



Industrial Hygiene

OSHA 10-Hour General Industry Course

Required Online Topic Time: 30m



Learning Objectives



Duration

30 minutes

Terminal Learning Objective

Given current OSHA and industry information regarding general industry worksite illnesses, injuries, and/or fatalities, the student will be able to recognize hazards associated with industrial hygiene.

Enabling Learning Objectives

- Identify strategies to control chemical hazards.
- Identify strategies to control biological hazards.
- Identify strategies to control physical hazards.
- Identify strategies to control ergonomic hazards.

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Introduction



In this topic, we will cover the science of protecting the health and safety of workers and how to identify and reduce the working conditions that can cause illness and injuries.



Introduction continued...



Types of Hazards

Chemical

Chemical hazards include solids, liquids, gases and vapors, and aerosols.



Biological

Biological hazards include insects, animals, soil, plants, water, and blood.



Physical

Physical hazards include noise, temperature extremes, and radiation.



Ergonomic

Ergonomic hazards include lifting, holding, pushing, walking, and reaching.



Chemical Hazards



Chemicals can enter your body through:

- *Inhalation*
- *Breathing in dusts, mists, fumes, or gases*
- *Accidentally swallowing through eating or drinking*
- *Skin and eyes*
- *Injection*

Examples of chemical exposure symptoms:

- *Eye, nose, throat, and skin irritation*
- *Flu-like symptoms*
- *Difficulty breathing*
- *Fatigue*
- *Loss of coordination, etc.*

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Chemical Hazards



Knowledge Key

Be sure to look for potential chemical hazards through visual signs such as gases, fumes, mists, or even liquids. Also, remember that at times these hazards may not be clearly visible. So if any of the common symptoms occur during or after work, be sure to bring this up with your supervisor.

Chemical Controls



If you can **eliminate chemical hazards** from the work environment, that is the safest solution.

If that can't be done, **engineering controls** can be used to protect you from exposure.

Administrative controls, such as training, inspection, housekeeping and so on can be used to limit exposure.

Where engineering and administrative controls are not possible or do not protect you completely, you should **wear PPE** to protect yourself from chemical exposure.

Chemical Controls



- Number of controls in place may also depend on how much of a chemical you can be exposed to at once or over a period of time before it becomes toxic to your system.
- Critical effects can be considered systemic, where your entire body is affected beyond just the site where you are exposed.

Chemical Controls



Knowledge Key

Administrative controls, such as training, inspection, housekeeping and so on can be used to limit exposure. Where engineering and administrative controls are not possible or do not protect you completely, you should wear PPE to protect yourself from chemical exposure.

Biological Hazards & Controls



Biological hazards include any harmful contact with water, soil, animals, plants, pathogens, and human blood or bodily fluids.

The effects can range from mild annoyances, such as allergic reactions, to life-threatening events.

You can protect yourself from exposure by following best practices for each hazard source.



Biological Hazards & Controls



Plants in the yard could be hiding poison ivy or other harmful plants. Watch out for **any bugs** that could be hanging around trees. Steer clear from **ant hills** before you get bitten!



Biological Hazards & Controls



Knowledge Key

Biological hazard sources include humans, plants, pathogens, and animals and insects. You can protect yourself from exposure by following best practices for each hazard source.

Physical Hazards & Controls



There are **four different types** of physical hazards you may be exposed to while working:

- *Noise Exposure*
- *Extreme Temperature*
- *Impact or Vibration*
- *Radiation*

Protect yourself from these hazards by following best practices to control exposure to noise and vibration hazards and being aware of the effects of the temperature, whether hot or cold.



Physical Hazards & Controls



Frostbite

The most common health effects are **frostbite** or even worse, **hypothermia**. To prevent this from happening, your **workplace should have heaters available or shielding** from the cold air, warm spaces to take breaks in, or even a policy to have a buddy system. **Protect yourself by layering** clothing, wearing gloves and hats, and insulated and waterproof boots.

Extreme Heat

If you are **sweating at work** for most of your shift, start to feel dizzy or sick to your stomach, or even break out into a rash you could be experiencing **prolonged heat exposure**. Before you start to experience the effects of being exposed to the heat or even worse begin feeling the signs of heat stroke, be sure to **drink lots of water**, take frequent breaks, and take advantage of your work place air conditioning, reflective shields, cooling fans, and other engineered controls in place.

Physical Hazards & Controls



- **Noise exposure** is produced by short-term or long-term **exposure to loud noises** from tools, equipment, and heavy machinery. OSHA and NIOSH set an exposure limit below 85 decibels. You cannot be exposed to this level of noise for longer than an 8-hour period.
- **Prolonged exposure** WILL lead to **hearing loss** and other **health effects**. Make sure you are wearing the proper type of ear plugs, muffs, or hearing bands, go to quiet areas during your breaks, and if the noise is above 85 dba make sure to limit the length of time you are working in this noisy environment.



Physical Hazards & Controls



Knowledge Key

There are four different types of physical hazards you may be exposed to while working: noise, extreme temperature, impact or vibration, and radiation. Protect yourself from these hazards by following best practices to control exposure to noise and vibration hazards and being aware of the effects of the temperature, whether hot or cold.

Ergonomic Hazards and Controls



Ergonomics is the study of physical tasks such as lifting, holding, pushing, walking, reaching, and sitting.

When these tasks are repeated excessively, performed at high speeds or with poorly designed tools, ergonomic hazards can arise that cause stress to your body and affect your ability to perform your job.

An important injury category related to poor ergonomics is musculoskeletal disorders.

- injury of the muscles, tendons, ligaments, nerves, joints, cartilage, bones, or blood vessels in the arms, legs, head, neck, or back that is caused or aggravated by work tasks such as lifting, pushing, and pulling.



