BENZENE AWARENESS PROCEDURE

V:2023.1

Benzene Awareness Procedure

January 2023

Introduction

It is the fundamental rule of our company to take every precaution to protect the health and well-being of personnel working in areas that contain Benzene. This procedure sets out the rules and principles that must be followed to:

- Safeguard personnel working with Benzene.
- Train employees the hazards of Benzene.
- Guard against any unauthorized people intending to enter the areas containing Benzene.
- and, to outline Benzene decontamination procedures.

Scope

IPS★ITCS has chosen to establish a Benzene Awareness Program for emergencies that could arise from exposure to Benzene.

Synonyms

Benzol, Benzole, Coal Naphtha, Cyclohexatriene, Phene Phenyl hydride, Pyrobenzol Note: (Benzin, petroleum benzin and Benzine do not contain Benzene).

References

A) 29 CFR 1926.55, Gases, Vapors, Fumes, Dust, and Mists
B) 29 CFR 1910.106 Flammable and combustible liquids

1.0 Physical and Chemical Characteristics

1.1 Benzene is a clear, colorless liquid with a distinctive sweet odor. Its boiling point is 176 degrees F, and its flash point is 12 degrees F. The flammable limits in air are 1.3% for the low end and 7.5% for the high end. Benzene is a flammable liquid. Its vapors can form explosive mixtures. All ignition sources must be controlled when Benzene is used, handled, or stored. Where liquid or vapor may be released, such areas shall be considered as hazardous locations.

1.2 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. No smoking designated area and fire extinguishers must be readily available.

1.3 Benzene is classified as a 1 B flammable liquid for the purpose of conforming to the requirements of 29 CFR 1910.106. A concentration exceeding 3,250 ppm is considered a potential fire explosion hazard. Locations where Benzene may be present in quantities sufficient to produce explosive or ignitable mixtures are considered Class I Group D for the purposes of conforming to the requirements of 29 CFR 1910.309. Health Effects: Benzene is primarily an inhalation hazard. Systemic absorption may occur.

2.0 Exposure and Health Effects

2.1 Benzene is primarily an inhalation hazard. Systemic absorption may cause depression of the hematopoietic system, pancytopenia, aplastic anemia, and leukemia. Inhalation of high concentrations can affect central nervous system function. Aspiration of small amounts of liquid Benzene immediately causes pulmonary edema and hemorrhage of pulmonary tissue. There is some absorption through the skin. Absorption may be more rapid in the case of abraded skin, and Benzene may be more readily absorbed if it is present in a mixture or as a contaminant in solvents that are readily absorbed. The defatting action of Benzene may produce primary irritation due to repeated or prolonged contact with the skin. A high concentration is irritating to the eyes and the mucous membranes of the nose, and respiratory tract.

Hematopoietic System –

Pancytopenia –

Aplastic Anemia –

Leukemia –

2.2 Direct skin contact with Benzene may cause erythema. Repeated or prolonged contact may result in drying, scaling dermatitis, or development of secondary skin infections. In addition, there is Benzene absorption through the skin. Local effects of Benzene vapor or liquid on the eye are slight. Only at very high concentrations is there any smarting sensation in the eye. Inhalation of high concentrations of Benzene may have an initial stimulatory effect on the central nervous system characterized by exhilaration, nervous excitation, and/or giddiness, followed by a period of depression,

drowsiness, or fatigue. A sensation of tightness in the chest accompanied by breathlessness may occur and ultimately the victim may lose consciousness.

Tremors, convulsions, and death may follow from respiratory paralysis or circulatory collapse in a few minutes to several hours following severe exposures.

2.3 The detrimental effect on the blood-forming system of prolonged exposure hematopoietic system is the chief target for Benzene's toxic effects that are manifested by alterations in the levels of formed elements in the peripheral blood. These effects have occurred at concentrations of Benzene that may not cause irritation of mucous membranes, or any unpleasant sensory effects. Early signs and symptoms of Benzene morbidity are varied, often not readily noticed and non-specific. Subjective complaints of headache, dizziness, and loss of appetite may precede or follow clinical signs. Rapid pulse and low blood pressure, in addition to a physical appearance of anemia, may accompany a subjective complaint of shortness of breath and excessive tiredness. Bleeding from the nose, gums, or mucous membranes, and the development of purpuric spots (small bruises) may occur as the condition progresses. Clinical evidence of leukopenia, anemia, and thrombocytopenia, singly or in combination, has been frequently reported among the first signs.

2.4 Bone marrow may appear normal, aplastic, or hyperplastic, and may not, in all situations, correlate with peripheral blood forming tissues. Because of variations in the susceptibility to Benzene morbidity, there is no "typical" blood picture. The onset of effects of prolonged Benzene exposure may be delayed for many months or years after the actual exposure has ceased and identification or correlation with Benzene exposure must be sought out in the occupational history.

2.5 Locations where benzene exposure can occur:

2.5.1. Petroleum refining sites, Reactors, Tanks, Pipes, Vessels

2.5.2. Tank Gauging (tanks at producing, pipeline & refining operations)

2.5.3. Field maintenance

3.0 Regulatory Limits:

3.1 The permissible exposure limits for Benzene are as follows

3.1.1 Airborne: The maximum time-weighted average (TWA) exposure limit is 1 part of Benzene vapor per million parts of air (1 ppm) for an 8-hour workday and the maximum short-term exposure limit (STEL) is 5 ppm for any 15-minute period.

