

## **POLICY**

E & B Oilfield Services Inc. has implemented this policy to ensure that no employee is exposed to Benzene past the permissible exposure limits (PEL). Kirk Duncan is responsible for enforcing these engineering controls and work practices:

- Provide employees with information and training at their initial assignment to a work area where benzene is present. Training will be conducted annually thereafter if exposures are above the action level.
- Develop a written schedule for implementing work practice and engineering controls for employee's exposure above the PEL to reduce the affected employee exposure below the PEL.
- These plans will be reviewed and revised based on the most recent exposure monitoring data, to reflect the status of the program.
- Employees will be informed of all regulated areas and are properly trained in entrance procedure, safety requirements and practices when in regulated areas.
- Establish a regulated area wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.
- Written compliance programs will be given upon request for to OSHA, affected employees and designated employee representatives.

## **TRAINING**

E & B Oilfield Services Inc. shall provide training to all employees who are exposed, or potentially exposed, to airborne concentrations of benzene at or above PEL and assures employee participation.

This training shall occur prior to or at the time of initial assignment and whenever a new exposure to benzene is introduced into the work area. The training will be repeated annually thereafter if exposures are above the action level.

The training program will be conducted in a manner which the employee is able to understand and will include:

- Requirements of OSHA's Benzene Standard and information available in Appendices A and B of 1910.1028 as well as how to access or obtain a copy of it in the workplace
- Description of the medical surveillance program and the information contained in Appendix C of OSHA's Benzene Standard 1910.1028.
- Information on the quantity, location, manner of use, release and storage of benzene and the specific operations in the workplace that could result in exposure to benzene

The supervisor will inform all affected employees of the location of written training materials and will make these materials readily available, without cost, to the affected employees.

Employees will be instructed as to potential locations where they may be exposed to Benzene including petroleum refining sites, tank gauging (tanks at producing, pipeline and refining operations), field maintenance, confined spaces.

Training will be provided before initial assignment and at least annually.

## **EXPOSURE MONITORING**

It is the policy of E & B Oilfield Services Inc. that determination of airborne exposure levels will be made from air samples that are representatives of each employee's exposure to benzene over an eight (8) period.

The PEL for benzene is 1-part benzene per million parts air (ppm). Since this is an eight (8)-hour average, short-term exposures above the PEL are permitted as long as the average exposure over an eight (8)-hour period does not exceed the PEL.

However, OSHA has set a short time exposure limit (STEL) for benzene that cannot be exceeded. The STEL is the greatest concentration of benzene in air to which exposure may occur for a fifteen-minute period. The current STEL is 5 ppm.

The action level is 0.5 ppm, measured over 8 hours. At this level, certain provisions of the standard, such as employee exposure monitoring and medical surveillance, are initiated. The action level is set lower than the PEL to better protect against overexposure. E & B Oilfield Services Inc. will continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven (7) days apart, are below the action level at which time E & B Oilfield Services Inc. may discontinue monitoring.

<b>Results</b>	<b>Frequency</b>
Less than the action level (0.5 ppm) twice within 7 days	May discontinue monitoring
At or above the action level (0.5 ppm) and at or below the PEL (1 ppm)	Annual
Above the PEL	Semi-annual

## **Employee Notification**

E & B Oilfield Services Inc. within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to affected employees.

Whenever the results indicate that the representative employee exposure exceeds the permissible exposure limit, E & B Oilfield Services Inc. will include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

### **METHODS OF COMPLIANCE**

E & B Oilfield Services Inc. will establish and implement a written program to reduce exposures to or below the permissible exposure limit of 1 part per million (ppm) wherever feasible by means of engineering and work practice controls. When engineering and work practice controls are not feasible to reduce employee exposures to or below the PEL, E & B Oilfield Services Inc. will utilize these controls to reduce company employee exposures to the lowest levels achievable.

Written plans for these compliance programs will include at least the following:

- A description of each operation in which benzene is used, e.g., machinery used, material processed, controls in place, crew size, employee job responsibilities and maintenance practices
- Engineering plans and studies used to select methods to control benzene exposure
- A report of the technology considered in meeting the permissible exposure limit
- Monitoring data
- A detailed schedule for implementation of the engineering controls and work practices that cannot be implemented immediately and for the adaption and implementation of any additional engineering and work practices necessary to meet the permissible exposure limit
- Whenever the employer will not achieve the permissible exposure limit with engineering controls and work practices, the employer must include in the compliance plan an analysis of the effectiveness of the various controls, will install engineering controls and institute work practices on the quickest schedule feasible and will include in the compliance plan and implement a program to minimize the discomfort and maximize the effectiveness of respirator use

Written plans for the program will be submitted upon request to the Assistant Secretary and the Director and will be available at the worksite for examination and copying by the Assistant Secretary, Director, or any affected employee or authorized employee representatives.

