

## SAT Report

PMN Number: L-12-0007

SAT Date: 10/18/2011

Print Date: 11/26/2014

### Related cases:

### Concern levels:

Type of Concern:	<u>Health</u>	<u>Eco</u>	<u>Comments</u>
Level of Concern:	1-2	2	

<u>Persistence</u>	<u>Bioaccum</u>	<u>Toxicity</u>	<u>Comments</u>
1	1	1	
		Awaiting	
		Human Health	
		Entry	
		Awaiting	
		Human Health	
		Entry	
		Awaiting	
		Human Health	
		Entry	

### Exposure Based Review:

Health: No

Ecotox: No

### Routes of exposure:

Health: Dermal Drinking Water Inhalation

Ecotox: All releases to water

Fate: ;

### Keywords:

Keywords:

### Summary of Assessment:

#### Fate:

Fate Summary: L-12-0007

FATE:

Solid with MP = 37-41 C (M)

log Kow = 4.32 (E)

S = 11.2 mg/L at 25 C (E)

VP = 4.7E-2 torr at 25 C (NOMO5)  
 BP = 246 C (M)  
 H = 9.96E-4 (E)  
 log Koc = 2.78 (E)  
 log Fish BCF = 2.52 (E)  
 log Fish BAF = 2.86 (E)  
 POTW removal (%) = 58 via sorption  
 Time for complete ultimate aerobic biodeg = wk-mo  
 Sorption to soils/sediments = strong  
 Volatilization half-life from a standard river = 3 hrs  
 Volatilization half-life from a standard lake = 7 da  
 Atmospheric Oxidation Half-life = 60 hr via OH radical  
 PBT Potential: P1B1  
 \*CEB FATE: Migration to ground water = slow

**Health:**

**Health Summary:** Absorption is nil through the skin as the neat material, poor through the skin when in solution, and poor through the lungs and GI tract based on physical/chemical properties. There is concern for mutagenicity, neurotoxicity, and liver effects for the aromatic bromines and uncertain concern for developmental toxicity based on small benzene compounds. Low moderate concern.

**Ecotox:**

Test Organism	Test Type	Test End Point	Predicted	Measured	Comments
fish	96-h	LC50	1.8		
daphnid	48-h	LC50	1.4		
green algal	96-h	EC50	1.8		
fish	–	chronic value	0.21		
daphnid	–	chronic value	0.33		
algal	–	chronic value	1.0		
Sewage Sludge	3-h	EC50	–		
Sewage Sludge	–	Chronic Value	–		

**Ecotox Values Comments:**

Factors	Values	Comments
Assessment Factor	10	
Concentration of Concern (ppb)	21	
SARs	neutral organic chemicals	

SAR Class	brominated hydrocarbon	new chemicals category: neutral organics
Ecotox Category		

**Ecotox Factors Comments:**

**SAT Chair:** Becky Jones

**Focus Report**  
**New Chemicals Program**  
PMN Number: **L-12-0007**

Focus Date: 10/23/2011 11:00:00 PM Report Status: Completed  
Consolidated Set:  
Focus Chair: Rose Allison Contractor: Stephen Wieroniey

**I. Notice Information**

Submitter: Johnson Matthey Inc. CAS Number: 1611-92-3  
Chemical Name: Benzene, 1,3-dibromo-5-methyl-  
Use: Tracer chemical to measure flow in deep oil-bearing strata. Related Cases Submitted Together: L-12-7, L-12-10, L-12-11. P2 Claim: Petroleum producers traditionally have used radionuclide tracers to measure the flow rate in oil-bearing strata and to adjust their pumping rate to achieve desirable flow characteristics. The LVE substance is a substitute for these radionuclides. Its use will result in a reduced handling of radioactive materials by both contractors and oil production employees, as well as lower release of radioactive materials into the environment.

Other Uses:



PV-Max: 1,000 Kg/yr Binding Option: Yes  
Manufacture: Import: X

**II. SAT Results**

(1) Health Rating: 1-2 Eco Rating: 2 Comments: ;

Occupational: 2-3A Non-Occupational: Environmental: 2

(1) PBT: 1 1 1 Comments:

**III. OTHER FACTORS**

**Categories:**

Health Chemical Category: Ecotox Category: neutral organic chemicals

**Related Cases/Regulatory History:**

Health related Cases:

Ecotox Related Cases:

Analogs: [Redacted]

Regulatory History:

[Redacted] -SR MID-COURSE DISP DROP  
[Redacted] -WITHDRAWN/FACE 5E  
[Redacted] -SHORT QUESTION DISPO DROP

**MSDS/Label Information:**

MSDS: Yes Label: No

General Equipment: impervious gloves / safety glasses / protective work clothing / properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Respirator: use respirator when high concentrations are present

Health Effects: causes skin irritation / causes serious eye irritation / may cause respiratory irritation

