limited.

4. Name the types of personal protective equipment commonly used in industrial work places.

- Hard hats
- Eye protection (goggles)
- Industrial quality shoes
- Respirators
- Chemical resistant gloves, boots and clothing.

5. Housekeeping means keeping the work place clean, orderly and safe. Give some examples.

- Work areas free from trash and debris.
- Walking surfaces free from tripping, slipping, and stumbling hazards.
- Work and storage equipment areas free from disorder with aisles that are marked and kept clear.

6. What are some benefits of good housekeeping ?

- Reduces risk of fires.
- Prevention of injuries
- Conservation of materials
- Increased production
- Increased morale
- Greater efficiency
- Better work habits

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 15: MEDICAL RECORDS / FIRST AID

LENGTH: 15 minutes

REFERENCES:

1. OSHA Standards 1910.20 and 1910.151.
2. OSHA Pamphlet 3110, "Access to Medical and Exposure Records".

AUDIOVISUALS: Slide Tray No. 5, Starts with Slide 71

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of their right of accessibility to their personal occupational medical records, the OSHA requirements for job site first aid, and follow-up medical care for job related injuries and illnesses.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. The content of an employment medical record. (General Information)
2. Rights of access to information contained in their personal occupational medical records. (General Information)
3. Rights to allow a representative or agent access to personal medical record. (General Information)
4. The provisions in the OSHA Standard that allow representatives of the Assistant Secretary of Labor access to an individual's medical or exposure records. (General Information)
5. The employer's obligation to provide access to first aid.
6. Those who administer first aid must be appropriately qualified.
7. Access to facilities for treatment of injuries beyond first aid must be available and reasonably accessible.
8. How to obtain first aid when needed.

SECTION NO. 15 (CONTINUED)

9. The employee's obligation to report injuries to supervision immediately.
Report vs Assistance

10. You should know where to go for first aid.

PRESENTATION FOR SECTION 15:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of their right of accessibility to their personal occupational medical records, the OSHA requirements for job site first aid, and follow-up medical care for job related injuries and illnesses.

2. **SLIDE: PRE-EMPLOYMENT SCREENING:**

- MEDICAL HISTORY
- OCCUPATIONAL HISTORY
- PHYSICAL EXAMINATION
- DETERMINATION OF FITNESS TO WORK WEARING PROTECTIVE EQUIPMENT
- BASELINE MONITORING FOR SPECIFIC EXPOSURES

Employers generally require a pre-employment screening which will include your medical history, occupational history and a physical examination.

Pre-employment screening has two major functions:

1. Determination of an individuals' fitness for duty, including the ability to work while wearing protective equipment, and
2. Provision of baseline data for comparison with future medical data.

3. **SLIDE: YEARLY UPDATES BASED ON:**

- EXAMINATION RESULTS
- EXPOSURES
- JOB CLASS AND TASK
- MORE FREQUENT TESTING BASED ON SPECIFIC EXPOSURES

Generally, medical examinations are updated at least yearly. More frequent examinations may be necessary, depending on the extent of potential or actual exposure, to chemicals, the duration of the work assignment, and the individual worker's profile.

4. **SLIDE:** ACCESS TO OCCUPATIONAL MEDICAL RECORDS:

- EMPLOYEE (UP TO 30 YEARS FOR WORKING WITH CERTAIN HAZARDOUS CHEMICALS)
- AUTHORIZED REPRESENTATIVE OR AGENT
- AUTHORIZED OSHA REPRESENTATIVES

(OSHA) regulations mandate that the employer must:

- Maintain and preserve medical records on certain hazardous chemical exposure of workers for 30 years after they leave employment.
- Make available to workers, their authorized representatives, and authorized OSHA representatives the results of medical testing and full medical records and analyses when requested.

5. **SLIDE:** THE EMPLOYER IS REQUIRED TO:

- PROVIDE FIRST AID AT THE WORK PLACE
- HAVE QUALIFIED PERSON TO GIVE FIRST AID
- ARRANGE IN ADVANCE FOR TRANSPORTATION FOR THOSE WHO MAY NEED MORE THAN FIRST AID
- INFORM WORKERS AS TO WHERE TO OBTAIN FIRST AID

Repeat information on slide.

6. **SLIDE:** THE EMPLOYEE SHOULD:

- KNOW WHERE TO GO FOR FIRST AID
- GO TO FIRST AID WHENEVER INJURED OR ILL
- REPORT ANY INJURY OR ILLNESS
- ASSIST OTHER INJURED WORKERS TO THE LIMIT OF YOUR ABILITY UNTIL HELP ARRIVES.

Repeat the information on slide.

7. Questions and answers.

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 16: HAND AND POWER TOOLS

LENGTH: 30 minutes

REFERENCES:

1. OSHA Standards 1910.
2. OSHA Pamphlet 3067, "Concepts and Techniques of Machine Safeguarding".
3. OSHA Pamphlet 3080, "Hand and Power Tools".

AUDIOVISUALS: 1. Slide Tray No. 6, Starts with Slide 1

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the basic hazards associated with and proper safety precautions for stationary and portable hand and power tools.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. The need to be experienced, trained or instructed in the use of a tool or, DO NOT USE IT. If there are any questions, ask your supervisor.
2. Selecting the right tool for the job and inspect it before each use.
3. Unsafe usage or unsafe tools. Lock-on devices are not allowed on most sites. If allowed, they should never be taped in "on" position.
4. Power tool guarding.
5. Use and recognition of plant site utility stations. Connections and color coding is not uniform within industry. Different types of hoses are required for different services. Always check previous content of hose.
6. Requirements for safe use of electrically operated hand tools including grounding or double insulation.