E & B Oilfield Services Inc. will review and update the program annually or more often to reflect the current status.

### **RESPIRATORY PROTECTION**

E & B Oilfield Services Inc. has implemented and will maintain a Respiratory Protection Program in accordance with §1910.134. The Respiratory Protection Program and respiratory protective equipment is provided for all employees with potential for exposure to Benzene.

For employees who use required respirators, E & B Oilfield Services Inc. will provide respirators that comply with the Respiratory Protection Program and OSHA. Respirators will be used during periods necessary to install or implement feasible engineering and work practice controls and emergencies.

For air-purifying respirators, Kirk Duncan will ensure the replacement of the air-purifying element when it expires or at the beginning of each shift in which it is used, whichever comes first. An air-purifying element with a National Institute of Occupational Safety and Health (NIOSH) approved end-of-service-life indicator for benzene may be used until the indicator shows no further useful life.

E & B Oilfield Services Inc. will provide affected employees with the appropriate respiratory protection that is approved by NIOSH based on the following requirements:

Kirk Duncan will select approved respirators according to the table below:

<b>Airborne concentration of benzene or condition of use</b>	<b>Respirator type</b>
(a) Less than or equal to 10 ppm	(1) Half-mask air-purifying respirator with organic vapor cartridge.
(b) Less than or equal to 50 ppm	(1) Full facepiece respirator with organic vapor cartridges.
	(1) Full facepiece gas mask with chin style canister <sup>1</sup> .
(c) Less than or equal to 100 ppm	(1) Full facepiece powered air-purifying respirator with organic vapor canister <sup>1</sup> .
(d) Less than or equal to 1,000 ppm	(1) Supplied air respirator with full facepiece in positive-pressure mode.
(e) Greater than 1,000 ppm or unknown concentration	(1) Self-contained breathing apparatus with full facepiece in positive pressure mode.
	(2) Full facepiece positive-pressure supplied-air respirator with auxiliary self-contained air supply.
(f) Escape	(1) Any organic vapor gas mask; or
	(2) Any self-contained breathing apparatus with full facepiece.
(g) Firefighting	(1) Full facepiece self-contained breathing apparatus in positive pressure mode.
<sup>1</sup> Canisters must have a minimum service life of four (4) hours when tested at 150 ppm benzene, at a flow rate of 64 LPM, 25°C and 85% relative humidity for non-powered air purifying respirators. The flow rate will be 115 LPM and 170 LPM respectively for tight fitting and loose-fitting powered air-purifying respirators	

Employees who cannot use a negative-pressure respirator will be allowed to use a respirator with less breathing resistance, such as a powered air-purifying respirator or supplied-air respirator.

**PERSONAL PROTECTIVE EQUIPMENT**

Personal protective clothing and equipment like boots, gloves, long sleeves, goggles, aprons and face protection will be provided at no extra cost to the employee and must be worn where appropriate to prevent eye exposure and limit dermal exposure to liquid benzene. Eye and face protection will meet the requirements of 29 CFR 1910.133.

## **VENTILATION**

Adequate ventilation will be ensured in all enclosed work areas.

Regular monitoring of air quality in work areas will be provided to ensure that PELs are not being exceeded. Records of all monitoring tests will be kept available at the Company office.

## **SIGNS & LABELS**

All containers or vessels containing Benzene will be appropriately labeled to indicate the contents and the hazards of the contents E & B Oilfield Services Inc. will post signs demarcating regulated areas bearing the legend:

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

## **MEDICAL SURVEILLANCE**

E & B Oilfield Services Inc. will institute medical surveillance programs for all employees exposed to benzene at concentrations at or exceeding the action level on 30 or more days per year above the PEL 10 or more days for employees who have been exposed to more than 10 PPM of benzene for 30 or more days in a year prior to the effective date.

All medical procedures, including administration of medical disease questionnaires, will be performed by or under the supervision of a licensed physician and will be provided without cost to the employee, without loss of pay and at a reasonable time and place. An accredited laboratory will conduct all laboratory tests.

