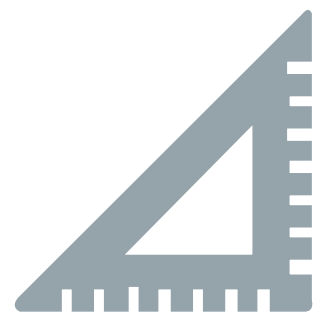


Safety and Health

Basic Foundations Series 719

LESSON PLANS



Safety and Health

719

Instructor Support Material:

Lesson Plans

How to Use These Lesson Plans

These Lesson Plans are very structured and detailed to be as helpful as possible to a first time instructor or trainer. Modify the Lesson Plans to meet your own specific needs.

The Lesson Plans contain:

- Brief restatements of the material in the text along with cues to ASK: questions, DISCUSS: a topic, or SHOW: a figure. The text is large so that you can read it from a distance.
- Important words in bold type. These include both technical terms whose meanings the students need to know and any words that you may want to locate quickly in the text.

Before teaching the class:

- Read the lessons to be covered and the corresponding Lesson Plans.
- Write your own notes for additional discussion or activities in the blank spaces of the Lesson Plans.

Keep in mind:

- The most effective teaching method is:
 - Tell the students what will be covered on the topic.
 - Present the information.
 - Tell the students what they just learned (and how they will be expected to show that they know it.)
- The more reaction and participation you can get from your students, the better.
- Remind the students that their success is a direct result of their efforts.
- Technical material is rarely learned the first time; it takes repetition. Involve more physical senses to make learning happen faster and last longer. For example draw and look at diagrams, see and handle physical objects.
- Students generally get more out of a course, evaluating it and their instructor more highly, when the instructor is enthusiastic about the teaching materials.

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Safety and Health — 719

Lesson Plan for Chapter One Introduction to Safety and Health

TOPICS	Text Page	Lesson Plan Page
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Safety and Health — 719

Lesson Plan for Chapter One Introduction to Safety and Health

Objectives: Upon the completion of this chapter, the student should be able to:

- Define the terms *accident* and *hazard*.
- Name and define the four main types of hazards.
- List and define various types of accidents.
- Compare meanings of the terms *unsafe act* and *unsafe condition*.
- Name the three ways in which a toxic substance can enter your body.
- List ways in which a company must plan for emergencies.
- Tell the main reason for prompt accident investigation.

Activity	Text Paragraph
<p>Your employer is responsible—by law—for providing you with a safe place to work.</p> <p>Your employer must:</p> <ul style="list-style-type: none"> • select safe equipment • identify and control hazards • establish safety rules and procedures. 	<p><i>Responsibility for Safety</i> (p. 4)</p> <p>1.01</p>
<p>Not all the responsibility for your safety rests with your employer. You must arrive at work in good physical condition, do your job as you were trained to do it, and follow the safety rules and procedures.</p>	1.02
<p>An accident is an unexpected <i>event</i> resulting in injury, illness, or property damage.</p> <p>A hazard is a <i>condition</i> that could cause an injury.</p> <p>For example, a high-pressure steam line is a hazard, but it cannot be eliminated from the plant. But, a shaky ladder is a hazard that can be eliminated.</p> <p>Accidents are often caused by conditions that no one has yet recognized as hazardous.</p>	1.03

Activity	Text Paragraph
<ul style="list-style-type: none"> • Part of your responsibility for safety is to report any conditions that may cause accidents. 	
<p>Safety experts agree that a hazardous condition usually causes many close calls before it causes a major accident.</p>	1.04
<ul style="list-style-type: none"> • One person may slip on an oily floor, hit his head on the cement, and have permanent vision problems. • The next person slips in the same place and only gets his pants dirty. 	
	<p><i>Your Company's Safety Program</i> (p. 4)</p>
<p>The safety program includes training, methods of communicating problems and changes of policy to all employees, and the committees or management structure that create the company's safety policies.</p>	1.05
<p>Safety committees.</p>	1.06
<p>Not all companies or plants have safety committees. Safety committees can include representatives from most or all departments and shifts, both supervisors and nonsupervisors. The safety committee may receive all suggestions and reports of unsafe conditions.</p>	
<p>New employee orientation.</p>	1.07