3.1.2 Dermal: Eye and skin contact shall be prevented.

4.0 Working Safely with Benzene

4.1 Order only the amount needed for your work. Excessive chemicals produce increased risk to the workplace.

4.2 Store Benzene in a vented flammable storage cabinet.

4.3 Before you are about to use Benzene, don proper personal protective equipment.

4.3.1 Respiratory, eye and face, boots, gloves, and apron protection.

5.0 Emergency Procedures

5.1 In a medical emergency call 911 or on-site responders if available. All personnel will be aware of the site-specific emergency plan.

5.2 Inhalation: If inhaled, move to fresh air. If not breathing give artificial respiration. If breathing difficultly, give oxygen.

5.3 Skin Contact: In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

5.4 Eye Contact: If in contact with eyes, flush with large amounts of water for at least 15 minutes. Assure adequate flushing by separating eyelids with fingers.

5.5 Ingestion: If swallowed, wash out mouth with water.

6.0 Training

6.1 All Benzene Awareness training shall be coordinated by the HSEQT Manager. Training will be conducted annually.

Document Management

The HSEQT Manager is responsible for developing and maintaining the program. If after reading this program, you find that improvements can be made, please contact the HSEQT Manager. We encourage all suggestions because we are committed to the success of our written Benzene Awareness Program. We strive for clear understanding, safe behavior, and involvement from every level of the company.

Change Control

All management system changes are reviewed, approved or disapproved by the Safety Committee. This program was initially developed on December 9, 2022, replacing the former Benzene Awareness Program entirely.

Personnel

The Owners of IPS★ITCS have the ultimate responsibility for the Benzene Awareness Program. They have designated the HSEQT Manager to manage the Benzene Awareness Program.

Revision History

Rev	Rev Date	Rev By	Approved By	Description
1.0	1.3.2022	Shayne Torrans	Shayne Torrans	Initial Procedure Document
1.1	12.5.2022	Shayne Torrans	Shayne Torrans	Format Revision

Approvals:

Procedure Owner

_____ _____
Print Name Date

_____
Signature

Competency Assessment

No.	Questionnaire	C/NYC
Q1		
A1		
Q2		
A2		
Q3		
A3		
Q4		
A4		
Q5		
A5		

Enclosed Attachments	
Risk Assessment	☑
Environmental Aspect and Impact	☑
Training and Competency	☑
Measure and Evaluation Tools	☑

Competency Checklist

To be filled out by Trainer and signed by Employee, Assessor and Supervisor before being returned to the HSEQT Manager for recording purposes.

Procedure	Competency	Date	Competent YES / NO	Employee Signature

(Please tick appropriate box)

This employee is competent in performing the job. ☐

This employee has not attained the competency level. ☐ *

* *If the employee has not attained all competency levels, the General Manager must assess the action to be taken, provide an extension of training or alternative action as listed below.*

Alternate action to be taken: _____

Signed By

Employee: _____ Date: _____

Trainer: _____ Date: _____

Assessor: _____ Date: _____

Regional Manager: _____ Date: _____

Environmental Aspects and Impacts

Identified Environmental Aspects and Impacts

The following table is a summary of the likely environmental aspects and impacts that may be identified during site inspections. The significance of each impact needs to be assessed using the Risk Assessment Model.

Activity	Aspect	Impact
Purchasing & Administrative Work	Consumption of goods	Conservation of natural resources
	Consumption of energy (eg. Electrical equipment and facilities)	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of waste (eg. Paper)	Consumption of space for waste disposal; Habitat loss
Climate Control	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of noise	Disturbance to community; Habitat loss
Cleaning of – offices / vehicles	Storage, use and release of chemicals	Contamination of air, water or soil; Risk to human health
Transport (Fleet vehicles / staff travel)	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Loss of habitat at all stages of generation; Light pollution
	Consumption of goods (eg. Oil)	Consumption of natural resources; Generation of waste; Habitat loss; Biodiversity impacts
	Generation of waste (eg. Oil)	Consumption of space for waste disposal; Potential contamination of water or soil; Habitat loss
	Exhaust emission	Release of greenhouse gases and atmospheric pollution
	Use of dangerous goods (eg. Batteries)	Potential contamination of air, water or soil; Risk to human health
	Generation of noise	Disturbance to community; Habitat degradation
Operations		

Risk Assessment

Risk Assessment // insert name here					
Step No: Logical sequence	**Sequence of Basic Job Steps documented in the Procedure, Work Instruction and project plans. Break down Job into steps.** Each step should be logical and accomplish a major task.	**Potential Safety & Environmental Hazards/Impacts at the site of the Job** Identify the actual and potential health and safety hazards and the environmental impacts associated with each step of the job.	**Risk Rating** Refer to the risk matrix or HSEQT.PRO. Risk Mgt	**Recommended Corrective Action or Procedure** ***Determine the corrective actions necessary to reduce the risk to as low as reasonably practical (ALARP) refer to HSEQ.PRO.Risk Mgt. The risk must be rediced or controlled to ALARP before work commences.*** Document who is responsible for implementing the controls to manage each hazard identified.	**Risk Rating** refer to the risk matrix or HSEQT.PRO.Risk Mgt
1.					
2.					
3.					
4.					
5.					

Audit

Process: insert// **Procedure**: Insert //	Date:	Audited by:
	Location of Audit:	Area Mgr/Supervisor:

Item	Question	Evidence Sited	Comments	Conformance Score 0,3,5
1.				
2.				
3.				
4.				
5.				
6.				
7.				

AUDITOR'S SIGNATURE: SAFETY REP'S SIGNATURE:	CONFORMANCE SCORE: / 25 CONFORMANCE %:	0 – Non-Conformance 3 – Continuous Improvement Opportunity 5 – Total Conformance