

1.1 PURPOSE

- 1.1.1 The purpose of this policy is to define work practices, administrative procedures, and engineering controls to protect employees exposed to benzene concentrations above the OSHA action level of 0.5 ppm calculated as an 8-hour time-weighted average (TWA). TERRY R PITT CONSTRUCTION employees are not to work in benzene exposure areas. If employees become aware of any potential exposure to benzene, they are to immediately stop work and notify their supervisor. The supervisor is responsible to inform the office for further information, but in no case allow work to proceed until the exposure to benzene has been abated. This also applies to multi contractor worksites where TERRY R PITT CONSTRUCTION personnel are exposed to benzene due to inadequate procedures.

1.2 CHARACTERISTICS

- 1.2.1 Benzene liquid is highly flammable and water-soluble.
- 1.2.2 Benzene has a flash point of 12 °F (-11 °C), an autoignition temperature of 1,076 °F (580 °C), a lower explosion limit (LEL) of 1.3%, and an upper flammable limit (UFL) of 7.5%.
- 1.2.3 All ignition sources must be controlled when benzene is used, handled, or stored. Benzene vapors are heavier than air; thus, the vapors may travel along the ground and be ignited by open flames or sparks at locations remote from where the benzene is used, handled, or stored.
- 1.2.4 Benzene is a clear, colorless liquid with a sweet odor. The odor of benzene does not provide adequate warning of its hazard.

1.3 EXPOSURE AND HEALTH EFFECTS

- 1.3.1 Benzene can affect your health if you inhale it or if it comes in contact with your skin or eyes. Benzene is also harmful if swallowed. If benzene has been swallowed and worker is conscious, do not induce vomiting. Call for medical assistance immediately.
- 1.3.2 TERRY R PITT CONSTRUCTION employees may be exposed to benzene at petroleum refining sites, near tank gauging and refueling operations, laboratories, when completing pipeline and oil and gas operations including hydraulic fracturing, or during field maintenance. Treat all tanks that have contained gasoline as a potential benzene hazard.
- 1.3.3 The maximum time weighted average exposure limit is one part of benzene vapor per million parts of air (1 ppm) for an 8-hour workday and the maximum short term exposure limit (STEL) is 5 ppm as averaged over a 15-minute sampling period.
- 1.3.4 Overexposure to high concentrations of benzene, well above the levels where its odor is first recognizable, may make a person feel breathless, irritable, euphoric, or giddy. Employees may experience irritation in eyes, nose, and respiratory tract. This can severely damage the lungs, causing fluid accumulation and bleeding, which is often fatal. They may develop a headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.

- 1.3.5 Long-term (chronic) exposure: Repeated or prolonged exposure, even at low concentrations, may result in the inflammation of the nasal airways and throat, as well as various blood disorders, including leukemia, an irreversible, fatal disease. Long-term exposure can also cause harmful effects on bone marrow and can cause a decrease in red blood cells, leading to anemia. Many blood disorders associated with benzene exposure may occur without symptoms.
- 1.3.6 Benzene exposure can lead to excessive bleeding and negatively affect the immune system, increasing the chance for infection. Females that have breathed high levels of benzene for many months may experience irregular menstrual periods and decrease in the size of their ovaries. The Department of Health and Human Services (DHHS) has determined that benzene causes cancer in humans and that long-term exposure to high levels of benzene can cause leukemia.

1.4 ENGINEERING AND WORK PRACTICE CONTROLS

- 1.4.1 This program will aid in developing and implementing engineering and work practice controls. TERRY R PITT CONSTRUCTION will strive to control employee exposure to benzene on a project-to-project basis, by engineering and/or administrative controls before PPE.
- 1.4.2 TERRY R PITT CONSTRUCTION will establish a regulated area wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the PEL, either the 8-hour TWA exposure of 1 ppm or the STEL of 5 ppm for 15 minutes.
- 1.4.3 TERRY R PITT CONSTRUCTION will evaluate worksites to determine if any area meets the criteria as a regulated area. Signs will be posted at entrances to regulated areas.

DANGER – BENZENE -CANCER HAZARD
FLAMMABLE - NO SMOKING
AUTHORIZED PERSONNEL ONLY
RESPIRATOR REQUIRED

- 1.4.4 Employees must wash their hands, face, and head before eating, drinking, or smoking.
- 1.4.5 Smoking is prohibited in areas where benzene is used or stored.
- 1.4.6 Gasoline powered or internal combustion engines should be parked away from the tank area, until such time as combustible vapor test results, taken at the firewall surrounding the tank(s), reveal no presence of flammable or combustible vapors or gases.
- 1.4.7 If diesel powered vacuum trucks are to be used for the removal of product from the tank, bond and ground all discharge hoses.
- 1.4.8 The metallic parts of ventilating equipment and duct work and all suction and discharge hoses will be double bonded to the tank and grounded to avoid sparks.
- 1.4.9 Avoid striking metal tools against other metal affixed to or placed around the tank. The use of non-sparking tools should be used when practical.

