



**SARNIA REFINERY**

**BENZENE CONTROL**

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## STANDARD

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Document Owner: Manager, EH&S

Document Contact: Hygienist

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### SCOPE AND PURPOSE

This Standard identifies management controls to reduce the risk of exposure to Benzene. This Standard replaces S.O. #1.013.

### ROLES & RESPONSIBILITIES

**Occupational Hygienist** is accountable to provide support, as necessary, to ensure appropriate control of worker exposure to benzene and conformance to this Standard.

### RISK CONTROLS

#### Engineering and Administrative Controls

All reasonable efforts shall be made to reduce human contact by means of engineering controls such as closed loop sampling points, on-stream analyzers, ventilated sample manifolds, double seal pumps, etc.

Where it is impractical to institute engineering control, appropriate personal protective equipment (PPE) must be used to reduce and eliminate potential exposure.

Any equipment that has been used in benzene service (greater than 2%) shall be cleaned and purged to render it as free from benzene fumes as possible before any work is performed on the equipment. Hazardous service tags shall be applied to any equipment that is removed from benzene service before the equipment leaves the process or tank farm areas.

Suitable signs shall be posted at the approaches to all areas where a significant amount of benzene may be present.

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### BENZENE CONTROL

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The number and frequency of samples taken on benzene rich streams (greater than 2%) should be kept to an absolute minimum.

### **Work and Hygiene Practices**

No food, drink or tobacco product shall be taken into any area where the possibility of exposure to benzene exists. All workers who have been working in any benzene area shall wash thoroughly before eating, drinking or smoking.

Any clothing that has come in contact with liquid benzene shall be removed promptly and washed before reuse. Any skin area adjacent to the affected clothing shall be washed thoroughly with soap and water.

In the event that a benzene stream is opened to the atmosphere, the worker shall remain upwind of the release unless adequate personal protective equipment is worn (See Section 3).

### **Exposure Limits**

Ontario Regulation 490/09 prescribes the following exposure limits:

- 0.5ppm based on an 8-hour time-weighted average (TWA); and
- 2.5ppm based on a short-term (15-minute) exposure (STEL).

### **Personal Protective Equipment**

To sample any process stream or tankage that contains more than 2% benzene, the minimum personal protective equipment required is:

- impervious rubber gloves
- splash goggles
- air-purifying respirator for concentrations above the TWA

Any equipment or vessel that is to be worked on or entered requires:

- impervious gloves
- rubber boots
- splash goggles
- adequate respiratory protection

until such time as the equipment or vessel is certified to contain less than 0.5 ppm airborne Benzene.

Laboratory personnel shall wear impervious gloves to handle benzene rich samples and splash goggles if pressure is applied to the samples.

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### *Respiratory Protection*

If circumstances dictate and/or testing indicates the presence of benzene at or above the level of 0.5 ppm, respiratory protection shall be worn in accordance with the Code for Respiratory Protection issued by the Ministry of Labour (see the table below).

<b>Airborne Concentration of Benzene</b>	<b>Type of Respirator Required</b>
≤0.5ppm (TWAEV)	No respiratory protection required.
≤ 5ppm (10xTWAEV)	Half-facepiece air purifying respirator with organic vapour cartridges.
≤ 12.5ppm (25xTWAEV)	Powered air purifying respirator with a hood or helmet equipped with organic vapour cartridge; or Supplied air respirator with a hood or helmet operated in continuous flow mode.
≤ 25ppm (50xTWAEV)	Full-facepiece air purifying respirator with organic vapour cartridges; or Powered air purifying respirator with a full facepiece and organic vapour cartridge; or Supplied air respirator with full facepiece operated in continuous flow mode.
>25ppm (50xTWAEV)	Supplied air respirator or self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure or continuous flow mode.
Escape	Any escape self-contained breathing apparatus or any air purifying respirator with organic vapour cartridges.

### **Benzene Training Program**

All workers on-site shall receive benzene awareness training. All personnel working in benzene areas shall undergo training in the hazards, procedures and requirements of the benzene control program before commencing work in restricted areas.

### **Industrial Hygiene Monitoring**

Personal exposure monitoring for personnel exposed to benzene will be carried out on a routine basis to establish worker exposures during routine upset and shutdown conditions. Sampling will be conducted using industry standard methods for workplace air sampling and analysis. Records will be maintained by the Occupational Hygienist via Medgate.

Results of personal benzene monitoring will be furnished to the Joint Health & Safety Committee and posted in the workplace for a period of at least 14 days. Sampled workers will receive individual notification regarding their personal monitoring results.

### **Medical Monitoring**

Annual hematological (blood) tests will be offered to Suncor and long-term (6 months+) TAMS employees. Urine testing will be performed in the event of suspected personal exposure for any worker on-site. If symptoms and signs of benzene toxicity are present, additional tests will be conducted and the worker shall be removed from benzene exposure.

An Incident Learning and Prevention (ILP) report shall be made out which will include the results of air monitoring at the time of an exposure. This information will be part of the employee's medical history and administration records according to the regulation.

With the exception of long-term TAMS employees, Contractors are responsible for performing medical monitoring of their employees as required by the regulations.

### **REFERENCES**

Designated Substance Assessment - Benzene

[Respiratory Protection Standard](#)

[Ontario Regulation 490/09, "Designated Substances"](#)

**END OF STANDARD**

<b>REVISION LOG</b>				
<b>Date</b> (MM/DD/YYYY)	<b>Revision</b>	<b>Section</b>	<b>Comments</b>	<b>Editor</b> (Name)
07/25/2009	Original		Transferred into "Standard" template. Revision #Original. Replaces S.O. #1.013.	
03/19/2010	1	References	Added 'Respiratory Protection Standard' to list of References	
04/07/2010	2	References	Added Ontario Regulation 839 to list of References	
		Risk Controls	Added reference to using PPE, exposure limits, respiratory protection selection table, and the need to post personal monitoring results. This information was taken from a document called "Designated Substance Control Program, Substance – Benzene" located in Livelink in the Accident Prevention Manual, Section #13.1. The intention is to replace that document with this Benzene Control Standard. The respiratory protection selection table was updated to reflect current occupational exposure limits and benzene regulation requirements.	
		Header	Document Contact changed to Manager, Environment, Health and Safety	
12/22/2011	3	Roles and Responsibilities	Removed statements that are redundant with general requirements. Added the Occupational Hygienist role.	
		Risk Controls	Exposure Limits: changed legislative and OEL references	

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			to reflect current regulation and terminology.	
		Benzene Training Program	Added statement regarding benzene awareness training for all workers on-site.	
		Industrial Hygiene Monitoring	Added statement that the OH will maintain records via Medgate. Added statement regarding employee notification of personal sampling results.	
		Medical Monitoring	Added information regarding the medical surveillance that is offered to non-Suncor personnel.	
		References	Added Ontario Regulation 490/09.	
06/27/2012	4	All	Updated format, but content was NOT altered.	
07/24/2013	-	Header	Document Owner & Contact Updated. NO content change. (L. Lebert)	
11/28/2014	-	-	Reviewed; no changes required.	
8/10/2016	5	Roles & Responsibilities	Changed "mercury" to "benzene"	M. Courteaux
	-	All	Updated template	K. Devereux

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The following individuals have approved and signed this document.

UserName: Peter Lynch (plynch)

Title: Mgr EH&S Sarnia Refinery

Date: Thursday, 11 August 2016, 11:31 AM Mountain Time

Meaning:

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