

# Industrial Safety and Health

## Course 109.1: Industrial Safety and Health

Explains government involvement in ensuring a safe workplace. Discusses safety in various situations. Discusses personal protective equipment and fire safety. Includes expanded coverage of many health hazards. Covers ergonomics, environmental responsibility and importance of maintaining a safe work environment.

TPC Training is accredited by IACET to offer **1.2 CEU** for this program.



### Lesson 1: Introduction to Safety and Health

#### Topics

Responsibility for Safety; Unsafe Acts and Conditions; Health Hazards; Accidents; Handling Emergencies; Safety Off the Job

#### Objectives

- 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 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.

### Lesson 2: Government Safety and Health Regulations

#### Topics

The Rights of Employees and Employers; OSHA Standards and Inspections; Taking Immediate Action; Records and Reports; OSHA's Hazard Communication Standard; MSDSs; NIOSH; EPA; OSHA

#### Objectives

- State the purpose of the OSHA Act.
- List the specific rights of employees under the Act.
- Explain what to do in a dangerous work situation.
- List things that you can do to help keep your workplace in compliance with OSHA standards.
- Explain the function of each of the following agencies: NIOSH, EPA.
- List the four main objectives of OSHA's Hazard Communication Standard.
- Tell what information can be found on an MSDS.

### Lesson 3: Personal Protective Equipment

#### Topics

Work Clothes; Special Body Protection; Gloves; Head, Eye, Face, Hearing, and Foot Protection; Safety Harnesses and Lifelines; Respiratory Protection

#### Objectives

- List employer and employee responsibilities related to PPE.
- Tell why work clothing can be dangerous if it fits poorly.
- Explain the importance of proper glove selection when handling chemicals.
- Describe the proper fit of a hard hat.
- Compare and contrast everyday eyeglasses, industrial safety glasses, and safety goggles.
- Identify noise levels that require hearing protection.
- Name the two basic kinds of respirators.

### Lesson 4: Chemical Safety

#### Topics

Physical Hazards; Health Hazards; Exposure Routes; Control of Chemical Hazards; Spill Response; First Aid

#### Objectives

- Define chemical hazard, physical hazard, and health hazard.
- Name three kinds of physical hazards.
- Name and describe at least four kinds of health hazards.
- Identify common symptoms of chemical exposure.
- List three health hazard exposure routes.
- Name three ways of controlling chemical hazards and exposures.
- Explain first aid procedures to follow when you are exposed to a hazardous chemical.

### Lesson 5: Tool Safety

#### Topics

Screwdrivers; Wrenches; Pliers; Hammers and Mallets; Chisels and Punches; Knives; Electric Tools; Pneumatic Tools; Gasoline-Powered Tools

#### Objectives

- Name at least three causes of hand tool accidents.
- List one safety rule to follow when using each of the following: screwdriver, wrench, pliers, hammer, chisel, knife.
- Describe proper and improper dress for working with rotating power tools.
- Explain the importance of grounding electric tools.
- Name two hazards involved in pneumatic tool use and explain how to guard against them.
- Explain proper handling and storage of gasoline.

### Lesson 6: Material Handling

#### Topics

Avoiding Injuries; Rules for Lifting; Teamwork; Hand Tools and Accessories; Power-Operated Handtrucks; Powered Industrial Trucks; Dock Safety; Conveyors; Hoists and Cranes; Receiving and Storing Materials; Corrosive and Flammable Liquids

#### Objectives

- List simple safety procedures and precautions related to material handling.
- Describe how to lift, carry, and put down a load.
- Explain safety principles for working with or around industrial trucks.
- Discuss safety rules for working with or around conveyors, slings, and hoists.
- Describe how and where to store materials.

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## Lesson 7: Working Safely with Machinery

### Topics

Point-of-Operation Guards; Fixed Guards; Special Guards; Power Transmission Guards; Other Safety Devices; OSHA Lockout/Tagout Procedures

### Objectives

- Identify a machine's point of operation and other pinch points, and explain why they are dangerous.
- Identify different kinds of mechanical safeguards, and explain why they are necessary.
- Define zero energy state.
- Describe the lockout/tagout procedures established by the OSHA energy control standard.

## Lesson 8: Working Safely with Electricity

### Topics

The Electric Circuit; Injuries from Electricity; First Aid for Shock Victims; National Electrical Code; Static Electricity

### Objectives

- Define the following terms: electric current, circuit, potential difference, ampere, watt, ohm, and volt.
- State Ohm's Law.
- Explain the function of each wire in a simple electric circuit and tell the color(s) used to identify each.
- List the three factors that affect the severity of an electric shock.
- Describe the effects of electric current on the human body.
- Tell the three most important points about first aid for shock victims.
- Explain how static electricity is generated, why its accumulation can be dangerous, and how it can be avoided.

## Lesson 9: Electrical Equipment Safety

### Topics

Grounding; Ground Faults; Fuses and Circuit Breakers; Portable Power Tools; Hazardous Electrical Locations; Basic Rules of Electrical Safety

### Objectives

- Explain the importance of proper grounding.
- Define the term "ground fault" and explain how ground faults occur.
- Explain the purpose and operation of the following devices: GFCI, fuse, circuit breaker.
- Identify typical hazardous electrical locations.
- Explain the purpose of explosion-proof and intrinsically safe electrical equipment.
- List at least two electrical safety rules in each of the following areas: clothing, equipment, water, lockout/tagout.

## Lesson 10: Fire Safety

### Topics

Causes of Fires; Classes of Fires; Fire and Explosion Hazards; Preventing Fires and Explosions; Fire-Fighting Substances; Fire Hoses; Portable Fire Extinguishers; Protecting Yourself

### Objectives

- Name and give the definition of the four classes of fires.
- Define the terms flash point and spontaneous combustion.
- Name the fire-fighting agents, and explain how they work and when to use them.
- Explain the use of at least two different types of portable fire extinguishers.
- List three ways of preventing fires.
- Explain fire hose and fire extinguisher maintenance.

## Lesson 11: Protecting Your Health

### Topics

Ergonomics; Noise; Radiation; Asbestos, Dusts, and Lung Disease; Fetal Protection; The Environment

### Objectives

- Define ergonomics and tell how poor ergonomic conditions affect the body.
- List three actions that you can take to protect your hearing.
- Tell the cause of each of the following lung diseases: asbestosis, lung cancer, brown lung, black lung, silicosis.
- Contrast ionizing and nonionizing radiation.
- Compare and contrast personal and background sampling.
- Explain the importance of protecting women from exposure to certain chemicals.
- State the purpose of the EPA.

## Lesson 12: A Safe Work Environment

### Topics

Industrial Housekeeping; Walking and Working Surfaces; Safety in Traffic; Working at Elevations; Ladders; Scaffolds; Industrial Lighting; Safety in Extreme Heat; Working in Confined Spaces; Welding and Cutting Safety

### Objectives

- Explain the importance of industrial housekeeping.
- List safety measures related to walkways, stairs, and floor openings.
- Tell how to protect yourself and others when working in traffic paths.
- Describe at least three hazards involved with each of the following and tell how to safeguard against them: working at elevations and working in confined spaces.
- Calculate the proper placement of a straight ladder based on its working length.
- Name two kinds of scaffolds and give at least one safety rule associated with each.
- List symptoms of heatstroke, heat cramps, and heat exhaustion.
- Name two major safeguards necessary when welding.
- Explain how to handle and store cylinders safely.