Initial medical surveillance must occur prior to assignment to a job. The initial examination must consist of the following elements:

A detailed occupational history which includes:

- Past work exposure to benzene or any other hematological toxins
- A family history of blood dyscrasias including hematological neoplasms
- Blood dyscrasias including genetic hemoglobin abnormalities, bleeding abnormalities, abnormal function of formed blood elements
- Renal or liver dysfunction
- Medicinal drugs routinely taken
- Previous exposure to ionizing radiation
- Exposure to marrow toxins outside of the current work situation
- A complete physical examination

- Laboratory tests, which must consist of a complete blood count including a leukocyte, count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count and erythrocyte indices (mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH) and MCH concentration (MCHC)). The examining physician will review the results of these tests.
- Additional tests the examining physician deems necessary.

The physical examination must pay special attention to the cardiopulmonary system and will include a pulmonary function test for all employees required to wear respirators for at least 30 days a year.

E & B Oilfield Services Inc. will provide each affected employee with a medical examination annually following the initial examination. These periodic examinations must include at least the following elements:

- A brief history regarding any new exposure to potential marrow toxins, changes in medicinal drug use and the appearance of physical signs relating to blood disorders.
- A complete blood count including a leukocyte count with differential, quantitative thrombocyte count, hemoglobin, hematocrit, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC)
- Appropriate additional tests as necessary, in the opinion of the examining physician, in consequence of alterations in the components of the blood or other signs which may be related to benzene exposure.

In addition to the monitoring required above, if an employee is exposed to benzene in an emergency, the E & B Oilfield Services Inc. will have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within 72 hours. The urine specific gravity will be corrected to 1.024. If the result of the urinary phenol test is below 75 mg phenol/L of urine, no further testing is required. If the result of the urinary phenol test is equal to or greater than 75 mg phenol/L of urine, the E & B Oilfield Services Inc. will provide the employee with a complete blood count including an erythrocyte count, leukocyte count with differential and thrombocyte count at monthly intervals for a duration of three (3) months following the emergency exposure.

- If the results of the complete blood count required for the initial, periodic and emergency examinations indicate any of the following abnormal conditions exist, then the blood count will be repeated within two (2) weeks.
- The hemoglobin level or the hematocrit falls below the normal limit [outside the 95% confidence interval (C.I.)] as determined by the laboratory for the particular geographic area and/or these indices show a persistent downward trend from the individual's pre-exposure norms, provided these findings cannot be explained by other medical reasons.
- The thrombocyte (platelet) count varies more than 20 percent below the employee's most recent values or falls outside the normal limit (95% C.I.) as determined by the laboratory; and the leukocyte count is below 4,000 per mm<sup>3</sup> or there is an abnormal differential count.

The referred hematologist's or internist's evaluation will include a determination as to the need for additional tests and the E & B Oilfield Services Inc. will assure that these tests are provided.

Supervisors will provide the following information to the examining physician:

- A copy of OSHA's Benzene Standard and Appendix A, B and C of the standard
- A description of the affected employee's duties related to benzene
- The employee's actual or representative exposure level
- A description of any personal protective equipment used or to be used
- Information from previous employment-related medical examinations of the affected employee which is not otherwise available to the examining physician

The examining physician must provide a written opinion that contains the results of the affected employee's medical examination within 15 days of the examination, limited to the following information:

- The occupationally pertinent results of the medical examination and tests
- The physician's opinion concerning whether the employee has any detected medical condition(s) that would place the employee's health at increased risk of material impairment from exposure to benzene
- Any recommended limitations upon the employee's exposure to benzene, including removal from benzene exposure, or upon the employee's use of respirators, protective clothing, or other protective equipment
- A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions resulting from benzene exposure which require further explanation or treatment

E & B Oilfield Services Inc. will not reveal specific records, findings and diagnoses in the written opinion with no bearing on the employee's ability to work in a benzene-exposed workplace.

### **Medical Removal Plan**

When referred to a hematologist/internist, the employee will be removed from areas where exposure may exceed the action level until evaluated. Following the examination, a decision will be made with the primary physician to allow the employee to return to areas where benzene exposure is above the action level or remove the employee. This decision will be reported, in writing, to the employee. The physician will state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

For any removed employee, E & B Oilfield Services Inc. will provide a follow-up examination where the physician, in consult with the hematologist/internist, will decide within six months of the date the employee was removed as to whether the employee will be returned to the usual job or whether the employee will be removed permanently.

