BENZENE AWARENESS

Purpose

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 HSE Director as required to reflect the most recent exposure monitoring data.

Scope

This program covers all employees who may be exposed to benzene while performing duties for the company. When work is performed by a contractor on a company site, the contractor's program shall take precedence. However, this program may be adopted for use by contractors who do not have a formal Benzene Awareness Program.
Although benzene exposure during routine activity in production and storage areas is well below the PEL, the cleaning of tanks and performing maintenance work in contaminated areas does have a potential for higher then average Benzene levels.

Definitions

- **Action Level-** means an airborne concentration of benzene of 0.5 ppm calculated as an 8-hour time-weighted average.
- **Benzene-** a toxic, colorless liquid or gaseous material. Benzene has an aromatic odor, is not soluble in water and is flammable.
- **Employee exposure-** exposure to airborne benzene that would occur if the employee were not using respiratory protective equipment.
- **Health Effects-** Short-term overexposure may cause irritation of eyes, nose and skin; breathlessness, irritability, euphoria, headache, dizziness or nausea. Long term effects may result in blood disorders such as leukemia and anemia.

Key Responsibilities

Site Supervisor or Designee

- Ensure personnel are aware of work that has the potential of exposure to benzene.
- Ensure individuals responsible for monitoring areas of exposure are properly trained.
- Ensure personnel receive documented medical surveillance exams when required.
- Ensure that emergency exams are performed if an overexposure or suspected overexposure occurs.

Supervisors

- Ensure employees have the appropriate personal protective equipment (PPE) and are properly trained in its use and care.
- Ensure employees comply with the benzene control program.

Safety Director or Designee

- In coordination with the site supervisor, develop and implement project/task specific benzene control procedures prior to the start of activities that may include exposure to benzene.
- Coordinate monitoring activities, ensuring monitoring equipment is in proper working order and, as necessary, modifying the benzene control procedures to reflect exposure monitoring data.
- Maintain the benzene control program, notify management of any regulatory changes and ensure compliance with regulatory and program requirements.

- Coordinate training activities.
- Coordinate the medical surveillance program, including maintenance of medical records and administration of exams.
- Ensure fire extinguishers shall always be readily available where benzene is used/stored. Benzene liquid is highly flammable, and vapors may form explosive mixtures in air. Fire extinguishers must be readily available in areas where benzene is used or stored.

Employees

- Comply with the benzene control program.
- Comply with the medical surveillance program and attend examinations as/if required.
- Maintain respiratory protection equipment in good working order and notify the supervisor or safety advisor of any problems prior to starting work.
- Review safety data sheets or consult with the supervisor to identify any container with benzene containing material.
- Report exposures resulting in any symptoms immediately.

Procedure

Permissible Exposure Limits

The time-weighted average limit (TWA) for benzene is:

- 8-hour TWA 1 ppm
- 12-hour TWA 0.67 ppm

The short-term exposure limit (STEL) for benzene is 5 ppm.

Regulated Areas

- Pulsar Helium shall establish regulated areas wherever airborne concentration of benzene exceeds or can reasonably be expected to exceed the PEL or STEL.
- Pulsar Helium will control access to regulated areas and limit access to authorized personnel.
- Smoking is prohibited in areas where benzene is used or stored. The following signage shall be posted in all regulated areas when the potential exists for benzene vapors to be more than the PEL:

DANGER – BENZENE REGULATED AREA - CANCER CAUSING AGENT - FLAMMABLE - NO SMOKING - AUTHORIZED PERSONNEL ONLY – RESPRITORY PROTECTION REQUIRED

Methods of Compliance

- The benzene control program shall be written and implemented to comply with OSHA regulation 29 CFR 1910.1028 (Benzene).
- This written program is intended to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls to ensure compliance with the benzene control program and federal and state requirements.

Exposure Monitoring

Exposure monitoring shall be performed for the 8-hour and 12-hour TWAs or for the 15-minute STEL exposure when:

- Regulated areas are established.

- An emergency occurs that could require a regulated area.
- A change in the production, process, control equipment, personnel or work practices may result in new or additional exposure to benzene.
- Cleanup of a spill, leak repair, or rupture occurs.
- If the monitoring required reveals employee exposure at or above the action level but at or below the TWA, Pulsar Helium shall repeat the monitoring for each employee at least every year.
- If the initial monitoring reveals employee exposure to be below the action level Pulsar Helium may discontinue the monitoring.
- If the monitoring reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level Pulsar Helium may discontinue to monitor.
- Direct reading detection instruments (Drager CMS is recommended) will be used where benzene vapors are expected to be present at levels above the PEL.

Medical Surveillance

- Pulsar Helium shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; 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 of the standard when employed by their current employer.
- Notification of monitoring results shall be provided to employees in writing within 15 working days of receipt of results.

Personal Protective Equipment

- PPE will be selected based on its ability to prevent absorption, inhalation and ingestion.
- PPE will reflect the needs of the employee based on work conditions, amount and duration of exposure and other known environmental factors but shall contain as a minimum; boots, proper eye protection, gloves, sleeves, aprons and others as determined.
- PPE shall be provided and worn when appropriate to prevent eye contact and limit dermal exposure to liquid benzene. PPE must meet the requirements of 29 CFR 1910.133 and be provided at no cost to the employee(s).

Respiratory Protection

- A respiratory protection program shall be established in accordance with 29 CFR 1910.134. Respiratory protection is required:
  - During the time necessary to implement engineering controls or work practices.
  - When engineering and work practices are not feasible.
  - In emergencies.

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

- 0 to 0.67 ppm – no respirator required.
- 0.67 to 6.7 ppm – half-mask respirator with OV cartridges.
- 6.7 to 33 ppm – full-face respirator with OV cartridges.
- Greater than 33 ppm – No Pulsar Helium employee shall enter a space containing more than 33 ppm. A contractor trained to perform work in areas of high Benzene concentrations shall be utilized in such cases.

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Recordkeeping

- Medical surveillance records shall be maintained for 30 years after termination of employment.
- Exposure and medical monitoring records shall be made available to affected employees or their representatives and to OSHA upon request.

Communication of Benzene Hazards

- Signs and labels shall be posted at entrances of regulated areas
- The benzene control program shall be updated by the Pulsar Helium safety director
- Project site specific safety plans and emergency action plans shall be updated by the safety advisor and made available to project staff prior to beginning work at high benzene concentration sites.