SECTION NO. 16: (continued)

7. Requirements for safe use of pneumatic tools including securing, bleeding down and use of compressed air. Hoses should not be crimped. Other gases such as oxygen or nitrogen should never be used to operate pneumatic tools. Clothing is not to be cleaned with compressed air. Discuss hazards including the possibility of asphyxiation from gases such as nitrogen, argon, etc. and the increased fire hazard in an oxygen enriched atmosphere.
8. Requirements for safe use of hydraulic tools. Examples, high pressure select-a-torque wrench, jacks, port-a-powers.

PRESENTATION FOR SECTION 16:

1. State in your own words, or read, the "General Objectives" for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of the basic hazards associated with and proper safety precautions for stationary and portable hand and power tools.

2. Give lead-in to this section such as:

Tools are such a common part of our lives that it is difficult to remember that they may pose hazards. Tools are manufactured with safety in mind but serious accidents do occur. Safe workers learn to recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent those hazards. A recent study has shown that in one out of every eight face injuries, the worker's tools were in poor condition or not working properly and contributed to the accident.

3. **SLIDE:** BASIC TOOL SAFETY RULES:

- KEEP ALL TOOLS IN GOOD CONDITION
- USE THE RIGHT TOOL FOR THE RIGHT JOB
- INSPECT EACH TOOL BEFORE USING IT
- OPERATE PER MANUFACTURER'S INSTRUCTIONS
- WEAR THE PROPER P.P.E.

Here are the basic safety rules for whatever tool you may be using. (Repeat information on slide.)

Appropriate personal protective equipment, e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools. Also remember that ordinary plastic dipped handles are designed for comfort -- not electrical insulation. Other tools that have high electric insulation are so identified. The high dielectric insulation is intended only as secondary protection. Never depend on an insulated tool to protect you from electricity.

4. **SLIDES:** "PHOTOS OF SEVERAL TOOLS" (2 SLIDES)

Each tool is made for a specific purpose. Use the right tool for the job.

5. **SLIDE:** SAFE USE OF WRENCHES

- **DO NOT USE "CHEATERS"**
- **USE A WRENCH THAT EXACTLY FITS THE NUT**
- **USE A BOX OR SOCKET RATHER THAN OPEN END**
- **PULL ON THE WRENCH -- DON'T PUSH**
- **DO NOT HEAT OR GRIND -- DO INSPECT**

Hand tools are non-powered. They include anything from axes to wrenches. So let's start with wrenches. Remember, the greatest hazards posed by hand tools result from misuse and improper maintenance.

- **Never** use a pipe extension or other form of "cheater" to increase the leverage of any wrench.
- Select a wrench whose opening exactly fits the nut. If the wrench is not exactly the correct size for the bolt, it is apt to damage the corners of the bolt, slip, or break.
- The safest wrench is a box or socket type; both because it is stronger and because it has less chance of slipping off the bolt. Different types of wrenches are of different strengths and are designed for different purposes. Open end, flare nut, and adjustable wrenches are not as strong as the corresponding sizes of box or socket wrenches and are not intended for heavy loads, such as breaking loose frozen bolts or final tightening.
- If possible, always **pull** on a wrench handle and adjust your stance to prevent a fall if sudden release occurs.
- **Never** expose any wrench to excessive heat which may change the hardness and metal structure and ruin the tool. Wrenches should not be ground to change their shape. Periodic inspection of hand tools by competent personnel is a **safety must**. Do not use a wrench which has been damaged and probably weakened by being bent, cracked, or severely worn.

6. **SLIDE:** "PHOTO OF WRENCHES"

They come in all sizes - use the right one.

7. **SLIDE:** SAFE USE OF STRIKING TOOLS

- USE AS INTENDED
- STRIKE THE SURFACE SQUARELY
- USE PROPER SIZE
- DISCARD WORN OR DAMAGED TOOLS

Hammers and other striking tools are perhaps the most widely used, and probably the most often abused of all hand tools. They are made in various types, sizes and configurations for specific purposes. They should be selected for their intended use and used only for those purposes for which they are designed. Misuse can cause the striking face to chip, possibly resulting in eye or other serious injury. A hammer blow should always be struck squarely with the hammer striking face parallel with the surface being struck. Always avoid glancing blows and over and under strikes.

- Always use a hammer of suitable size and weight for the job. Don't use a tack hammer to drive a spike, nor a sledge to drive a tack.
- Never use a striking or struck tool with loose or damaged handle.
- Discard any striking or struck tool if tool shows dents, cracks, chips, mushrooming, or excessive wear.

8. **SLIDES:** "PHOTOS OF STRIKING TOOLS" (2 SLIDES)

This first slide shows typical striking tools, and the second a holding device to keep the hand out of harm's way.

9. **SLIDE:** SAFE USE OF SCREWDRIVERS

- THE TIP SHOULD FIT THE SLOT
- DO NOT USE AS A CHISEL, PUNCH OR PRY BAR
- DO NOT HOLD PART IN ONE HAND WHILE USING THE SCREWDRIVER IN THE OTHER
- DISCARD WORN OR DAMAGED TOOLS

- Make sure that the tip fits the slot of the screw; not too loose and not too tight. You may be saying to yourself that "I know that". Good, but the point is to do it. Use the right tool for the job.
- Don't use a screwdriver for prying, punching, chiseling, scoring, or scraping. A screwdriver should **never** be used as a pry bar. If it is overstressed in this manner, the blade might break and send a particle of steel into the operator's arm/hand, etc.
- Don't hold the work in one hand while using the screwdriver with the other. If the screwdriver slips out of the slot (even if you are using the right size screwdriver!) you will be most likely to receive a gash on your hand.
- Don't use a screwdriver with a split or broken handle. Discard it.

