


<i>HEALTH AND SAFETY MANUAL</i>		
Title: Benzene Exposure Control Program		
Approved by: Greg Savoy		Rev. 4/1/08

1 Purpose/Scope:

The purpose of this program is to define work practices, administrative procedures and engineering controls to protect employees exposed to benzene concentrations above the OSHA action level. This plan shall be implemented and kept current by the director of safety as required to reflect the most recent exposure monitoring data.

This program covers all employees who may be exposed to benzene in the course of completing job duties. Affected employees shall have access to this program. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Company employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

2 Definitions/Responsibilities:

2.1 Definitions:

2.1.1 **Action level** - an airborne concentration of benzene of 0.5 parts per million (ppm) calculated as an 8-hour time weighted average (TWA).

2.1.2 **Benzene** – a toxic, colorless liquid or gaseous material. Benzene has an aromatic odor, is not soluble in water and is flammable.

2.1.3 **Employee exposure** - exposure to airborne benzene that would occur if the employee were not using respiratory protective equipment.

2.1.4 **Permissible Exposure Limits (PEL)** – benzene exposure of 1 ppm averaged over an eight-hour period. 5 ppm Short Term Exposure Limit (STEL) averaged over 15 minutes.

2.1.5 **Health Effects** – Short-term exposure causes depression of the central nervous system (CNS), marked by drowsiness, dizziness, headache, nausea, loss of coordination, confusion and unconsciousness. No effects are expected at 25 ppm. Exposure to 50 to 150 ppm produces headache, and tiredness. Nose and throat irritation have also been reported following short-term exposure. A period of feeling excited or giddy may precede the onset of other symptoms. Exposure to approximately 20,000 ppm for 5 to 10 minutes may result in death. In general, blood and immune system effects

have not been documented in humans following short-term exposures, although these effects have been seen in animals.

2.2 Responsibilities:

2.2.1 Managers and Supervisors are responsible to ensure that all requirements of this program are understood and followed.

2.2.2 Employees are required to act in strict compliance with the requirements of the Benzene Exposure Control Program and delay/discontinue work if there is ever an unresolved concern regarding exposure to benzene.

3 Requirements:

3.1 Exemptions:

3.1.1 Containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene.

3.1.2 Work operations where the only exposure to benzene is from liquid mixtures containing less than 0.1 percent benzene.

3.1.3 Oil and gas drilling, production and servicing operations.

3.1.4 The Company shall ensure that exempted operations do not exceed the permissible exposure limits defined for benzene.

3.2 Exposure Monitoring for Owned or Operated Locations:

3.2.1 Initial monitoring of personnel for each job task suspected to cause a potential exposure to benzene.

3.2.2 Periodic monitoring, if necessary, shall be performed annually if initial monitoring results in exposure above the action level and every six months for results above the PEL.

3.2.3 Additional monitoring shall be performed when changes in work processes or other factors may increase the exposure to benzene.

3.2.4 Area or personal monitoring shall be performed after spills, ruptures, leaks, or other breakdowns occur and have been cleaned up to ensure that exposures have returned to the level that existed prior to the incident.

3.3 Employee Notification of Monitoring Results:

3.3.1 Employees shall be notified of the results of any benzene exposure monitoring performed within fifteen days of their receipt.

- This notification must be in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

- Whenever PELs are exceeded, written notification shall contain the corrective action being taken by the location to reduce the employee exposure to or below the PEL; or shall refer to a document available to the employee which states corrective action to be taken.

3.4 Regulated Areas:

3.4.1 When a location has not been, a regulated area must be established wherever the airborne concentration of benzene exceeds, or can reasonably be expected to exceed, either the TWA of 1.0 ppm or the STEL of 5.0 ppm.

- The regulated area must be demarcated from the rest of the work site by physical means or signs that limit access to only authorized, properly equipped personnel in order to minimize exposure to benzene. Benzene liquid is highly flammable and vapors may form explosive mixtures in air. Fire extinguishers must be readily available.
- Signs with the following legend shall be posted at all entrances to the regulated work area:

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

3.5 Respiratory Protection:

3.5.1 Respiratory protection shall follow all requirements of The Company's Respiratory Protection Program in accordance with 29CFR1910.134.