Activity	Text Paragraph
<p>An orientation ensures that anyone newly hired at a facility has all the basic safety information needed. The orientation should include:</p> <ul style="list-style-type: none"> • a tour of the work area • location of medical care • method of reporting injuries • location of fire and emergency equipment • required personal protective equipment • incentive and awards programs • housekeeping requirements • required inspections • plant safety rules. 	
<p>Bulletin boards/communication.</p>	1.08
<p>Bulletin boards, newsletters, or some other form of communications are used to answer questions and inform all employees of changes in rules or conditions.</p>	
<p>There are also some forms of information that the employer is required to have posted at all times:</p>	
<ul style="list-style-type: none"> • required federal and state safety posters • other posters • how to obtain emergency care 	

Activity	Text Paragraph
<ul style="list-style-type: none"> • plant safety rules • plant emergency plan and map • list and location of all chemicals used in every department. 	
<p>Training.</p>	1.09
<p>Basic training for all employees includes:</p>	
<ul style="list-style-type: none"> • use of powered industrial equipment • safe handling of chemicals • proper lifting and carrying techniques • first aid and CPR • evacuation procedures for fire and weather emergencies • how to read the information on signs and tags. 	
<p>Each employee must be given a complete description of his or her specific job.</p>	1.10
<ul style="list-style-type: none"> • This description must include all the hazards of the job. • The employee must be given specific training for that job including all the work procedures. 	
<p>The specific training for the job may include information on any or all of the following:</p>	

Activity	Text Paragraph
<ul style="list-style-type: none"> • forklift and crane operation • machine safety • lockout/tagout procedures • radiation, fumes, gas • use of respirators and other protective equipment • cutting and welding procedures • MSDSs. 	1.11
<p>Incentive programs.</p>	
<p>Some companies have incentive programs with awards for a high number of hours without any injuries.</p>	
<p>The purpose of an incentive program is to <i>improve</i> safety.</p>	
<ul style="list-style-type: none"> • Never fail to report an injury or unsafe condition to win an award. 	
<p>In industrial safety, unsafe acts always mean undesirable (as well as unsafe) behavior.</p>	1.12
<p>An unsafe act does not <i>necessarily</i> result in an injury or an accident.</p>	

***Unsafe Acts
and Unsafe
Conditions***
(p. 6)

Activity

Text Paragraph

Safety experts estimate that there are about **300** unsafe acts committed for each one that results in an injury.

This does *not* mean that you are safe the first 299 times that you do not wear goggles when you cut metal.

- The probability that you will be hurt is the same every time.
- If you let yourself get into the habit of doing something unsafe, it is very hard to break the habit again.

Figure 1-1 is called the accident pyramid.

1.13

SHOW: Fig. 1-1

The accident pyramid illustrates the fact that serious, disabling, or fatal injuries usually occur only after a long series of close calls, near misses, and minor accidents.

Action to prevent serious accidents must be taken at the bottom of the pyramid.

It is your employer's responsibility to design work procedures that make your job as safe as possible, to train you in these procedures, and to encourage you to have safe work habits.

1.14

It is your responsibility to perform your job *as you were trained to do it*.

It is also your employer's responsibility to give you the knowledge you need to recognize unsafe conditions and unsafe acts.

Activity

Text Paragraph

Unsafe acts include:

- not wearing required protective equipment
- distracting other people (teasing, horseplay)
- operating any equipment you have not been trained in
- operating equipment outside its range
- failing to secure or store objects properly
- not warning or signalling other people or not giving them information they need
- trying to service moving machinery
- carrying, lifting, or loading unsafely
- disabling safety devices
- using unsafe equipment
- failing to call attention to the unsafe acts of others.

Taking unsafe shortcuts or not reporting unsafe conditions is gambling that this unsafe act will cost you:

- nothing
- only minor inconvenience or injury
- the loss of part of your body
- the loss of the use of your legs or eyes

Activity	Text Paragraph
<ul style="list-style-type: none"> • the loss or your life. 	
<p>Unsafe conditions.</p>	1.15
<p>Most of your safety responsibilities can be summed up as: do not commit unsafe acts and be alert for unsafe conditions.</p>	
<p>SHOW: Fig. 1-2</p>	
<p>Unsafe conditions include:</p>	1.16
<ul style="list-style-type: none"> • unsafe machinery or defective tools • dangerous work areas, surfaces, or elevations • inadequate ventilation • inadequate lighting • ineffective warning and alarm systems • unsafe clothing or ineffective protective devices • slippery walking surfaces. 	
<p>The workplace must be inspected regularly and often for unsafe conditions.</p>	1.17
<p>Formal inspections are usually done by supervisors, but unsafe conditions checked during an inspection are also conditions you should report if they occur between inspections.</p>	

Activity

Text Paragraph

SHOW: Fig. 1-3

Notice all the checks of fire extinguishers.