10. **SLIDE: HAND TOOL CARE**

- **DO NOT EXPOSE TO HIGH HEAT**
- **DO NOT GRIND TO RESHAPE**
- **OIL MOVING PARTS**
- **KEEP CLEAN, INSPECT, REPLACE WHEN NECESSARY**

A great many tool related injuries are due to tools which were not cared for properly. So remember to:

- Never expose tools to excessive heat, grind on or reshape a tool. This can change the metal hardness and the strength of the tool.
- Oil the moving parts of tools to keep them working properly. A little WD-40 now and then.
- And keep tools clean. Inspect them regularly and replace worn or damaged tools.

One more thing -- put the tools back in their proper storage location when you finish using them.

11. **SLIDES:** "PHOTOS OF POWER TOOLS" (2 SLIDES)

Power tools can be hazardous when improperly used. There are several types of power tools, based on the power source they use: electric, pneumatic, gas, hydraulic, and powder-actuated.

12. **SLIDE:** POWER TOOL SAFETY RULES

- DO NOT CARRY TOOL BY THE CORD
- DO NOT YANK CORD FROM RECEPTACLE
- KEEP CORDS FROM HEAT, OIL, WATER AND SHARP EDGES
- DISCONNECT TOOLS WHEN NOT IN USE
- USE A G.F.C.I.

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

The following general precautions should be observed by power tool users:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- Use G.F.C.I.'s and never remove the third prong from the plug or use an electric tool that has had the third prong removed.

13. **SLIDE:** **POWER TOOL SAFETY RULES (cont'd)**

- **BE SURE OF GOOD FOOTING / BALANCE**
 - **DO NOT WEAR LOOSE CLOTHING OR JEWELRY**
 - **WATCH OUT FOR CO-WORKERS**
 - **USE A VISE OR CLAMP WHEN NECESSARY**
 - **WORK AREA SHOULD BE WELL LIGHTED**
-
- Be sure to keep good footing and maintain good balance.
 - The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts.
 - Individuals not involved in the job should be kept out of the work area and watch out for your co-workers.
 - Secure work with clamps or a vise when necessary, freeing both hands to operate the tool.
 - Have proper lighting to do the job.

14. **SLIDE:** **POWER TOOL SAFETY RULES (cont'd)**

- **DO NOT REMOVE OR TIE-BACK GUARDS**
 - **DO NOT TAPE OR LOCK SWITCH IN ON POSITION**
 - **KEEP TOOLS SHARP & STORE PROPERLY**
 - **KEEP TOOLS CLEAN & WELL MAINTAINED**
 - **REMOVE DAMAGED TOOLS - TAG "DO NOT USE"**
-
- Hazardous moving parts of a power tool should be safeguarded. For example, belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment. Safety guards must never be removed when a tool is being used. For example, portable circular saws must be equipped with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except when it makes contact with the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work.

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- The following hand-held powered tools should be equipped with a momentary contact "on-off" control switch:
 - Drills and tappers
 - Fastener drivers
 - Horizontal, vertical and angle grinders with wheels larger than 2 inches in diameter
 - Disc and belt sanders
 - Reciprocating and saber saws and similar tools.
- These tools also may be equipped with a lock-on control in which turnoff can be accomplished by a single motion of the same finger or fingers that turn it on. Lock-on devices are not allowed on most work sites. If allowed, switches should never be taped in the "on" position.
- Tools should be maintained with care and kept clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories. Tools should also be kept sharp. Not only does this make the work easier but it is also safer. More tool related injuries occur with a worker using a dull tool than a sharp one.
- All portable electric tools that are damaged should be removed from use and tagged "Do Not Use."

15. **SLIDE:** "PHOTO OF GRINDER"

Powered abrasive grinding, cutting, polishing, and wire buffing wheels create special safety problems because they may throw off flying fragments.

16. **SLIDE:** POWERED ABRASIVE WHEEL TOOL SAFETY RULES

- INSPECT TOOL & WHEEL BEFORE USE
- DO NOT ALLOW OTHERS OR YOURSELF IN FRONT OF THE WHEEL
- USE EYE PROTECTION
- DISCONNECT WHEN NOT IN USE
- DO NOT CLAMP A GRINDER IN A VISE

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

To prevent the wheel from cracking, the user should be sure it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, without distorting the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications.

- Due to the possibility of a wheel disintegrating (exploding) during start-up, you or co-workers should never stand directly in front of the wheel as it accelerates to full operating speed. Portable grinding tools need to be equipped with safety guards to protect workers not only from the moving wheel surface, but also from flying fragments in case of breakage. In addition, when using a powered grinder:
 - Always use eye protection.
 - Turn off the power when not in use.
 - Never clamp a hand-held grinder in a vise.

17. **SLIDES:** "PHOTOS OF GRINDERS" (2 SLIDES)

This is an example of this type of equipment that may be in the workplace.

18. **SLIDES:** "PHOTOS OF VISES" (2 SLIDES)

Use one of these to hold the piece being worked, but not in awkward position.

19. **SLIDE:** PNEUMATIC TOOL SAFETY RULES

- INSPECT TOOL, HOSE & HOSE CONNECTIONS
- INSPECT SAFETY DEVICES
- WEAR P.P.E., EYE / FACE SHIELD,
EAR PLUGS, SAFETY SHOES, ETC.
- PROTECT NEAR BY WORKERS

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders.

