	VOC READING RESPONSE PROCEDURE		
	Procedure Type: Routine		Department: Environmental, Health and Safety
	Document Owner: Manager, EH&S		Document Contact: Occupational Hygienist
Document Number: 4000-ZPR-HMOENVCA-028364	Issue Date: 11/28/2018	Revision Number: 2	Next Review Date: 08/28/2021

Purpose and Scope:	This procedure describes the steps for Operations to respond to VOC readings for the purpose of determining respiratory protection requirements for protection from airborne hydrocarbons.
	NOTE This procedure is appropriate for preliminary response and short-term exposure situations. For on-going exposure issues, the Occupational Hygienist must be consulted.
Personal Protective Equipment (PPE) Required:	Normal mandatory PPE for working in process areas required. <ul style="list-style-type: none"> Respiratory protection may also be required.
References:	<ul style="list-style-type: none"> Benzene Assessment MSA Altair 5X PID Multigas Monitor Operation Gastec GV-100/110s Sampling Pump Operation

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PREREQUISITE

Ensure MSA Altair 5X PID is fully charged and has been bump tested as per the procedure MSA Altair 5X PID Multigas Monitor Operation.

PROCEDURE INSTRUCTIONS

				Procedure Start Date		
				Start	Finish	Initial
1.0	<i>Test for VOCs using MSA Altair 5X PID Gas Tester</i>	1.1	Test required area for VOCs.			
		1.2	If VOCs are <0.5ppm, no further testing or respiratory protection is required.			
		1.3	If VOCs are ≥0.5ppm, proceed to Step 2.0.			
2.0	<i>Determine if airborne benzene is a concern</i>		<p style="text-align: center;"><u>NOTE</u></p> <p style="text-align: center;">Airborne benzene must be considered to be of concern in the following areas:</p> <ul style="list-style-type: none"> • Plant #2 Reformer Unit: <ul style="list-style-type: none"> ○ 23-V-001 ○ 23-P-001's ○ 23-T-001 and associated equipment (Northeast corner of the unit, East of the centre maintenance way and North of the 23-E-018's) • Plant #2 BTX Unit • Tank Farm: <ul style="list-style-type: none"> ○ Tanks 31 and 32 (benzene) ○ Tanks 18 and 19 (reformate) • Laboratory 			
		2.1	If airborne benzene is a concern, proceed to Step 3.0.			

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				Start	Finish	Initial
		2.2	If airborne benzene is not a concern, respiratory protection may be prescribed based on VOC concentrations in accordance with column (a) in Table 1. Proceed to Step 4.0.			
3.0	<i>Determine percentage of benzene in total VOCs.</i>	3.1	While keeping the MSA Altair 5X PID gas tester monitoring VOCs, use a Gastec Sampling Pump to test for benzene in the same location.			
			<u>NOTE</u> A handheld electronic benzene monitor may be obtained from the Occupational Hygienist if interference of other aromatics on the Gastec tube is suspected.			
		3.2	Calculate the percentage of benzene in the total VOCs using the following formula: $\%benzene = \frac{benzene(ppm)}{VOCs(ppm)} \times 100$			
4.0	<i>Determine respiratory protection required.</i>	4.1	Use Table 1 – Respiratory Protection Requirements Based on VOC Concentrations to determine the type of respiratory protection required.			

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NOTE

Table 1 – Respiratory Protection Requirements Based on VOC Concentrations

%benzene in VOCs ⇒	(a)	(b)	(c)
	<2.5%	2.5-50%	>50%
Respirator Required	VOC Concentrations		
No respirator Required	0-20ppm	0-1ppm	0-0.5ppm
Half-Facepiece APR*	>20-200ppm	>1-10ppm	>0.5-5ppm
Full-Facepiece APR*	>200-500ppm	>10-50ppm	>5-25ppm
SAR or SCBA	>500ppm	>50ppm	>25ppm

*Air-purifying respirators must be equipped with organic vapour cartridges.

CHANGES / UPDATES

Are any changes/updates required? YES NO

Changes/updates required may be written within the procedure itself or in this section.

All comments **MUST** include operator name and review date (mm/dd/yy).

