



Training Solutions, Delivered!

Working Safely with Benzene

**Leader's Guide, Fact Sheet
& Quiz**

Item Number: 5298
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This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation.

PREPARING FOR THE MEETING

Here are a few suggestions for using this program:

- a) Review the contents of the Fact Sheet that immediately follows this page to familiarize yourself with the program topic and the training points discussed in the program. The Fact Sheet also includes a list of Program Objectives that details the information that participants should learn from watching the program.
- b) If required by your organization, make an attendance record to be signed by each participant to document the training to be conducted.
- c) Prepare the area and equipment to be used for the training. Make sure the watching environment is comfortable and free from outside distractions. Also, ensure that participants can see and hear the TV screen or computer monitor without obstructions.
- d) Make copies of the Review Quiz included at the end of this Leader's Guide to be completed by participants at the conclusion of the presentation. Be aware that the page containing the answers to the quiz comes before the quiz itself, which is on the final page.

CONDUCTING THE PRESENTATION

- a) Begin the meeting by welcoming the participants. Introduce yourself and give each person an opportunity to become acquainted if there are new people joining the training session.
- b) Introduce the program by its title and explain to participants what they are expected to learn as stated in the Program Objectives of the Fact Sheet.
- c) Play the program without interruption. Upon completion, lead discussions about your organization's specific policies regarding the subject matter. Make sure to note any unique hazards associated with the program's topic that participants may encounter while performing their job duties at your facility.
- d) Hand out copies of the review quiz to all of the participants and make sure each one completes it before concluding the training session.

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FACT SHEET

LENGTH: 9 MINUTES

PROGRAM SYNOPSIS:

Benzene is a highly flammable, colorless liquid that evaporates quickly into the air. Benzene is found in products that are made from coal and petroleum. Lubricants, plastics, rubbers, dyes and other chemicals can be produced with benzene. While it is very useful, Benzene is also a dangerous carcinogen and a flammable liquid. This program discusses the dangers involved with Benzene and the ways to handle it safely.

PROGRAM OBJECTIVES:

After watching the program, the participant should be able to explain the following:

- What is Benzene;
- What are the hazards of Benzene;
- The PPE required when working with the chemical;
- Proper storage and handling;
- What to do if a Benzene exposure occurs.

PROGRAM OUTLINE:

INTRODUCTION

- Benzene is a highly flammable, colorless liquid that evaporates quickly into the air. It is also called Benzol, Coal Naptha, Phene, Phenyl Hydride and Pyrobenzol.
- Benzene is found in products that are made from coal and petroleum. Lubricants, plastics, rubbers, dyes and other chemicals can be produced with benzene.

HAZARDS AND TRAINING

- Let's take a look at some of the hazards of this chemical. Benzene can affect you when breathed in and by passing through your skin. Benzene is a carcinogen, which means it can cause cancer, so handle with extreme caution. It can irritate the eyes and skin with dry and scaling of the skin.
- Benzene can irritate the throat and can cause symptoms of dizziness, lightheadedness, headache and vomiting.
- High exposures may result in convulsion and coma, or sudden death from irregular heartbeat. Prolonged exposure can cause damage to the blood. It is a flammable liquid and fire hazard.
- You will receive additional training to help determine exposures at your worksite, but your company provides routine evaluations including collection of air samples.
- If you believe you are experiencing any work-related health problems, notify your supervisor so a doctor specifically trained in recognizing occupational diseases can make that determination.

EXPOSURE LIMITS

- The information provided here is basic and your company may have more stringent requirements for exposure limits. The legal airborne PEL, or permissible exposure limit, is one part per million averages over an 8-hour period work shift.
- Five parts per million should not be exceeded in any 15-minute period of time.
- The range of accepted odor threshold value is 34 to 119 parts per million. In other words, it takes about 34 to 119 PPM for you to detect this chemical. For this reason, caution should be used in relying on odor alone as a warning or potentially hazardous exposure.
- Benzene is a carcinogen, so there is no safe level of exposure. All contact with the chemical should be reduced to the lowest possible level. The workplace exposure limit of one part per million is for air levels only.

PREVENTING EXPOSURES

- When skin contact also occurs, you may be overexposed even though the air levels have a time weighted average of less than one part per million. But that doesn't mean exposures have to happen. They can be prevented. How?
- Enclose operations and use local exhaust ventilation at the site of chemical release. If proper engineering controls cannot be affected, respirators should be worn.
- A regulated, marked area should be established where benzene is handled, used or stored as required by federal and state regulations. Post hazard and warning information in the work area.
- Wear protective clothing. Wash thoroughly immediately after exposure to benzene before you eat or drink anything and at the end of your work shift.
- Where possible automatically pump liquid benzene from drums or other storage containers to process containers.
- Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to benzene.