Inspections must ensure that all emergency equipment is **ready to use**.

Inspections also check whether employees are wearing their required safety equipment.

Whenever you see an unsafe condition, do something about it.

- If it is just a box sticking out in an aisle, move it.
- Report spills, defective wiring, slippery floors.
- Do not work with defective tools.

NOTE:

If you believe that a condition presents an *immediate* danger to you, *by law* you do not need to perform that task until the situation is corrected.

1.18

***Recognizing
Hazards***
(p. 10)

Activity	Text Paragraph
<div style="border: 1px solid black; padding: 5px;"> <p>ASK: What is the definition of a <i>hazard</i>?</p> <p>Answer: A hazard is a condition that could cause an injury.</p> </div>	1.19
<div style="border: 1px solid black; padding: 5px;"> <p>SHOW: Fig. 1-4</p> </div>	
<p>The four main kinds of industrial hazards are:</p> <p>Electrical—Electrical hazards are everywhere in the plant.</p> <p>Chemical—Explosive, flammable, toxic, and corrosive chemicals.</p> <p>Mechanical—Moving machinery, gears, and work-in progress.</p> <p>Environmental—Heat, cold, noise, radiation, and fire.</p>	1.20-1.23
	Health Hazards (p. 10)
<p>Safety includes staying healthy as well as avoiding injury. Some hazardous conditions cause illnesses that do not develop for years.</p>	1.24
<p>Toxic substances.</p> <p>A substance is toxic if its presence in your body will make you sick.</p> <ul style="list-style-type: none"> • All poisons are toxic substances. 	1.25

Activity	Text Paragraph
<ul style="list-style-type: none"> • Substances like lead and asbestos are not chemically poisonous, but cause illness because they interfere with the way your body works. <p>There are three easy ways for substances to get inside the body:</p> <ul style="list-style-type: none"> • by breathing (inhaling) • eating (ingesting) • being absorbed through the skin. 	
<p>SHOW: Fig. 1-5</p>	
<p>EXTRA INFORMATION: The most common human diseases are reactions to the substances that enter the body through these three paths: colds (<i>breathing</i>), rashes (<i>skin</i>), and vomiting or diarrhea (<i>eating</i>).</p>	
<p>Toxic substances can cause either:</p> <ul style="list-style-type: none"> • an acute (sudden) reaction, like poison gas • a chronic (lingering) condition, like smoker's cough • an acute disease many years later, like cancer or black lung. 	1.26
<p>Noise.</p>	1.27
<p>Hearing loss is caused by noise.</p>	

Activity	Text Paragraph
<ul style="list-style-type: none"> • It may take years before hearing is lost due to excessive noise. • The government has limited the amount of noise to which workers can be exposed. • Hearing loss is discussed in detail in Lesson 11. 	1.28
<p>Radiation.</p> <p>Most work places do not have radiation.</p> <p>If radiation is used in your job, remember:</p> <ul style="list-style-type: none"> • you will not feel or sense anything if you are exposed to radiation • you will need a radiation detection instrument to gather a reading of the exposure. <p>Follow the manufacturer's instructions exactly when handling radiation sources.</p>	1.29
<p>Engineering controls are changes made to the work area, machinery, or tools to minimize employees' exposure to hazards.</p> <p>Examples of engineering controls:</p> <ul style="list-style-type: none"> • noise barriers • housing of radiation sources • ventilation systems that trap and evacuate gas and fumes from the work area. 	