Name: _____

Date: _____

CHANGES/UPDATES ACCEPTED AS IDENTIFIED

Document Contact Signature: _____

Date: _____

END OF PROCEDURE

VOC READING RESPONSE PROCEDURE

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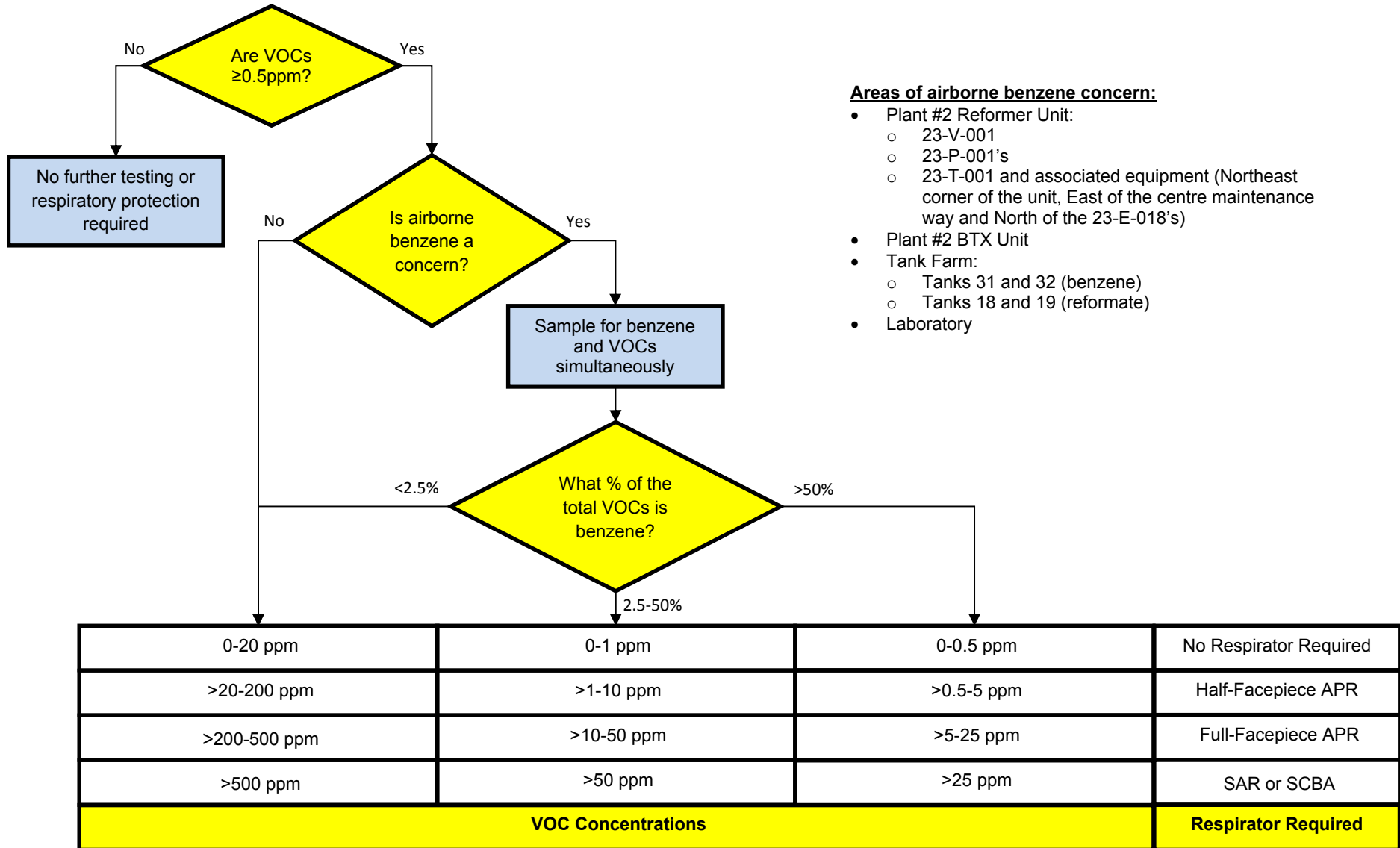
REVISION LOG

Date (MM/DD/YYYY)	Revision	Section	Comments	Editor (Name)
07/18/2013	Original	All	New procedure. Added Livelink number to header. eSign page lost due to Edit. Approved by P. Lynch	R. Fitzjohn & M. Courteaux L. Lebert
02/23/2015	-	Appendix A	Edit to flowchart. Words cut off in diagram.	M. Courteaux
03/01/2016	1	2.0 Note	Updated list of benzene areas to match current Benzene Assessment document.	M. Courteaux
		Appendix A	Updated list of benzene areas to match current Benzene Assessment document.	
		All	Corrected all MultiRAE references to "MultiRAE Plus".	
11/28/2018	2	References General	Updated all references to MultiRAE Plus to the new gas monitor - MSA Altair 5X PID.	M. Chipman
		3.0 Note	Updated reference to UltraRAE to generic term "handheld electronic benzene monitor".	
		Table 1 Appendix A	Revised concentrations to include those in between whole numbers.	



**APPENDIX A
VOC Response Flowchart**

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Areas of airborne benzene concern:

- Plant #2 Reformer Unit:
 - 23-V-001
 - 23-P-001's
 - 23-T-001 and associated equipment (Northeast corner of the unit, East of the centre maintenance way and North of the 23-E-018's)
- Plant #2 BTX Unit
- Tank Farm:
 - Tanks 31 and 32 (benzene)
 - Tanks 18 and 19 (reformate)
- Laboratory



The following individuals have approved and signed this document.

UserName: Todd Murray (toddmurray)

Title: Mgr EH&S Sarnia Refinery

Date: Thursday, 29 November 2018, 06:54 AM Mountain Time

Meaning:

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