There are several dangers encountered in the use of pneumatic tools. The main one is the danger of getting hit by one of the tool's attachments or by some kind of fastener the worker is using with the tool.

Pneumatic tools that shoot nails, rivets, or staples, and operate at pressures more than 100 pounds per square inch, must be equipped with a special device to keep fasteners from being ejected unless the muzzle is pressed against the work surface.

- Before using a pneumatic tool you should inspect it and check to see that the tool is fastened securely to the hose to prevent it from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool will serve as an added safeguard.
- Safety devices should also be inspected. Some examples include:
 - Airless spray guns that atomize paints and fluids at high pressures (1,000 pounds or more per square inch) should be equipped with automatic or manual safety devices that will prevent pulling the trigger until the safety device is manually released.
 - A safety clip or retainer should be installed to prevent attachments, such as chisels on a chipping hammer, from being unintentionally shot from the barrel.

- If an air hose is more than one-half inch in diameter, a safety excess flow valve should be installed at the source of the air supply to shut off the air automatically in case the hose breaks.
- In general, the same precautions should be taken with an air hose that are recommended for electric cords, since the hose is subject to the same kind of damage or accidental striking.
- Eye protection is required and face protection is recommended for employees working with pneumatic tools. Noise is another hazard. Working with noisy tools such as jackhammers requires proper, effective use of ear protection. Workers operating a jackhammer should also wear safety shoes.
- Screens or barricades should be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, air drills, etc. Compressed air guns should never be pointed toward anyone. The user should never "dead-end" it against him or herself or anyone else. They should not be used to clean your clothing.

20. **SLIDE:** **GASOLINE TOOL SAFETY RULES**

- **HANDLE GAS/FUEL PROPERLY & CAREFULLY**
- **USE ONLY APPROVED FLAMMABLE LIQUID CONTAINERS**
- **TURN OFF TOOLS BEFORE REFUELING**
- **HAVE EFFECTIVE VENTILATION**

Another type of tool is fuel-powered, usually by gasoline. The most serious hazard with fuel-powered tools comes from fuel vapors that can burn or explode and give off dangerous exhaust fumes.

- You should be careful to handle, transport, and store the gas or fuel only in approved flammable liquid containers, according to proper procedures for flammable liquids.
- Before the tank for a fuel-powered tool is refilled, you should shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors.
- If a fuel-powered tool is used inside a closed area, effective ventilation and/or personal protective equipment may be necessary to avoid breathing carbon monoxide. Fire extinguishers must be available in the area.

21. **SLIDE:** "PHOTO OF UNACCEPTABLE CONTAINERS"

These types of containers are not acceptable at the workplace. We will discuss this more in the next section.

22. **SLIDE:** HYDRAULIC POWER TOOL SAFETY RULES

- USE ONLY FIRE-RESISTANT FLUID
 - OPERATE ONLY AT MANUFACTURE'S RECOMMENDED SAFE OPERATING PRESSURE
 - INSPECT TOOL, HOSES, VALVES, PIPES & FITTINGS BEFORE USE
 - WEAR NECESSARY P.P.E.
-
- The fluid used in hydraulic power tools should be an approved fire-resistant fluid and should retain its operating characteristics at the most extreme temperatures to which it will be exposed.
 - The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.
 - And as with other tools, inspect them before use and wear the necessary P.P.E.

23. **SLIDE:** SAFETY RULES FOR JACKS

- USE PER MANUFACTURER'S LIFT LIMIT
 - DO NOT USE AS A "SUPPORT"
 - HAVE BASE ON FIRM, LEVEL SURFACE
 - CENTER CORRECTLY & APPLY LIFT FORCE EVENLY
 - MAINTAIN, LUBRICATE AND INSPECT REGULARLY
-
- All jacks -- lever and ratchet jacks, screw jacks, and hydraulic jacks -- should have a device that stops them from jacking up too high. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack and should not be exceeded.

- A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Use wooden blocking under the base if necessary to make the jack level and secure. If the lift surface is metal, place a 1-inch thick hardwood block or equivalent between it and the metal jack head to reduce the danger of slippage.
- To set up a jack, make certain of the following:
 - the base rests on a firm level surface,
 - the jack is correctly centered,
 - the jack head bears against a level surface, and
 - the lift force is applied evenly.
- Proper maintenance of jacks is essential for safety. All jacks should be inspected before each use and lubricated regularly. If a jack is subjected to an abnormal load or shock, it should be thoroughly examined to make sure it has not been damaged.

24. **SLIDE:** **POWDER-ACTUATED TOOL SAFETY RULES**

- **SHOULD BE USED ONLY BY SPECIALLY TRAINED EMPLOYEES**
- **INSPECT BEFORE USE & DO NOT LEAVE UNATTENDED**
- **DO NOT LOAD UNTIL READY TO USE**
- **WEAR EYE AND FACE PROTECTION**
- **TAKE PRECAUTIONS TO PROTECT CO-WORKERS**
- Powder-actuated tools operate like a loaded gun and should be treated with the same respect and precautions. They should be operated only by specially trained employees.
- Before using the tool, it should be inspected to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.
- The tool should not be loaded unless it is to be used immediately. A loaded tool should not be left unattended, especially where it would be available to unauthorized persons.