Activity	Text Paragraph
<p>If engineering controls cannot be used to eliminate a hazard, each person must be protected by wearing personal protective equipment:</p> <ul style="list-style-type: none"> • goggles • respirators • protective suits. 	
<p>You must be trained in the use of this protective equipment including:</p> <ul style="list-style-type: none"> • how to wear it • when to wear it • how to take care of it. 	1.30
<p>Repetitive motion injuries.</p>	1.31
<p>One kind of hazards that we have not yet mentioned is injury caused by motions of the body itself.</p> <ul style="list-style-type: none"> • Back injuries from improper lifting are common and familiar to everyone. 	
<p>SHOW: Fig. 1-6</p>	1.32
<p>Even using the proper techniques illustrated in Fig. 1-6, many repetitions of lifting can cause injury. This is an example of repetitive motion injury.</p>	

Activity	Text Paragraph
<p>Most repetitive motion injuries are to the hands and arms. Many tools are being redesigned to require less gripping and twisting.</p>	<p><i>Types of Accidents</i> (p. 13)</p>
<p>In order to better prevent an accident, you need to know what actions can cause harm.</p>	<p>1.33-1.35</p>
<p>The following identifies the various accident types:</p>	
<p>Caught between—being pinched or squeezed</p>	
<p>Caught in—an enclosure or grating</p>	
<p>Caught on—a moving object, like a conveyor belt</p>	
<p>Fall from above—from a ladder or platform</p>	
<p>Struck by—a dropped tool, a moving forklift</p>	
<p>Struck against—a wall or machine</p>	
<p>Contacted by—chemical spill, hot wires</p>	
<p>Exposed to—toxic chemicals, fumes</p>	
<p>Strain or overexertion—from lifting or pulling.</p>	
<p>Accident investigation.</p>	<p><i>Accident Investigation</i> (p. 14)</p> <p>1.36</p>

Activity	Text Paragraph
<p>The purpose of an accident investigation is to keep the same accident from happening again.</p>	
<p>The investigation is usually conducted by the first-line supervisor of the department, who is looking for facts, not finding fault.</p>	
<p>Most accidents have multiple causes.</p>	
<ul style="list-style-type: none"> • The investigation should find <i>all</i> conditions that contributed to the accident. • Answer all questions as fully and truthfully as you can. 	
<p>Figure 1-7 shows a typical accident report form.</p>	1.37
<p>SHOW: Fig. 1-7</p>	
<p>After the investigation is complete, an attempt will be made to change the conditions that caused the accident:</p>	1.38
<ul style="list-style-type: none"> • machinery may be moved • tools may be improved • more training may be required. 	
	<p><i>Handling Emergencies</i> (p. 14)</p>

Activity	Text Paragraph
<p>Emergencies include fires, medical emergencies, storms, and chemical spills.</p>	1.39
<p>In case of a fire, your facility should:</p> <ul style="list-style-type: none"> • have adequate fire extinguishers • train employees in fire prevention basics • have a sprinkler system in place • have emergency maps noting fire exits, fire-fighting equipment, and gas shutoffs. 	1.40
<p>Do not become involved in a fire that endangers you.</p>	
<p>Note where the maps, exits, equipment, and shutoffs are located.</p>	
<p>Repeating emergency drills until people automatically do the right thing prevents panic and wild actions and has saved many lives.</p>	1.41
<p>If you and your fellow employees are trained in first aid and CPR (<i>cardiopulmonary resuscitation</i>):</p>	1.42
<ul style="list-style-type: none"> • you may some day save someone's life when the medical department cannot get there in time. 	
<p>If your facility is in an earthquake, tornado, or hurricane area, you will have evacuation drills and special storage precautions.</p>	1.43

Activity	Text Paragraph
<p>“Spill training” includes safe clean-up and legal disposal.</p> <ul style="list-style-type: none"> • You can cause enormous problems by pouring something down a drain. <p>Do not attempt to clean up a chemical spill unless you have been trained to do it.</p>	<p>1.44</p> <p><i>Safety Off the Job</i> (p. 16)</p>
<p>Unless you have an unusually dangerous job, your chances of being injured or killed triple as soon as you <i>leave</i> the plant.</p> <p>The most dangerous place you can be is in your car. The second most dangerous place is your home.</p>	<p>1.45</p>
<p>Follow these simple rules to save lives and prevent injuries in automobiles.</p> <ul style="list-style-type: none"> • Wear your seat belt. • Stay calm and attentive while driving. • Make sure you are fine to handle the car - do not take medicine, alcohol, or other drugs prior to driving. • Do not cut in and out of traffic. <p>Be alert at home for common hazards, like:</p>	<p>1.46</p>

Activity	Text Paragraph
<ul style="list-style-type: none">• falling• fire.	
<p>You should be aware of safety wherever you are-work, home, or car.</p>	1.47
<p>Safety is not a sometimes thing. It is something you practice every day in everything you do.</p>	1.48