Ergonomic Hazards and Controls



Working in awkward or same posture

Working in awkward postures or being in the same posture for long periods of time. Using positions that place stress on the body, such as prolonged or repetitive reaching above shoulder height, kneeling, squatting, leaning over a counter, using a knife with wrists bent, or twisting the torso while lifting.



Localized pressure into the body part

Pressing the body or part of the body (such as the hand) against hard or sharp edges or using the hand as a hammer.



Cold temperatures

A combination of any one of the other risk factors may also increase the potential for MSDs to develop. For example, many of the operations in meatpacking and poultry processing occur with a chilled product or in a cold environment.



Ergonomic Hazard and Controls



Knowledge Key

While ergonomic hazards exist in all work environments, the workspace and the tools you use to perform your job can be designed to lessen the likelihood of you suffering from ergonomic-related injuries. Any incorrect tool usage, awkward prolonged postures, and repetitive movements can lead to musculoskeletal disorders that affect your ability to do your job now or in the future, as well as cause you permanent injury.

Practice Questions



1. Your employer has implemented a weekly housekeeping checklist you must complete to ensure that the release of hazardous dusts in your work environment are minimized. What kind of chemical control is this considered?

- a. Administrative Controls
- b. Engineering Controls
- c. Personal Protective Equipment
- d. Elimination/Substitution

2. A patient has just left the exam room. In order to avoid spreading any biological hazards, which items must be refreshed before the next patient can use the room?

- a. A trash can with a lid
- b. A sharps container
- c. A paper line on exam table

Practice Questions



3. Lorena is a farm hand for the summer. Her supervisor asked her to take the tractor to the back field to start clearing out old crops. What physical hazards should she be aware of? [Select all that apply.](#)

- a. Heat
- b. Vibration
- c. Noise
- d. Radiation

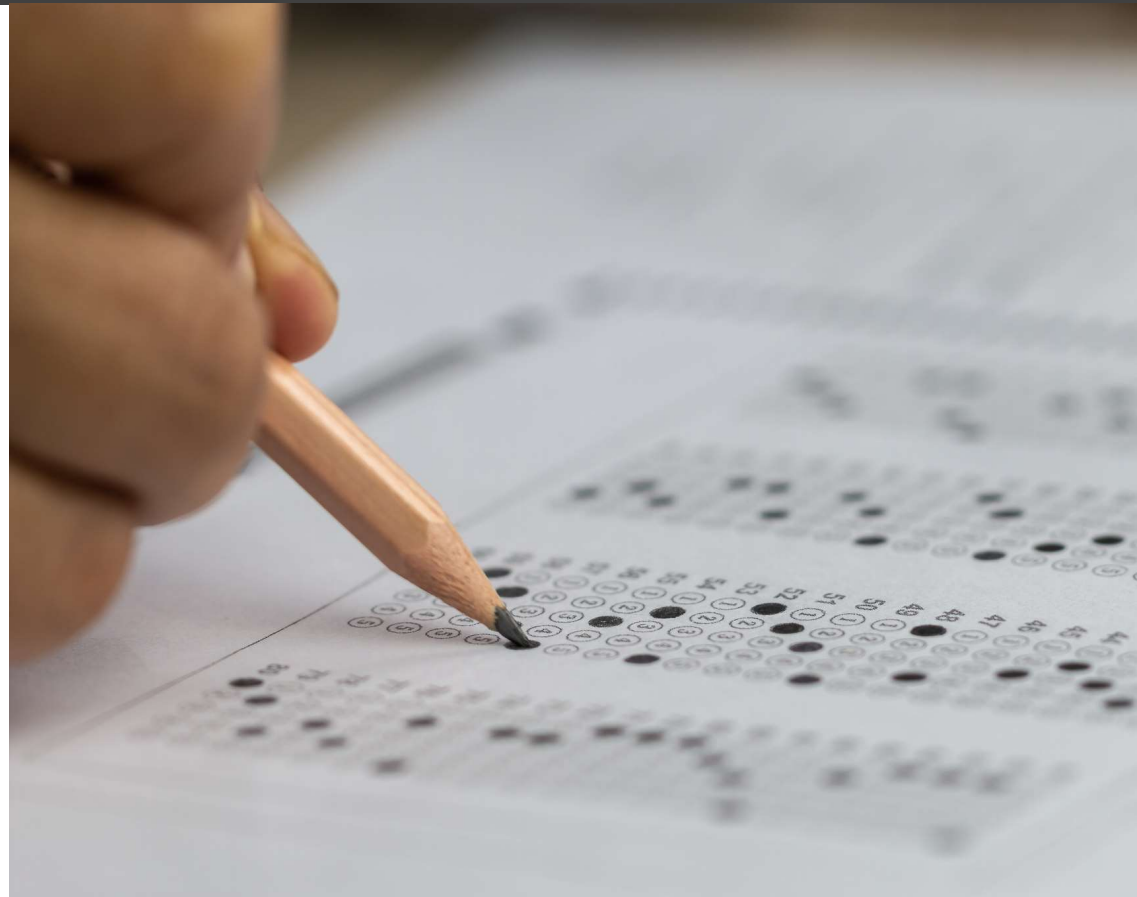
4. You're taking kitchen trash out of the back of a restaurant where you work early in the morning. Which of the following would pose a biological hazard in this situation?

- a. Broken glass on the ground
- b. A puddle
- c. A rat
- d. A car

Practice Questions Answer Key



1. A
2. C
3. A, B, C
4. C



Conclusion



Great Job!

You have now completed the Industrial Hygiene Topic!