- An eye wash fountain should be provided in the immediate work area for emergency use. If there is a possibility of skin exposure, an emergency shower facility should be provided.
- On skin contact with benzene, immediately wash or shower to remove the chemical. At the end of your work shift wash any areas of the body that may have contacted benzene, whether or not known skin contact has occurred.
- Do not eat, smoke or drink where benzene is handled, processed or stored since the chemical can be swallowed. Wash hands carefully before eating or smoking.

MEDICAL TESTING

- Many scientists believe there is no safe level of exposure to a carcinogen. It should also be treated as potentially harmful to reproductive organs.
- Repeated exposure had damaged the blood forming organs, causing a condition, called aplastic anemia. This may cause death.
- Exposure to benzene can cause drying and scaling of the skin.
- Before beginning employment and at regular times after that, a complete blood count should be taken. You should request a copy of any medical testing provided.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- The information provided in this program is only a guide and may not apply to every situation. Workplace controls are better than personal protective equipment. However, for some jobs, personal protective equipment may be appropriate.
- Wear solvent resistant gloves and clothing. All protective clothing should be clean, available each day and put on before work.
- Wear splashproof, chemical goggles and face shield when working with liquids, unless full facepiece respirator protection is worn.
- Improper use of respirators is dangerous. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training fit testing, selection of respiratory equipment and medical exams.
- Where the potential exists for exposure over 0.1 part per million, an approved supplied air respirator or approved self-contained breathing apparatus with full facepiece must be worn.
- Exposure to 3000 parts per million is IDLH or Immediately Dangerous to Life and Health. All respiratory protective equipment must meet federal and state requirements.

STORAGE OF BENZENE

- Proper handling and storage of benzene is also important. Store benzene in tightly closed containers in a cool, well-ventilated area away from heat
- Sources of ignition, such as smoking and open flames, are prohibited where benzene is handled, used or stored.
- Metal containers involving the transfer of benzene should be grounded and bonded. Drums must be equipped with self-closing valves, pressure vacuum bungs and flame arrestors.
- Wherever benzene is used, handled, manufactured or stored, use explosion proof electrical equipment and fittings. Always follow your company's emergency action procedures.

REACTING TO A SPILL OR LEAK

- If benzene is spilled or leaked, take the following steps. Restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources.
- Cover liquid with activated carbon absorbent or other approved material and deposit in sealed containers. Ventilate area of spill or leak after cleanup is complete.
- Keep benzene out of a confined space, such as a sewer, due to the possibility of an explosion.
- Benzene contaminated material may be classified as hazardous waste and may require proper disposal according to EPA and other federal and state regulations.

FIRST AID PROCEDURES

- If benzene comes in contact with the eyes, immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upwards lower eyelids to get water into the eye.
- If there is skin contact, quickly remove contaminated clothing. Immediately wash area with a large amount of soap and water. Seek medical attention.
- If a person has breathed benzene, remove the person from exposure. Begin rescue breathing if breathing has stopped and CPR if heart action has stopped.

CONCLUSION

- You have the responsibility to work and act safely, and part of that responsibility is protecting yourself and others from the potential hazards of this chemical.
- Know, understand and follow your company's policies and procedures related to benzene. If you have any questions, be sure to ask your supervisor.

Working Safely with Benzene

ANSWERS TO THE REVIEW QUIZ

1. a

2. a

3. c

4. a

5. b

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REVIEW QUIZ

Name _____ Date _____

The following questions are provided to determine how well you understand the information presented in this program.

1. Benzene can irritate the throat and can cause symptoms of dizziness, lightheadedness, headache and vomiting.
 - a. True
 - b. False

2. The legal airborne PEL, or permissible exposure limit, is _____ per million averages over an 8-hour period work shift.
 - a. one part
 - b. five parts
 - c. 10 parts

3. Enclose operations and use local exhaust ventilation at the site of chemical release. If proper engineering controls cannot be affected, _____.
 - a. no worker should enter the area
 - b. a HAZMAT team should be called in
 - c. respirators should be worn

4. At the end of your work shift wash any areas of the body that may have contacted benzene, whether or not known skin contact has occurred.
 - a. True
 - b. False

5. Smoking and open flames are permitted where benzene is handled, used or stored.
 - a. True
 - b. False