Whenever an employee is temporarily removed from benzene exposure, the E & B Oilfield Services Inc. will transfer the employee to a comparable job for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible, but in no event higher than the action level. The E & B Oilfield Services Inc. will maintain the employee's current wage rate, seniority and other benefits. If there is no such job available, the E & B Oilfield Services Inc. will provide medical removal protection benefits until such a job becomes available or for 6 months, whichever comes first.

In the case that an employee is removed permanently from benzene, the employee will be given the opportunity to transfer to another position which is available or later becomes available for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible but in no event higher than the action level. E & B Oilfield Services Inc. will assure that such employee suffers no reduction in current wage rate, seniority, or other benefits as a result of the transfer.

### **Medical Removal Protection Benefits**

E & B Oilfield Services Inc. will provide to the affected employee six months of medical removal protection benefits immediately following each occasion an employee is removed from exposure to benzene because of hematological findings, unless the employee has been transferred to a comparable job where benzene exposures are below the action level. Those benefits include the current wage rate, seniority and other benefits of an employee as though the employee had not been removed.

E & B Oilfield Services Inc. obligation to provide medical removal protection benefits to a removed employee will be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or from employment with another employer made possible by virtue of the employee's removal.

### **Record Keeping**

E & B Oilfield Services Inc. will maintain an accurate record of:

- Exposure monitoring data, which must be maintained for at least 30 years, including the dates, number, duration and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures
- A description of the sampling and analytical methods used
- A description of the type of respiratory protective devices worn if any
- The name, social security number or company ID number, job classification and exposure levels of the employee monitored and all other employees whose exposure the is intended to represent. Medical surveillance records, which will be maintained for the at least the duration of the employment plus thirty years, including:
  - The name and social security number or E & B Oilfield Services Inc. ID number of the employee
  - The copy of the physicians written opinion on the initial, periodic and special examinations, including results of medical examinations and all tests, opinions and recommendations.
  - Any employee medical complaints related to benzene exposure.
  - A copy of the information provided to the physician; and
  - A copy of the employee's medical and work history related to exposure to benzene or any other hematologic toxins.

Upon request, E & B Oilfield Services Inc. will provide records maintained as a requirement of this policy for examination and copying to OSHA. Employee exposure and medical records required by

this policy will be provided upon request for examination and copying, to the subject employee or former employee or to anyone having the specific written consent of the subject employee or former employee.

### **BENZENE AWARENESS**

All employees who may be exposed to benzene need to know the following characteristics, health effects and safety precautions including when to wear the needed personal protective equipment (PPE), not smoking and even when to use the available fire extinguishers and what to do in an emergency.

#### **Benzene Characteristics**

Benzene is a flammable, clear colorless liquid with a pleasant, sweet odor. The smell is not enough warning of the hazardous presence of benzene and should not be relied upon alone. Other characteristics include:

- 2.7 times denser than air
- Slightly dissolves in water
- Floats on top of water
- Considered toxic

Benzene is extremely flammable with a flash point of 12°F (-11°C), an autoignition temperature of 1,076°F (580°C) and a lower explosion limit (LEL) of 1.3% and an upper flammable limit (UFL) of 7.5%.

It is important that all ignition sources are controlled when working with benzene. The vapors of benzene are heavier than air and 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.

#### **Fire Extinguishers**

Employees will be provided training on the use of carbon dioxide, dry chemical or foam type fire extinguishers. These will be readily available and employees will know where they are located and how to operate them.

## **Health Effects**

Low level exposure can lead to inflammation of the nasal airways and throat.

High level exposures can severely damage the lungs causing fluid accumulation and bleeding, which is often fatal.

Long-term effects of benzene on the blood of those exposed which include, harmful effects on the bone marrow and can cause a decrease in red blood cells, leading to anemia. 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.

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, experienced irregular menstrual periods and decrease in the size of their ovaries.

## **SMOKING**

Smoking is prohibited in areas where Benzene is used or stored.

## **EMERGENCY RESPONSE PLANS**

Before any employees begin work, they will know the site-specific emergency plans including how to recognize and warn others of a benzene related emergency, how to recognize there is an emergency, what to do and where to go including who to report to at primary and secondary meeting locations.



