Benzene Exposure

- Benzene is a colorless, sweet-smelling, organic chemical compound.
- Benzene is used as a solvent and an intermediate in many industrial processes.
- There is a plethora of research documenting the toxic and carcinogenic effects of benzene exposure in animals and humans.
- Acute, short-term benzene exposure causes dizziness, drowsiness, headaches, unconsciousness and vomiting.
- Once inside the body, benzene targets the bone marrow.
- Incidence of leukemia is linked to benzene exposure.
- Employers should comply with the standards for the General Industry 29 CFR 1910 Subpart I for Personal Protective Equipment (respiratory protection 1910.134) and 1910 Subpart Z for toxic and hazardous substances (Benzene 1910.10.28)

Related Examinetics Services

- Hazardous Material (HAZMAT) Exam

Overview

Benzene is an organic chemical compound with known carcinogenic properties. The colorless, sweet-smelling liquid is highly flammable and used extensively as a solvent or intermediate in a number of industries. Benzene is used to produce chemical compounds such as plastics, resins, pharmaceuticals, dyes and synthetic rubber. The widely used chemical is also a constituent in petrochemicals and is employed to extract oils from nuts and seeds. Workers involved in these applications are vulnerable to the harmful health effects of benzene exposure unless strict protective measures are in place.

Health effects of benzene exposure

There is extensive research surrounding the carcinogenic and toxicological profile of benzene. Benzene exposures result from environmental such as forest fires and industrial sources including heavy traffic emissions. Benzene exposure also occurs when people come into contact with cigarette smoke. The eleventh edition of the National Toxicology Program’s ‘Report on Carcinogens’ claims there is substantial epidemiological evidence to show the carcinogenic effects of benzene exposure based on occupational and geographic data. The chemical nature of benzene makes the substance evaporate very quickly. Therefore, hazardous benzene exposures occur mainly through inhalation. Dermal benzene exposure occurs on contact with the chemical, and its toxicological effects are often heightened by mixtures with other chemicals. Exposures also result from accidental ingestion through food and drink. Acute short-term exposure can result in dizziness, drowsiness, headaches, unconsciousness and vomiting. Long-term or chronic exposure leads to the development of blood conditions and disorders of the tissues involved in blood production. This is attributable to the fact that benzene and its metabolites target the bone marrow once inside the body. Incidence of leukemia, Acute Myeloid Leukemia, and Chronic Lymphocytic Leukemia are linked to benzene exposure.

Regulatory measures

OSHA recommends that employers become familiar with regulations associated with benzene. Notably, employers should read and comply with the standards for the General Industry 29 CFR 1910 Subpart I for Personal Protective Equipment (respiratory protection 1910.134) and 1910 Subpart Z for toxic and hazardous substances (Benzene 1910.10.28). Also take a look at the standards for Shipyard Employment and the Construction Industry, 1915.1028 and 1926.1128 for benzene respectively. The standards outline employers’ responsibilities, benzene exposure limits, employee training, medical monitoring, air monitoring, compliance programs, protective equipment, evaluation and recordkeeping.