- Suitable eye and face protection are essential when using a powder-actuated tool. The tool should never be pointed at anybody. These tools should not be used in an explosive or flammable atmosphere.
- Precautions should be taken to protect others working in the area. Also, the muzzle end of the tool should have a protective shield or guard to confine any flying fragments or particles that might otherwise create a hazard when the tool is fired. The tool must be designed so that it will not fire unless it has this kind of safety device. If the tool develops a defect during use it should be tagged and taken out of service immediately until it is properly repaired.

25. **SLIDE:** **BASIC TOOL SAFETY RULES:**

- **KEEP ALL TOOLS IN GOOD CONDITION**
- **USE THE RIGHT TOOL FOR THE RIGHT JOB**
- **INSPECT EACH TOOL BEFORE USING IT**
- **OPERATE PER MANUFACTURER'S INSTRUCTIONS**
- **WEAR THE PROPER P.P.E.**

It seems clear that those who use hand tools can be exposed to many types of hazard. Hazards can be minimized and injuries prevented by following the five basic safety rules. (Review information on slide.)

26. Questions and answers on this section.

CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 17: FIRE SAFETY

LENGTH: 45 minutes

REFERENCES: 1. OSHA Standards 1910.106 and 1910.157.

AUDIOVISUALS: 1. Videotape "Fire Extinguishers".
2. Slide Tray No. 6, Starts with Slide 31

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of: (1) fire prevention and protection as related to use of flammable combustible liquids, and (2) portable fire extinguishers.

SPECIFIC OBJECTIVES: Completion of this section should provide participants with knowledge of:

1. The fire hazards of materials and processes likely to be encountered at a plant site.
2. Sources of ignition, such as tools, internal combustion engines, improper or substandard lighting/electrical, etc. Discuss Welding Blankets, Sewer Covers, Fire Blankets, Hot Work Permits, etc.
3. General definitions of flammable and combustible liquids and proper storage and handling for such.
4. **Classes of fires.**
5. **Fixed fire extinguishing equipment likely to be found at a plant site and the employee's obligation to maintain clear access.**
6. **Classes of fire extinguishers.**
7. **The general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.**

NOTE: Objectives in bold print are covered by videotape.

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PRESENTATION FOR SECTION 17:

1. State in your own words, or read, the "General Objectives for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of : (1) fire prevention and protection as related to use of flammable and combustible liquids, and (2) portable fire extinguishers.

2. Introduce the video: "Fire Extinguishers".
 - Industrial fires could involve ordinary materials or a wide variety of flammable/combustible liquids or gases. Industrial fires often result from poor housekeeping or careless cutting/welding/grinding operations or improper/substandard electrical.
 - Each facility will have specific fire hazards and emergency response procedures. Be certain you know them and what is expected of you.
 - Prevention is of prime importance in fire safety. The next line of defense is prompt use of a fire extinguisher when the fire is still small. The video we are about to watch gives a good overview of the classes of fires and the types of fire extinguishers which can be used on them. Specific points to watch for include:
 - What are the four elements of a fire?
 - The classes of fire, A, B, C, D.
 - The procedures and steps to follow when discovering a fire.
 - The types of fire extinguishers.
3. Show the video: "**Fire Extinguishers**". This video is about 14 minutes in length.
4. Have question and answers on the video and review key points. Some items to cover may include:
 - Types of fires.
 - Four elements of a fire.

- Procedural steps to follow.
- Types of fire extinguishers.
- The different ways extinguishers put out the fire.
- The range of the different types of extinguishers.
- Types of extinguishers for types of fires.
- Things to consider when fighting a fire indoors.
- Things to consider when fighting a fire outdoors.
- Maintenance of extinguishers.
- The PASS system:

P - Pull the Pin
 A - Aim at the base of the fire
 S - Squeeze the lever and
 S - Side to Side Spray.

5. Have participants give examples of ignition sources. Examples should include:

- Welding
- Cutting or grinding tools
- Striking Tools
- Internal combustion engines
- Electrical equipment
- Lack of bonding
- Poor grounding

6. Discuss extra precautions which may be required to prevent fires in industrial setting. This would include such items as:

- Welding Blankets
- Covering Sewers
- Hot Work Permits
- Non-sparking Tools
- Explosion Proof Equipment
- Fire Watch

7. **SLIDE:** "PHOTO OF SMOKING AREA SIGN"

Remember that smoking is generally allowed ONLY in designated areas.

8. **SLIDES:** "PHOTOS OF WELDING OVERHEAD" (2 SLIDES)

These are examples of welding overhead. The area under the work area should be restricted by using barricade tape.

9. **SLIDES:** "PHOTOS OF LIQUIDS ON GROUND" (2 SLIDES)

Any spilled liquid in an industrial setting should be avoided and considered as a possible health or fire hazard.

When doing hot-work at an industrial work site, it may be necessary to have a fire watch. This person should be familiar with the hazards and emergency procedure for that work-site. This person should also have had training in the selection, care, use and limitations of portable fire extinguishers.

10. **SLIDES:** "PHOTOS OF FIRE EXTINGUISHERS" (3 SLIDES)

These are examples of fire extinguishers located in a facility. Know where the nearest extinguisher is located before beginning work. Also know what types of fires it can extinguish and its limitations.

11. **SLIDE:** "PHOTO OF A BLOCKED FIRE EXTINGUISHER"

This is an example of how not to store things.

12. **SLIDE:** "PHOTO UL LABELLED SAFETY CONTAINERS"

This is an example of a UL labelled safety container for flammable liquids. Only properly labelled safety containers should be used for flammable materials, not the ones we saw a few minutes ago.

A flammable liquid is one that has a flash point below 100°F. An example would be gasoline.