3.5.2 Approved respirators shall be selected according to airborne concentrations of benzene or condition of use.

3.5.3 Respirators shall be provided at company expense and used by the employee in the following circumstances:

- During the time period necessary to install and/or implement feasible engineering controls.
- Where feasible engineering controls and work practices by themselves are not sufficient to reduce employee exposure to or below the PEL.
- During intermittent or limited duration work operations where engineering controls and work practices are not feasible or required.
- In emergencies.

3.6 Personal Protective Equipment:

PPE shall be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene. PPE shall meet the requirements of

29CFR1910.133 and provided at no cost to employees. PPE includes eye and face protection, rubber boots, gloves, sleeves and aprons.

3.7 Medical Surveillance:

3.7.1 A medical surveillance program shall be made available, without cost, to those employees who are or may be exposed to benzene:

- At or above the action level for 30 days or more per year.
- At or above the TWA PEL for 10 days or more per year.

3.7.2 The medical surveillance program shall be operated under the supervision of a licensed physician.

3.7.3 Initial Examinations shall be conducted within 60 days of an employee's exposure as described in 3.6.1 – the initial examination shall include:

- Detailed occupational history, including:
 - ✓ Past work exposure to benzene or other hematological toxins.
 - ✓ Family history of blood dyscrasias including hematological neoplasm, 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.
- Complete physical examination.
- Complete blood count including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count, and erythrocyte indices (MCV, MCH and MCHC).
- These tests shall be reviewed by the examining physician.
- Other tests, as necessary, by the examining physician.

3.7.4 Periodic examinations shall be conducted annually following the initial examination – the periodic examination shall include:

- A brief history regarding any new exposures to marrow toxins, changes in medicinal drug use or signs or symptoms of blood disorders.
- Complete blood count including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count, and erythrocyte indices (MCV, MCH and MCHC).
- Other tests, as necessary, by the examining physician.

3.7.5 Emergency examinations shall be conducted whenever an employee is exposed to benzene during an emergency condition.

3.7.6 The examining physician shall conduct the appropriate re-tests, referrals and employee exposure limitations as results of initial, periodic or emergency examinations indicate.

3.7.7 The employee shall receive a written opinion from the examining physician within 15 days of the examination.

3.8 Hazard Communication and Training:

- 3.8.1 Employees covered under the Hazard Communication Program must receive training and information on benzene prior to their initial assignment. Where exposures are above the action level, training must be repeated annually. The training must include:
- Review of the OSHA benzene standard;
 - Review of the benzene Material Safety Data Sheet;
 - Review the medical surveillance requirements for benzene.

3.9 Record Keeping:

- 3.9.1 The location Manager will establish and maintain an accurate record of all measurements required by the Benzene Exposure Control Program and will establish and maintain an accurate record for each employee subject to medical surveillance.
- 3.9.2 Employee exposure records must be maintained for at least 30 years and medical surveillance records must be maintained for the duration of employment plus 30 years. These records shall be kept by the Corporate Human Resources Department.
- 3.9.3 Availability of those records will be in accordance with The Company's Access to Employee Exposure and Medical Records Program.

3.10 Benzene Exposures Encountered At Client Locations:

Possible locations where employees may be exposed to Benzene during their job functions include: 1. petroleum refining sites 2. tank gauging (tanks at producing, pipeline and refining operations 3. field maintenance

3.10.1 Exposure Monitoring:

- The Company shall rely on client site-specific exposure determinations and ensure employees are made aware of site-specific contingency/emergency plans. Employees shall be informed where benzene is used in host facility and aware plant safety rules.
- Area or personal monitoring shall be performed after spills, ruptures, leaks, or other breakdowns occur and have been cleaned up to ensure
- that exposures have returned to the level that existed prior to the incident.

- 3.10.2 Employees shall be aware of provisions of all other aspects of the Benzene Exposure Control Program shall be in effect on client locations.

4 References:

29 CFR 1910.1028, Benzene.

5 Exhibits: None.