



## GOALS

This safety session will teach trainees that:

- Benzene is a very useful workplace substance—and a very hazardous one.
- Unfortunately, exposure to benzene can be very hazardous to your health, and the substance is also highly flammable.
- By following the Occupational Safety and Health Administration's (OSHA) protective procedures, employees can greatly reduce their risk of dangerous exposure to benzene.

**Applicable Regulations: 29 CFR 1910.1028, .134, .1200, and 1926.1128**



**1. Benzene is a component of products derived from coal and petroleum and is found in gasoline and other fuels.**

- Benzene is used in the manufacture of plastics, detergents, pesticides, and other chemicals.
- In addition, it's an ingredient in adhesives, varnishes, and other products.

**2. Benzene can be hazardous to your health in many ways:**

- One of the biggest risks comes from inhaling benzene, which can cause lung and respiratory problems—in severe cases, people may experience tremors and convulsions and occasionally even die.
- Benzene is a carcinogen that can cause leukemia—long-term exposure may also affect bone marrow production.
- Even limited direct contact can irritate the skin or eyes.
- It can also be absorbed through the skin, causing more long-term problems.

**3. In addition to being a health hazard, benzene is highly flammable.**

- It's a clear, colorless liquid and its vapor can form explosive mixtures.
- Benzene vapors are heavier than air, so they can travel along the ground where open flames or sparks could cause them to ignite.

**4. OSHA has set permissible exposure limits for benzene and it is regulated under the Hazard Communication Standard (HazCom).**

- The 8-hour time-weighted average permissible exposure limit (PEL) for airborne benzene is at 1 part per million of air (1 ppm).
- The 15-minute short-term exposure limit (STEL) is 5 ppm.
- With such low exposure limits, it's not surprising that OSHA requires employers to monitor benzene exposure in the workplace.

**5. Employers must have a written program that explains how they'll reduce employee exposure to or below the PELs.**

- They can do this with engineering and work practice controls and, where necessary, a respiratory protection and fit testing program.
- They must train employees to understand and use signs, labels, and safety data sheets (SDSs) in accordance with HazCom.



- They must ensure that employees use protective clothing and equipment to prevent eye contact and limit skin exposure to liquid benzene.
- In addition, they must provide medical surveillance for employees whose jobs expose them to benzene and remove employees from jobs with benzene exposure when advised to do so by a physician.

## 6. We identify the presence of benzene with air monitoring.

- Employers must share the results of these measurements with their employees and tell them what protective measures are being taken to reduce exposure.
- Areas where airborne benzene is—or is likely to be—above the PELs are also regulated.
- These areas are posted with special signs, with entry permitted only to authorized employees.
- You need permission to enter an area with a sign that says:

**DANGER; BENZENE; MAY CAUSE CANCER; HIGHLY FLAMMABLE LIQUID AND VAPOR; DO NOT SMOKE; WEAR RESPIRATORY PROTECTION IN THIS AREA; AUTHORIZED PERSONNEL ONLY**

- OSHA requires workers to wear respirators in these regulated areas.
- Workers must also wear personal protective equipment (PPE), such as safety goggles, gloves, and clothing, to prevent eye and skin contact with benzene.

## 7. We've focused on benzene's health hazards today, but we don't want to forget that it's also highly flammable.

- Store in tightly closed containers in a cool, well-ventilated area.
- Keep containers closed when not in use.
- Know the location and instructions for the closest fire extinguishers.
- Don't smoke around benzene.
- Use benzene in areas with good ventilation.
- Use nonsparking, properly grounded tools around benzene.
- Make sure benzene containers are effectively grounded and bonded before opening and pouring the substance.



### DISCUSSION POINTS:

How and where is benzene found in our workplace?



### CONCLUSION:

- Benzene is both a serious health risk and highly flammable.
- Following the safety rules is necessary to be safe around it.



### TEST YOUR KNOWLEDGE:

Have your employees take the Working Safely with Benzene quiz to see if they understand this important subject or whether they need to review it again soon.



## WORKING SAFELY WITH BENZENE QUIZ

- 1. Benzene is a component of products derived from coal and petroleum and is found in gasoline and other fuels.**  
a. True    b. False
- 2. One of the biggest risks comes from inhaling benzene, which can cause lung and respiratory problems.**  
a. True    b. False
- 3. Benzene is a carcinogen that can cause leukemia—long-term exposure may also affect bone marrow production.**  
a. True    b. False
- 4. Luckily, it cannot be absorbed through the skin.**  
a. True    b. False
- 5. Employers must have a written program that explains how they'll reduce employee exposure to or below the permissible exposure limits (PELs).**  
a. True    b. False
- 6. Employers must train employees to understand and use signs, labels, and safety data sheets in accordance with the Hazard Communication Standard.**  
a. True    b. False
- 7. Anyone can enter regulated areas where airborne benzene is above the PELs if they wear proper personal protective equipment (PPE).**  
a. True    b. False
- 8. The Occupational Safety and Health Administration (OSHA) requires workers to wear respirators and PPE in these regulated areas.**  
a. True    b. False
- 9. Benzene is highly flammable and its vapors are heavier than air, so they can travel along the ground where open flames or sparks could cause them to ignite.**  
a. True    b. False
- 10. Store in tightly closed containers in a cool, well-ventilated area and know the location and instructions for the closest fire extinguishers.**  
a. True    b. False

When you have completed this quiz, turn it in to your supervisor.

Name: \_\_\_\_\_

Date: \_\_\_\_\_



## ANSWERS TO WORKING SAFELY WITH BENZENE QUIZ

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1. a. True.
2. a. True.
3. a. True.
4. b. False. It can be absorbed through the skin, causing more long-term problems.
5. a. True.
6. a. True.
7. b. False. These areas are posted with special signs, with entry permitted only to authorized employees.
8. a. True.
9. a. True.
10. a. True.