LVEPPE: impervious gloves / goggles / Tyvek suit

**Exposure Based Information:**

Exposure Based Review: N Exposure Based Review (Health): N  
Exposure Based Review (Eco): N Exposure Based (Occupational): No  
Exposure Based Review (Non Occupational): Exposure Based (Environmental):

## **IV. Summary of SAT Assessment**

### **Fate:**

**Fate Summary:** L-12-0007  
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Solid with MP = 37-41 C (M)  
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POTW removal (%) = 58 via sorption  
Time for complete ultimate aerobic biodeg = wk-mo  
Sorpton to soils/sediments = strong  
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### **Health:**

**Health Summary:** Absorption is nil through the skin as the neat material, poor through the skin when in solution, and poor through the lungs and GI tract based on physical/chemical properties. There is concern for mutagenicity, neurotoxicity, and liver effects for the aromatic bromines and uncertain concern for developmental toxicity based on small benzene compounds. Low moderate concern.

### **Ecotox:**

**Ecotox Values:**  
Fish 96-h LC50: 1.8(P)  
Daphnid 48-h LC50: 1.4(P)  
Green algal 96-h EC50: 1.8(P)  
Fish Chronic Value: 0.21(P)  
Daphnid ChV: 0.33(P)  
Algal ChV: 1.0(P)

**Ecotox values comments:** Predictions are based on SARs for neutral organic chemicals; SAR chemical class = brominated hydrocarbon; MW 250; log Kow = 4.32 (EPI); solid with mp = 41 C (M); pH7; effective concentrations based on 100% active ingredients and mean measured concentrations; hardness <150.0 mg/L as CaCO<sub>3</sub>; and TOC <2.0 mg/L;

### **Ecotox Factors:**

Assessment Factor: 10  
Concern Concentration: 21

## V. Summary of Exposures/Releases

Engineering Summary: L-12-0007

Exposures/Releases	Release	Release	Release
<b>Scenario</b>	<b>Processing: Tracer Chemical Formulation</b>	<b>Processing: Tracer Chemical Formulation</b>	<b>Processing: Tracer Chemical Formulation</b>
<b>Sites</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Media</b>	<b>Water or Air or Incineration or Landfill</b>	<b>Water or Incineration or Landfill</b>	<b>Water or Incineration or Landfill</b>
Descriptor A	Output 2	Output 2	Conservative
Quantity A (kg/site/day)	3.1E-1	6.2E-1	6.2E-1
Frequency A (day/year)	16	16	16
Descriptor B			
Quantity B (kg/site/day)			
Frequency B (day/year)			
From	Unloading Solid Raw Material from Transport Containers	Cleaning Solid/ Powder Residuals from Containers Used to Transport the Raw Material	Equipment Cleaning Losses of Liquids from a Single, Small Vessel
Workers			
Exposure Type			

Engineering Summary: Exposures/Releases	Release	Release	Release
<b>Scenario</b>	<b>Processing: Tracer Chemical Formulation</b>	<b>Processing: Tracer Chemical Formulation</b>	<b>Use: Injection of Tracer Chemical into Oil-Bearing Strata</b>
<b>Sites</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Media</b>	<b>Air</b>	<b>Air</b>	<b>Air</b>
Descriptor A	Output 2	Typical	Typical
Quantity A (kg/site/day)	3.9E-3	4.0E-5	3.2E-5
Frequency A (day/year)	16	16	50
Descriptor B		Worst Case	Worst Case
Quantity B (kg/site/day)		4.0E-5	3.2E-5
Frequency B (day/year)		16	50
From	Equipment Cleaning Losses of Liquids from a Single, Small Vessel	Loading Liquid Product into Containers	Unloading Liquid Product from Containers
Workers			
Exposure Type			

## V. Summary of Exposures/Releases

Engineering Summary: L-12-0007

Exposures/Releases	Release	Release	Exposure
<b>Scenario</b>	<b>Use: Injection of Tracer Chemical into Oil-Bearing Strata</b>	<b>Use: Injection of Tracer Chemical into Oil-Bearing Strata</b>	<b>Processing: Tracer Chemical Formulation</b>
<b>Sites</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Media</b>	<b>Water or Incineration or Landfill</b>	<b>Incineration</b>	<b>Dermal</b>
Descriptor A	High End	Output 2	High End
Quantity A (kg/site/day)	1.2E-1	2.0E+1	3.0E+3
Frequency A (day/year)	50	50	16
Descriptor B			
Quantity B (kg/site/day)			
Frequency B (day/year)			
From	Cleaning Liquid Residuals from Containers Used to Transport the Product	Oil Production	Unloading Solid Raw Material from Transport Containers
Workers			3
Exposure Type			Solid

