SECTION 3 CHAPTER 10
BENZENE AWARENESS PROGRAM

Purpose

This chapter provides awareness for the hazards of working in areas that contain, or may contain, Benzene.

Scope

All company employees who work in areas that may contain hazards associated with Benzene.

In this chapter

Benzene Awareness

Possible exposure locations

The company will advise employees to a facility areas and operations where exposure to benzene could occur. Common operations and locations in which exposures to employees are likely to occur include:

- Petroleum refining sites
- Tank gauging; and
- field maintenance
- when pulling tubing

All employees will be made aware of any site specific contingency plans prior to being allowed onto the facility. Additional operations and locations in which high exposures to benzene are more than likely to be encountered are:

- The primary production and utilization of benzene; and
- transfer of benzene

Physical characteristics

Color-Odor-Solubility:
Benzene is a clear, colorless liquid with a distinctive sweet odor and is soluble in water and other liquids.

Toxicity-Flammability and By-products
Benzene is primarily and inhalation hazard. Aspiration of small amounts of liquid benzene immediately causes pulmonary edema and hemorrhage of pulmonary tissue. High concentrations are irritating to the eyes and the mucous membranes of the nose, and respiratory tract.

There can be absorption through the skin and direct skin contact with benzene may cause erythema. Benzene may be more readily absorbed if it is present in a mixture or as a contaminant in solvents which are readily absorbed.

Benzene:
- is a flammable liquid
- vapors can form explosive mixtures
- produces hazardous decomposition by-products including toxic gases and vapors (such as carbon monoxide)

Health Hazards:
Benzene will adversely affect your health if:
- it is inhaled
- comes in contact with a person's skin or eyes; or
- if it is ingested or swallowed

Short Term (Acute) Overexposure:
If employees are exposed to high concentrations of benzene, well above the levels where the odor is first recognizable you may feel:
- breathless
- irritable
- euphoric
- giddy; or
- you may experience irritation in eye, nose and respiratory tract

You may:
- develop a headache
- feel dizzy
- feel nauseated; or
- intoxicated

Severe exposures may lead to convulsions and loss of consciousness.

Long Term (Chronic) Exposure:
Repeated or prolonged exposure to benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia (an irreversible, fatal disease). Many blood disorders associated with benzene exposure may occur without symptoms.

Protective clothing and equipment

Respirators are required from the operations in which engineering controls or work practice controls are not feasible to reduce exposure to the permissible level. However, where the company can document that benzene is present in the workplace less than 30 days a year, respirators may be used lieu of engineering controls. If respirators are worn, see *Respiratory Protection* for additional information.

Protective Clothing such as:

- boots
- gloves
- sleeves; and
- aprons…

…must be worn by all employees that could be exposed to liquid benzene

Eye and Face Protection:
Employees must wear splash-proof safety goggles if there is a possible safety hazard to their eyes. In addition, they will wear a face shield if their face could be splashed with liquid benzene.

Precautions for safe use, handling, and storage

The following are general handling characteristics that must be adhered to:

- Benzene liquid is highly flammable.
- Should 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, where provided, must be readily available.
- Know where fire extinguishers are located and how to operate them.
- Smoking is prohibited in areas where benzene is used and stored.
- Where liquid or vapor may be released, such areas shall be considered as hazardous locations.
- 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 the site at which benzene is handled.

Special firefighting procedures: Do not use solid streams of water since streams will scatter and spread fire. Fine water spray can be used to keep fire exposed containers cool.

Emergency and first aid procedures

Eye and Face Exposure:
If benzene is splashed in the eyes wash it out immediately with large amounts of water. If irritation persists or vision appears to be affected, see a doctor as soon as possible.

Skin Exposure:
If benzene is spilled on clothing or skin, remove the contaminated clothing and wash the exposed skin with large amounts of water and soap immediately. Wash contaminated clothing before it is worn again.

Breathing:
If any employee breathes in large amounts of benzene, get the exposed person to fresh air at once. Apply artificial respiration if breathing has stopped. Call for medical assistance or doctor immediately. Never enter any vessel or confined space where the benzene concentration might be high without the proper safety equipment and at least one other employee present who will stay outside. A life line is required to be used.

Swallowing:
If benzene has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.

For additional first aid information refer to *Guidelines for First Aid and Medical Assistance.*