A combustible liquid is one that has a flash point above 100°F. They do not ignite as easily as flammable liquids but still should be handled with caution. An example would be diesel.

Flash point is the lowest temperature at which a liquid gives off enough vapor to ignite when a source of ignition is present.

Never remove or damage the "filter" in these cans because it is not just a "filter". It is also a flame arrestor.

UL approved containers should also be used for the safe disposal of oily waste or flammable soaked materials such as rags. These have a self closing cover. These containers prevent spontaneous combustion which can occur if oily wastes are not placed in a proper container.

13. **SLIDES:** "PHOTOS OF FUEL STORAGE AREAS" (2 SLIDES)

Flammable and combustible liquids should always be stored properly according to established standards. These are examples of fuel storage areas.

14. **SLIDES:** "PHOTOS OF STORAGE CABINETS" (2 SLIDES)

Proper storage cabinets should be used as shown here for smaller container of flammable and combustible liquids.

15. **SLIDE:** "IGNITION SOURCES"

- ELECTRICAL
- SMOKING
- HOT SURFACES
- FRICTION

- Electrical equipment failure is the leading cause of industrial fires. Most start in wires and motors.
- Smoking is a potential cause of fire almost everywhere. Smoking should be strictly prohibited in dangerous areas and only permitted in clearly designated safe areas.
- Hot surfaces are those such as heat from boilers, furnaces, hot ducts, electric lamps, irons and hot processes.
- Friction is caused by two objects rubbing together thus creating heat and sometimes sparks.

16. **SLIDE:** SOURCES OF IGNITION (cont'd)

- OVERHEATED MATERIALS
- CUTTING & WELDING
- BURNER FLAMES
- SPONTANEOUS IGNITION
- EXPOSURE

- Overheated materials are a result of abnormal process temperatures, especially those involving heated flammable liquids and materials in dryers.
- Cutting and welding produce sparks, electrical arcs and hot metal that can easily ignite combustible materials.
- Examples of burner flames are portable torches, boilers, dryers, ovens and kilns, furnaces, portable heating units and gas- or oil-burner flames.
- Spontaneous ignition can occur in oily waste and rubbish, deposits in dryers, ducts and flues, industrial wastes, and incompatible chemicals.
- Fires can result from direct exposure to controlled fires, or fires from nearby properties.

17. **SLIDE:** SOURCES OF IGNITION (cont'd)

- COMBUSTION SPARKS
- MECHANICAL SPARKS
- MOLTEN SURFACES
- STATIC SPARKS
- CHEMICAL ACTION
- LIGHTNING

- Combustion sparks can be released from incinerators, foundry cupolas, furnaces, fireboxes, various process equipment and vehicles.
- Mechanical sparks are generated by grinding and crushing operations and foreign material in machinery.
- Fires can be caused by molten metal escaping from ruptured furnaces or spilled during handling.
- Static sparks are created by the discharge of accumulation of static electricity on equipment, materials, or the human body. Static electricity can be prevented by grounding, bonding, ionization and humidification.
- Ignition can result from chemical processes getting out of control, chemicals reacting with other materials and decomposition of unstable chemicals.
- Lightning can cause fires by direct hits, sparks of one object to another induced by a nearby lightning stroke and induced surges in electrical equipment.

18. **SLIDE:** "PHOTO OF BONDING IN FUEL TRANSFER"

When flammable liquids are transferred from storage drums/tanks to smaller containers or when there are large quantities transferred, the containers should be "bonded" to prevent sparks caused by static electricity. This is an example of "bonding". Note the use of the electrical conductor.

19. Questions and answers.

QUESTIONS FOR DISCUSSION - FIRE:

1. What is fire?

- Fire is a chemical reaction. When combined in appropriate amounts, heat, fuel, and air result in fire. These elements make up what is traditionally known as the fire triangle.

2. What is the fourth element in this process?

- Scientists have identified a fourth element in this process called chemical chain reaction.

3. What must happen to a material before it will ignite and burn?

- After the material reaches its flashpoint, add air to the vapors and a source of ignition and a flame will result. This fire will only continue to burn if the temperature remains above the ignition temperature. With all elements of the fire in correct proportion, combustion will be sustained and the fire will continue to burn.

4. How are extinguishers labeled?

- The classes of fire are identified by a labeling system, consisting of a letter and corresponding color-coded symbol. These easy-to-read markings are located on the front of each extinguisher shell.
- An alternate labeling system uses a pictorial code. This recently implemented concept involves three symbols which present both the uses and non-uses of an extinguisher on a single label.

5. What are the four classes of fire and their corresponding extinguishing method?

- Class A - ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics. Cooling is the most common extinguishing method for this type of blaze.

- Class B - flammable liquids and gases. This type of fire can also occur in oils, greases, tars, as well as paints and lacquers. Oxygen displacement is the best method of extinguishment.
- Class C - energized electrical equipment. Use an extinguishing agent that is non-conductive. An alternate method of extinguishing a Class C fire is to de-energize the electrical equipment and then treat it as a Class A fire.
- Class D - combustible metals like sodium, magnesium, and potassium. An extinguishing agent designed for the specific burning metal is required.

6. What size up procedures should you follow when you discover a fire?

- Sound the alarm. This signal is a cue to other personnel that a problem exists in your area. The local fire department or plant brigade should also be contacted.
- Evacuate the area. Anyone not involved in fighting the fire should be directed to leave the area immediately.
- Establish a way out for yourself. If the fire is quickly moving toward your escape route, do not attempt to extinguish it. Leave for a safer area immediately.
- Determine what is burning. You must be able to readily identify different types of fire. This decision will help you in your choice of extinguishers and agents.
- Consider the intensity of the blaze. Even a newly discovered fire could be well involved. If the fire is too large, the extinguisher at hand may not be adequate.
- Determine the direction the fire is moving. As the flames consume the area surrounding it, various materials will likely ignite. What started as a small trash fire could easily progress to a more serious Class B blaze if flammable liquids are stored nearby.