- 1.4.10 Benzene must be stored in tightly closed containers in a cool, well-ventilated area. Benzene vapor may form explosive mixtures in air. All sources of ignition must be controlled. Use non-sparking tools when opening or closing benzene containers. Fire extinguishers must be readily available.
- 1.4.11 Entry into a tank is not allowed if the oxygen content is below 19.5% or higher than 23.5%. Entry into a tank is prohibited without a valid *Confined Space Entry Permit* and hole watch.
- 1.4.12 A tank is considered *Benzene Hazard Free* only after being cleaned and tested and tests reveal the atmosphere in the tank to contain concentrations of benzene to be equal or less than 0.1 ppm.
- 1.4.13 Safe work practices are instituted when job tasks consist of or involve product line removal, blinding, blanking, draining, cleaning, steaming, purging, high pressure washing, or neutralizing. Safe work procedures such as lockout/tagout, hot work, or confined space entry are implemented to further control exposure potentials.

1.5 PERSONAL PROTECTIVE EQUIPMENT

- 1.5.1 All personal protective equipment is supplied to the employee at no cost and conforms to standards as outlined in 29 CFR 1926 Subpart E.
- 1.5.2 PPE will be selected on the basis of its ability to prevent absorption, inhalation, and ingestion. PPE will be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene.
- 1.5.3 PPE will reflect the needs of the employee based on work conditions, amount, and duration of exposure and other known environmental factors but will contain as a minimum - boots, proper eye protection, gloves, sleeves, aprons, and others as determined.
- 1.5.4 Respiratory protection will be required as a principal means of protecting employees under certain circumstances. Respirators will be used when engineering and administrative controls are being developed, when engineering and administrative controls have been unable to adequately limit exposure levels and reduce them below the PEL, and in emergency situations.
- 1.5.5 Respiratory protection will be selected according to the airborne concentrations of benzene or conditions of use. A respiratory protection program will be established in accordance with 29 CFR 1926.103. Respiratory protection is required:
 - 1.5.5.1 During the time period necessary to implement engineering controls or work practices.
 - 1.5.5.2 When engineering and work practices are not feasible.
 - 1.5.5.3 In emergencies.
- 1.5.6 Approved respirators will be selected according to airborne concentrations of benzene.

10 ppm or less	- Half-mask air purifying respirator with OV cartridges
50 ppm or less	- Full-face respirator with OV cartridges or full-face piece gas mask with chin-style canisters
100 ppm or less	- Full-face piece powered air purifying respirator with OV cartridges
1000 ppm or less	- Supplied-air respirator with full-face piece in positive pressure mode
Greater than 1000 ppm	- Self-contained breathing apparatus (SCBA) with full-face piece in positive pressure mode or full-face piece positive pressure supplied air respirator with auxiliary self-contained air supply

1.6 EMERGENCY PLAN

- 1.6.1 In the event of a medical emergency, institute first aid procedures and send for assistance in accordance with local procedures. Dial 9-1-1.
- 1.6.2 Employees not wearing protective equipment and clothing will be restricted from areas of spills or leaks until cleanup has been completed.
- 1.6.3 Only authorized and trained emergency response personnel should attempt containment. Unauthorized workers must evacuate the area. If benzene is spilled or leaked the following steps as a minimum should be taken.
- 1.6.3.1 Remove all ignition sources.
 - 1.6.3.2 Ventilate the area of the spill or leak to disperse vapors.
 - 1.6.3.3 If possible, stop flow of liquid and allow to vaporize.
 - 1.6.3.4 Use containment equipment such as dikes, compatible absorbent materials, etc.
 - 1.6.3.5 Use non-sparking tools and explosion proof equipment at all times in the spill area.
 - 1.6.3.6 TERRY R PITT CONSTRUCTION should be aware of customer contingency plan provisions. Employees must be informed where benzene is used at client facilities and aware of additional plant safety rules.
- 1.6.4 Move any affected workers from the hazardous area. If the exposed person has been overcome, initiate local emergency notification procedures. Never enter any vessel or confined space where the benzene concentration might be high enough to displace air or create an explosive

atmosphere without proper training, equipment, and procedures. Understand the facility's emergency rescue procedures and know the locations of rescue equipment before the need arises.