Engineering Summary: Exposures/Releases	Exposure	Exposure	Exposure
<b>Scenario</b>	<b>Processing: Tracer Chemical Formulation</b>	<b>Processing: Tracer Chemical Formulation</b>	<b>Processing: Tracer Chemical Formulation</b>
<b>Sites</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Media</b>	<b>Inhalation</b>	<b>Dermal</b>	<b>Inhalation</b>
Descriptor A	Upper Bound	High End	Worst Case
Quantity A (kg/site/day)	1.5E+2	7.1E+2	1.9E-1
Frequency A (day/year)	16	16	16
Descriptor B			Typical
Quantity B (kg/site/day)			6.3E-3
Frequency B (day/year)			16
From	Unloading Solid Raw Material from Transport Containers	Loading Liquid Product into Containers	Loading Liquid Product into Containers
Workers	3	3	3
Exposure Type	Particulate	Liquid	Vapor

## V. Summary of Exposures/Releases

Engineering Summary: L-12-0007

Exposures/Releases	Exposure	Exposure	
Scenario	Use: Injection of Tracer Chemical into Oil-Bearing Strata	Use: Injection of Tracer Chemical into Oil-Bearing Strata	
Sites	1	1	
Media	Dermal	Inhalation	
Descriptor A	High End	Worst Case	
Quantity A (kg/site/day)	7.1E+2	4.5E-1	
Frequency A (day/year)	50	50	
Descriptor B		Typical	
Quantity B (kg/site/day)		1.5E-2	
Frequency B (day/year)		50	
From	Unloading Liquid Product from Containers	Unloading Liquid Product from Containers	
Workers			
Exposure Type	Liquid	Vapor	



## **VI. Focus Decision and Rationale**

### **Regulatory Actions**

Regulatory Decision: LVE Conditional Grant  
Type of Decision:

Decision Date: 10/23/2011

Rationale: L-12-0007 was given a conditional grant. Human health concerns were low-moderate for dermal, drinking water and inhalation exposure. Potential risks to workers were addressed by adequate dermal PPE. There were potential health concerns based on aromatic bromine and benzene. However, the submitter must amend the notice and MSDS to include a NIOSH-certified combination respirator with an APF of 10. Ecotoxicity concerns were moderate. Potential risks to the environment were low due to less than 20 days of exceedance of the COC. This LVE was bound at 1,000 kg/year.

COC: Chronic – 21 ppb; Acute – 280 ppb.

Summary of Exposures and Releases:

Processing:

1 site, 16 days/year, 3 workers

Inhalation 1: Part: 1.5E+2 mg/day

Inhalation 2: Part: Typical: 6.3E-3 mg/day; Worst Case: 1.9E-1 mg/day

Dermal 1: 3.0E+3 mg/day (Solid 98%)

Dermal 2: 7.1E+2 mg/day (Liquid 40%)

Releases to Water 1: 3.1E-1 kg/site-day over 16 days/yr

Or Air or Incineration or Landfill

Releases to Water 2: 6.2E-1 kg/site-day over 16 days/yr

Or Incineration or Landfill

Releases to Water 3: 6.2E-1 kg/site-day over 16 days/yr

Or Incineration or Landfill

Releases to Air 1: 3.9E-3 kg/site-day over 16 days/yr

Releases to Air 2: Typical: 4.0E-5 kg/site-day over 16 days/yr; Worst Case: 4.0E-5 kg/site-day over 16 days/yr

Fate Releases to Water (58% Removal):

SWC: 120.33 ppb

DW: LADD: 4.40E-06 mg/kg/day; ADR: 5.80E-03 mg/kg/day

FI: LADD: 6.21E-06 mg/kg/day; ADR: 7.61E-03 mg/kg/day

>COC (21 ppb): 6/16 release days

Use:

1 site, 50 days/year, 3 workers

Inhalation: Typical: 1.5E-2 mg/day; Worst Case: 4.5E-1 mg/day

Dermal: 7.1E+2 mg/day (Liquid 40%)

Releases to Water: 1.2E-1 kg/site-day over 50 days/yr

Or Incineration or Landfill

Releases to Air: Typical: 3.2E-5 kg/site-day over 50 days/yr; Worst Case:

3.2E-5 kg/site-day over 50 days/yr

Releases via Incineration: 2.0E+1 kg/site-day over 50 days/yr

Fate Releases to Water (58% Removal):

SWC: 20.00 ppb

DW: LADD: 2.57E-06 mg/kg/day; ADR: 9.40E-04 mg/kg/day

FI: LADD: 3.63E-06 mg/kg/day; ADR: 1.42E-03 mg/kg/day

>COC (21 ppb): 9/50 release days

Fate Release to Air:  
Stack Air: 2.73E-04 mg/kg/day

P2 Rec Comments:

**Testing:**

**Final Recommended:**

Health:

Eco:

Fate:

Other: