Sample Lesson Plan

Construction Training Program (10-hour)

Overview

The purpose of this lesson is to provide workers with information that will enable them to recognize and avoid potential health hazards in your work environment.

Step 1: Planning the Lesson

• Instructional Materials.
  1. PowerPoint presentation.
  2. Instructor notes.
  3. Other materials.

• Instructional Objectives.
  1. Complete the required topics for the OSHA 10-hour course.
  2. Complete and discuss the following topics
  3. Present Health Hazards in Construction to [number] participants.
  4. Incorporate active participation in each lesson.
  5. Provide a quiz or short evaluation at the end of the course.
  6. Ensure feedback from participants at various points in the training.

• Guest Speakers/Presenters and Topics/Responsibilities.

Step 2: Presenting the Lesson

• Lesson Introduction.

  Introductory remarks or transition from previous lesson.

• Learning Objectives/Outcomes.

  1. After completing this module, students will be able to:
     a. List the four types of health hazards on construction sites.
     b. Distinguish between acute and chronic hazard exposure and illnesses.
     c. Describe the characteristics and effects of various chemical hazards.
     d. Describe the characteristics and effects of various physical hazards.
     e. Describe the characteristics and effects of various biological hazards.
     f. Describe the characteristics and effects of various ergonomic hazards.
2. What are the four types of health hazards on construction sites?

   **Chemical Hazard** - Can be present in dust, fumes, liquids, solids, mists, vapors, or gases of products used at a site or released during a construction job. Asbestos, silica, lead, carbon monoxide, spray paint, solvents, and welding fumes are examples of such hazards. They can be absorbed by touch, inhaled, or ingested.

   **Physical Hazard** - The most commonly thought of hazards for construction. This hazard includes radiation, extreme temperatures, noise, and vibration.

   **Biological Hazards** - Microorganisms, such as bacteria, fungus, mold, or viruses that can cause illness and may be present in soil, water, animal waste, insects, and structures.

   **Ergonomic Hazard** - May cause the most injuries in the construction field. These hazards can lead to injuries to the joints or muscles by way of heavy, frequent lifting, repetitive tasks, irregular gripping and postures, intense work, and using tools improperly.

3. Distinguish between acute and chronic hazard exposure and illnesses.

   **Acute** - Short term period between exposure and the onset of symptoms. Usually a one time or few times event that is also usually unexpected. Determination of exposure is almost always after the fact. An example of this type of exposure is a worker getting a headache and collapsing or dying from high levels of carbon monoxide.

   **Chronic** - Long time period between exposure to an agent and the onset of symptoms. Usually ongoing or continuing for at least three months. Determining length of exposure, which factors into overall exposure, is more complex because it depends on memory or other records and their accuracy. An example of this type of exposure is a worker getting lung cancer from exposure to asbestos.

4. Describe the characteristics and effects of various chemical hazards

   a. Chemicals at work sites can cause headaches, eye irritation, dizziness, faintness, drowsiness, and affect judgment and coordination. They can also lead to severe health disorders, such as poisoning, asphyxiation, and cancer.

5. Describe the characteristics and effects of various physical hazards

   **Noise** - Prolonged exposure to noise levels above 85 decibels can cause noise-induced temporary and permanent hearing loss. High noise levels can be sporadic in construction. Damage to hearing is cumulative and PELs are based on 8-hour averages. Workers not using or operating equipment are often exposed to excessive noise as much as the operators.

   **Vibration** - Whole-body vibration occurs from operating large mobile equipment, such as drillers, air hammers, pile drivers, earth-moving equipment, and other large machinery. Hand-arm vibration can result from using hand-held power tools, such as pneumatic drills and hammers. Hand-arm vibration may cause carpal tunnel syndrome, a disease that affects the fingers and hands. In the long term, permanent damages to the nerves result in a loss of the sense of touch and dexterity.
Temperature Extremes - Changes in body temperature due to extreme work conditions can lead to stress or illness from heat or cold. If left untreated, stress from heat or cold can lead to life-threatening situations, such as dehydration, sudden collapse, unconsciousness, irregular breathing, or hypothermia.

Radiation Exposure - Prolonged exposure to ionizing radiation from X-rays and gamma rays from different construction equipment can lead to an increased risk of developing cancer and genetic diseases. Exposure to non-ionizing radiation, such as ultraviolet light, infrared radiation, radio waves, and lasers, can result in skin cancer, eye damage, premature skin aging, and burns.

6. Describe the characteristics and effects of various biological hazards

Bird Droppings - Inhaling dust or water droplets containing contaminated bird droppings can lead to several diseases, including Psittacosis, which is a flu-like illness that can lead to pneumonia.

Discarded Needles - Needlestick injuries from discarded needles used for recreational drug use can lead to exposure to blood borne viruses, including Hepatitis B and C and HIV.

Rats - Exposure to rat urine or water contaminated with it can cause Leptospirosis or Weils disease if it enters a cut or gets into the eyes, nose, or mouth.

Sewage Contamination - Contamination of the site with sewage or animal feces can lead to infection with E. coli or Hepatitis A.

Stagnant Water - Water systems that are not drained or disinfected can contain stagnant water which may have bacteria. If workers inhale fine droplets contaminated with the bacteria they can contract Legionnaires disease.

7. Describe the characteristics and effects of various ergonomic hazards

Ergonomic hazards are the most frequently occurring health hazards in construction and the cause of most injuries. Common examples of ergonomic risk factors are found in jobs that require:

- Repetitive, forceful, or prolonged exertions of the hands
- Frequent or heavy lifting, pushing, pulling, or carrying of heavy objects
- Prolonged awkward postures
- Exposure to vibration and cold which may add risk to these work conditions
Sample Lesson Plan

Construction Industry Training Program (10-hour)

Topic: Health Hazards In Construction

Purpose

The purpose of this lesson is to provide workers with information that will enable them to recognize and avoid potential health hazards in your work environment.

Objectives

Upon completion of this topic lesson, students will:

- List the four types of health hazards on construction sites.
- Distinguish between acute and chronic hazard exposure and illnesses.
- Describe the characteristics and effects of various chemical hazards.
- Describe the characteristics and effects of various physical hazards.
- Describe the characteristics and effects of various biological hazards.
- Describe the characteristics and effects of various ergonomic hazards

Instructor’s Activities

- Complete the required topics for the OSHA 10-hour course.
- Complete and discuss the following topics
- Present *Health Hazards in Construction* to [number] participants.
- Incorporate active participation in each lesson.
- Provide a quiz or short evaluation at the end of the course.
- Ensure feedback from participants at various points in the training.