1.7 FIRST AID

- 1.7.1 For eye exposure, immediately flush with water for at least 15 minutes, lifting the lower and upper lids occasionally. Get medical attention as soon as possible.
- 1.7.2 For skin exposure, immediately flush with copious amounts of water. Remove any clothing contaminated, and flush exposed skin areas. Get medical attention as soon as possible.
- 1.7.3 If benzene has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.
- 1.7.4 For respiratory exposure, get the victim to open, fresh air immediately. If breathing has stopped perform CPR. Keep the victim warm and at rest. Get medical attention as soon as possible.

1.8 MONITORING AND MEDICAL SURVEILLANCE

- 1.8.1 TERRY R PITT CONSTRUCTION will provide a medical surveillance program available for employees who are or may be exposed to benzene at or above the action level 30 or more days per year, who are or may be exposed to benzene at or above the PEL 10 or more days per year, or who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by TERRY R PITT CONSTRUCTION.
- 1.8.2 TERRY R PITT CONSTRUCTION will monitor the worksite and operations to accurately determine the airborne concentrations of benzene to which employees may be exposed. Initial monitoring will be completed within 30 days of the introduction of benzene at the worksite.
 - 1.8.2.1 If initial monitoring reveals employee exposure to be below the action level, the monitoring may be discontinued for that employee, except as otherwise required.
- 1.8.3 If the monitoring reveals employee exposure at or above the action level but at or below the TWA, the monitoring will be repeated at least every year. If the monitoring reveals employee exposure above the TWA, the monitoring will be repeated for each such employee at least every six months.
- 1.8.4 The monitoring schedule may be reduced from every six months to annually for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to the TWA or below but is at or above the action level.
- 1.8.5 Baseline and annual medical exams will be provided to employees that may work or are anticipated to participate in operations more than 10 times per year or may work in areas where benzene exposures may exceed the PEL over 30 days per year.
- 1.8.6 Notification of monitoring results will be provided to employees in writing within 15 working days of receipt of results.

1.9 RECORDKEEPING

- 1.9.1 Medical surveillance records will be maintained for the duration of employment plus 30 years after termination of employment.
- 1.9.2 Exposure monitoring records will be maintained for 30 years after completion of the project.
- 1.9.3 Exposure and medical records, medical surveillance, and training records, along with company policies will be made available to affected employees or their representatives and to the assistant secretary, director, and OSHA upon request.
- 1.9.4 This plan will be implemented and kept current by the safety director as required to reflect the most recent exposure monitoring data. TERRY R PITT CONSTRUCTION will periodically review and revise its benzene program to reflect the most recent exposure monitoring data available, but in no case will the time period exceed 12 months between reviews.

1.10 TRAINING

- 1.10.1 Prior to the job assignment, TERRY R PITT CONSTRUCTION will provide training to ensure that workers understand the required knowledge, skills, and PPE necessary when working around benzene hazards. The training will include:

- 1.10.1.1 Recognition of applicable hazards involved with the particular job and jobsite, as well as the methods and means necessary for safe work
- 1.10.1.2 The specific nature of the operation which could result in exposure to benzene
- 1.10.1.3 The purpose, proper selection, fitting, use, and limitation of PPE
- 1.10.1.4 The adverse health effects associated with benzene exposure
- 1.10.1.5 Engineering controls and work practices associated with the job assignment
- 1.10.1.6 The medical surveillance program
- 1.10.1.7 Monitoring procedures in place used to determine benzene exposure
- 1.10.1.8 Physical characteristics of benzene, including the fact that benzene is a colorless liquid with a sweet odor. Training will emphasize that smell is not an adequate warning of the hazards of benzene.

- 1.10.2 Retraining will be provided for all affected workers as a minimum whenever there is a change in job assignments, a change in PPE, a change in equipment that presents a new hazard, a change in processes that presents a new hazard, the work takes the worker into hazardous or regulated areas, if there is a change in benzene safety procedures, or if a safety procedure fails resulting in a near miss, illness, or injury.
- 1.10.3 Additional retraining will also be conducted whenever a periodic inspection reveals or whenever TERRY R PITT CONSTRUCTION has reason to believe, that there are deviations from or

Benzene Awareness

inadequacies in the worker's knowledge of known hazards or use of equipment or procedures. The retraining will reestablish worker proficiency and introduce new equipment or revised control methods and procedures, as necessary.

- 1.10.4 TERRY R PITT CONSTRUCTION will certify that worker training has been accomplished and kept up to date. The certification will contain an overview of training conducted, employee name, and date of training.
- 1.10.5 Workers will be trained on client emergency procedures. They must be informed where benzene may be present and of any additional facility safety rules during a site-specific orientation.
- 1.10.6 TERRY R PITT CONSTRUCTION will provide benzene awareness training to affected company employees who do not use benzene in the performance of their duties but have potential to be exposed to benzene.

Terry R.
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