7. What are the six major types of extinguishers?

- Pressurized water

- Aqueous film forming foam (AFFF)
- Dry chemical / multipurpose dry chemical
- Halon
- Carbon dioxide
- Dry powder

8. What are the operating procedures for most types of extinguishers?

- Pull the pin or seal
- Aim the nozzle toward the fire
- Squeeze the handles to discharge the agent
- Sweep the stream across the base of the flames

9. What are the major causes of industrial fires?

- Poor house keeping
- Improper handling of flammable / combustible liquids / gases
- Electrical equipment
- Cutting / welding / grinding operations and other hot work.
- Smoking and careless use of smoking materials.

10. How can you help prevent fires resulting from poor house keeping practices?

- Avoid the accumulation of combustible and flammable materials.
- Eliminate sources of ignition, such as smoking materials. Obey all smoking regulations. Dispose of butts and matches in properly marked containers or ashtrays.

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- Discard items from your personal areas that might be fire hazards (e.g. paint-smeared clothes)
- Communication - if you see potential hazards, advise the responsible employee or report it to your supervisor
- Follow a regular routine of rubbish and waste disposal - discard waste in the designated containers

11. What are some ways in which you can remove sources of ignition?

- Removing sources of ignition includes eliminating flames, hot surfaces, exposed electrical connections, and potential sources of static charges. When handling flammable materials, use non-sparking tools. If your work calls for the use of temporary lighting, the fixtures and equipment must be explosion-proof -- they must be capable of withstanding and containing internal explosions of flammable gas and/or vapor/air mixtures to prevent the spread of fire in the surrounding atmosphere.
- Use proper bonding and grounding techniques because a static electrical charge can be a source of ignition, especially during mixing and pouring.
- Follow instructions or the Hot Work Permits.

12. What are the major causes of electrical fire?

- Worn out, or tired equipment - deterioration of insulation around wires and other electrical parts that carry current
- Improper use of electrical equipment
- Defective installations

13. How can you help prevent the deterioration of electrical equipment?

- Inspect cords for signs of wear, such as frayed or exposed wires. Discard or replace damaged cords as soon as possible.
- If you find it necessary to run cords where other walk, or equipment is used, attach bridges to the cords to prevent wear and tear.
- Keep electrical equipment in good working condition.

14. If you determine that you can stay and fight a small fire in your work area, what should you know?

- The location of fire extinguishers in your area.
- How to activate the fire alarm system (and remember to call the fire department).
- The evacuation plans and escape routes.

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CONTRACTOR SAFETY ORIENTATION COURSE SECTION OBJECTIVES
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SECTION NO. 18: HAZWOPER

LENGTH: 30 minutes

REFERENCES: 1. OSHA Standards 1910.120, 1910.96 and 1910.1001.
2. OSHA Pamphlet 3114, "Hazardous Waste & Emergency Response"

AUDIOVISUALS: 1. Coastal Videotape "Hazwoper / Awareness Level" (20 min.)

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of general requirements and applicability of the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard.

SPECIFIC OBJECTIVES: Completion of this section should provide the participant with knowledge of:

1. The training requirements for personnel who work at Hazardous Waste Operations and TSD facilities.
2. How to identify classes of hazardous materials by reading warning labels and DOT Placards.
3. The role of the First Responder at the Awareness and Operations Levels.
4. The role of and need for a facility HAZMAT Response Team.

NOTE: Objectives in bold print are covered by videotapes.

NOTE: After completing the entire twelve hour orientation program and the necessary site specific orientation, participants should meet minimum training requirements for First Responders at the Awareness Level.

PRESENTATION FOR SECTION 18:

1. State in your own words, or read, the "General Objectives for this section.

GENERAL OBJECTIVE: Upon completion of this section, the participants should have an understanding of general requirements and applicability of the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard.

2. Introduce the video "Hawwoper/Awareness Level". Cover the following points:
 - Hazwoper stands for Hazardous Waste Operations and Emergency Response.
 - OSHA and the EPA have issued joint standards on HAZWOPER.
 - Under the law, workers at Hazardous Waste Sites must receive 24-40 hours of specific training.
 - The second part of the law has to do with Emergency Response which is the part most likely to effect you. Emergency Responders must be trained at one of five levels, the first of which is Awareness Level which is discussed in the video we are about to see.

Some key things to watch for in this video include:

- Safety hazards - What are they?
- Health hazards - What are they?
- What is expected of First Responders at the Awareness Level?
- Risks of hazardous materials
- How to recognize and identify hazardous materials
- Reference materials
- Site control of spills or releases
- Proper notification of authorities

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3. Show the video "**Hazwoper/Awareness Level**". This video is about 20 minutes in length.
4. Have questions and answers on the video and discussion on key points.

Some key points to cover include:

- The most likely level of response for contractors would be First Responder/Awareness Level.
 - Level 1: **First Responders at the Awareness Level** are workers who are likely to discover a hazardous materials release and have been trained to notify the proper authorities.
 - If you are expected to do more than Level 1 requires - **YOU NEED MORE TRAINING.**
 - Ask - Find out what is expected of you at each job site.
 - Be certain you know the Emergency Procedures.
 - What are examples of safety hazards? What are examples of health hazards?
 - How can hazardous materials be identified?
 - Review types of labels, e.i. HMIS, NFPA, DOT.
5. Have final question and answers period on Section 13 - 18.
 6. Give Post-Quiz on Sections 13 - 18.
 7. Go over Post-Quiz on Sections 13 - 18 by reading each question and giving the correct answer. Clear up any misunderstanding that participants may have on any material covered in the Post -Quiz.

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**CONTRACTOR SAFETY ORIENTATION
POST-QUIZ (13-18)**

DATE: _____ **NAME:** _____

Circle T if the statement is TRUE, and F if the statement is FALSE.

Circle the letter with the most correct answer.

SECTION 13 - OSHA

74. T F OSHA is the branch of Government that enforces Federal Safety and Health Regulations in most work places.
75. T F Failure to follow OSHA regulations can result in fines for the employer.
76. T F Under OSHA regulations, the employer is obligated to provide access to first aid for his employees.
77. T F You have the right to file a complaint with OSHA about uncorrected safety violations.
78. OSHA requires employers to:
- a. Be familiar with standards that apply to their business.
 - b. Be sure employees have and use personal protective equipment
 - c. Furnish a place of employment free of recognized hazards.
 - d. All of the above.
79. As an employee, you should:
- a. Follow all employer safety and health rules
 - b. Read OSHA posters at the job-site, and comply with OSHA rules
 - c. Let your employer handle anything dealing with OSHA
 - d. Both A and B

SECTION 14 - SAFETY RULES & HOUSEKEEPING

80. T F Safety rules are the same at all work places. Once you learn them at one site there is no need to check the safety rules at a different site.
81. T F Housekeeping is only necessary at the end of the workday.

82. T F Employees who have been on the job less than 30 days account for 25% of all construction accidents.
83. If you are not sure of a work place safety rule, you should:
- a. Get the job done as safely as you know how
 - b. Ask supervision about it
 - c. See if you can get someone else to do it
 - d. None of the above
84. Who should clean up the area where you work ?
- a. Your supervisor
 - b. You, the employee
 - c. The Maintenance staff
 - d. The Plant Operational personnel

SECTION 15 - MEDICAL RECORDS / FIRST AID

85. T F The employer is not required to allow the employee to see or copy their occupational medical records.
86. T F Employee Medical Records must be kept by the employer only for the duration of employment.
87. At any work place you must:
- a. Know where to go for first aid
 - b. Immediately report all injuries to supervision and obtain first aid
 - c. Treat minor injuries yourself
 - d. Both A and B are correct

SECTION 16 - HAND & POWERTOOLS

88. T F Hand tool injuries are often caused by not using the right tool for the job or using defective tools.
89. T F By-passing or modifying guards on tools is acceptable if you are careful and it helps to get the work done faster.
90. T F If the ladder is well secured, it is OK to carry tools in your hand when climbing the ladder.
91. T F Poor house keeping and faulty electrical equipment are major causes of

industrial fires.

92. It is OK to suspend your come-along from:

- a. Structures
- b. Scaffolds
- c. Small piping
- d. Both A and C

SECTION 17 - FIRE SAFETY

93. T F All types of fire extinguishers have the same discharge range.

94. T F Multipurpose dry chemical extinguishers can be used on Class A, B, and C fires.

95. Match the phrase on the right with the correct class of fire on the left.

- | | |
|----------------|---|
| ___ 1. Class A | a. Burning liquids and gases |
| ___ 2. Class B | b. Combustible metal fires |
| ___ 3. Class C | c. Energized electrical equipment fires |
| ___ 4. Class D | d. Ordinary combustible materials fires |

96. The correct way to operate most portable extinguishers is to:

- a. Direct the agent at the tip of the flames and move the stream up and down
- b. Use a circular motion of the agent as you circle the fire
- c. Keep the agent directed into the middle of the fire at all times
- d. Aim the agent at the base of the fire while moving the stream in a side-to-side motion

SECTION 18 - HAZWOPER

97. T F If you find an unknown material leaking from a container, you should try to plug the leak at once.

98. T F You can always smell the presence of a hazardous gas in the air.

99. T F From a personal hygiene standpoint, food, tobacco products, and personal care items should not be eaten, used or brought into areas where hazardous chemicals are handled.

100. If you discover any release of hazardous material, your first concern should be:

- a. To rescue co-workers
 - b. For your own safety and notification of responsible persons
 - c. To stop the leak
 - d. To identify the substance
101. The HAZWOPER Standard requires emergency responders to be trained and certified at one of the five levels. Level 1: First Responders at the Awareness Level are workers who:
- a. Respond to stop the release of hazardous materials
 - b. Contain a release from a safe distance
 - c. Recognize a release and notify the proper authorities
 - d. All of the above
102. Some of the signs of over-exposure to hazardous materials that may be observed by others:
- a. Cramps and dizziness
 - b. Headaches and blurred vision
 - c. Skin discoloration, lack of coordination, slurred speech
 - d. All of the above
103. The blue section of the NFPA Hazard Diamond or HMIS label provides information on the _____ hazard:
- a. Health
 - b. Reactivity
 - c. PPE
 - d. Fire
104. The red section on the NFPA Hazard Diamond or HMIS label provides information on the _____ hazard.
- a. Health
 - b. Reactivity
 - c. PPE
 - d. Fire
105. The yellow section on the NFPA Hazard Diamond or HMIS label provides information on the _____ hazard.
- a. Health
 - b. Reactivity
 - c. PPE
 - d. Fire