



**2017 TOXICS REDUCTION ACT**

**Report on Toxic Substance  
Accounting Requirements**

Suncor Energy Inc.  
Sarnia Refinery  
1900 River Road  
Sarnia, Ontario  
N7T 7J3

July 2018



## Version Control

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## **1.0 INTRODUCTION**

Suncor Energy Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, kerosene, home heating oils, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstocks.

Protection of the environment is a fundamental Suncor value. It is our responsibility to determine and manage the impacts of our business through programs like the Toxics Reduction Act.

This annual toxics substance accounting report has been prepared to meet the regulatory obligations specified in Section 10 of the Act and has been prepared in accordance with the requirements of Section 27(1) of Ontario Regulation 455/09, as amended from time to time. It summarizes the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

For more information on the Toxics Reduction Act and O. Reg. 455/09 visit: <http://www.ontario.ca/environment-and-energy/toxic-substance-reduction-planner-licence>



## **2.0 REPORTING CRITERIA**

Section 3(1) of the Act specifies the criteria requiring the preparation of a toxic substance plan. These criteria are as follows:

*3. (1) The owner and the operator of a facility shall ensure that a toxic substance reduction plan is prepared for a toxic substance in accordance with this Act and the regulations if all of the following criteria are met:*

*1. The facility belongs to a class of facilities prescribed by the regulations.*

*2. The number of persons employed at the facility exceeds the number of persons prescribed by the regulations.*

*3. The toxic substance is used or created at the facility and the amounts of the substance that are used or created meet the criteria prescribed by the regulations.*

*4. Such other criteria as are prescribed by the regulations. 2009, c. 19, s. 3 (1).*

Specific criteria are outlined in O. Reg. 455/09. The following sections detail the criteria and applicability to the Suncor facility.

### **2.1 Class of Facility**

Section 4(1) of O. Reg. 455/09 specifies the types of facilities subject to toxic substance reduction planning and includes facilities that begin in North American Industry Classification System code "31", "32" or "33" and "212".

The Suncor Sarnia Refinery carries out processes and activities related to "Petroleum and Coal Product Manufacturing", which begins in NAICS code "32", which is a code identified in O. Reg. 455/09.

### **2.2 Number of Persons**

Section 5 of O. Reg. 455/09 specifies the numbers of persons at a facility must be greater than zero. In 2016, the Sarnia Refinery employed 823 full-time equivalent employees.

### **2.3 Amounts of Toxic Substance Used or Created**

Section 6 of O. Reg. 455/09 specifies that amounts of a toxic substance used or created must exceed zero. In 2016, the use or creation of toxic substances for which accounting is required is greater than zero (refer to Section 4).



## 2.4 Other Criteria

Section 7(1) of O. Reg. 455/09 requires the owner and operator of a facility provide information on National Pollutant Release Inventory (TRA) substances if reporting to the TRA is required; or if the substance is acetone and reporting under Ontario Regulation 127/01 (Airborne Contaminant Discharge Monitoring and Reporting) made under the Environmental Protection Act applies.

In 2016, Suncor Sarnia Refinery was required to report to the TRA. Specifically, the Suncor Sarnia Refinery met the reporting requirements for the following substances listed in Schedule A of O. Reg. 455/09:

### ***TRA Part 1A Substances:***

- 1,2,4-Trimethylbenzene
- Ammonia
- Asbestos
- Benzene
- Cadmium
- Cyclohexane
- Dicyclopentadiene
- Ethylbenzene
- Hydrofluoric acid
- Hydrogen Sulfide
- Cumene
- Methanol
- Molybdenum Trioxide
- Naphthalene
- N-hexane
- Nickel compounds
- Styrene
- Sulphuric acid
- Toluene
- Xylene
- Total Reduced Sulfur

### ***TRA Part 1B Substances:***

- Cobalt

### ***TRA Part 4 Substances:***

- Oxides of Nitrogen
- Carbon Monoxide
- Sulfur Dioxide
- Total Particulate Matter
- PM 10
- PM 2.5



***TRA Part 5 Substances:***

- 1,2,4-Trimethylbenzene (also reported as a Part 1A Substance)
- Benzene (also reported as a Part 1A substance)
- N-hexane (also reported as a Part 1A Substance)
- Propane
- Styrene (also reported as a Part 1A Substance)
- Toluene (also reported as a Part 1A Substance)
- Xylene (also reported as a Part 1A Substance)
- Butane (all isomers)
- Butene (all isomers)
- Heptane (all isomers)
- Hexane (all isomers)
- Nonane (all isomers)
- Octane (all isomers)
- Pentane (all isomers)
- Propylene
- Methyl ethyl ketone
- Pentene (all isomers)
- Benzo(a)phenanthrene
- Benzo(a)pyrene
- Fluorene
- Phenanthrene
- Pyrene





### 3.0 GENERAL FACILITY INFORMATION

Table 3-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 3-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road Sarnia, Ontario N7T 7J3	O. Reg. 455/09 s.18(2) subparagraph 4
Universal Transverse Mercator (UTM) in North American Datum (NAD83)	Latitude: 42.93060 Longitude: -82.44330	O. Reg. 455/09 s.18(2) subparagraph 13
National Pollutant Release Inventory Identification Number	3071	O. Reg. 455/09 s.18(2) subparagraph 2
Ontario Regulation 127/01 Identification Number	Not applicable	O. Reg. 455/09 s.18(2) subparagraph 3
Two Digit North American Industry Classification System (NAICS) Code	32 – Manufacturing	O. Reg. 455/09 s.18(2) subparagraph 6
Four Digit North American Industry Classification System (NAICS) Code	3241 – Petroleum and Coal Product Manufacturing	O. Reg. 455/09 s.18(2) subparagraph 6
Six Digit North American Industry Classification System (NAICS) Code	324110 – Petroleum Refineries	O. Reg. 455/09 s.18(2) subparagraph 6
Number of Full-time Employee Equivalents at the Facility	601 (as of December 31, 2016)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications & Stakeholder Relations Advisor 1900 River Road Sarnia, Ontario N7T 7J3 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7



## 4.0 SUBSTANCE REPORTING

In accordance with s. 26(1) subparagraphs 2 and 7, the Suncor Sarnia Refinery made determinations for each substance reportable under the Act as follows:

- 1) The amount of the substance that enters a process as the substance itself or as a constituent of another substance.
- 2) The amount of the substance that is created.
- 3) If the substance is a TRA substance,
  - i. quantifications relating to its release, disposal and transfer that,
    - A. are required to be provided under the TRA Notice, or
    - B. are determined through mass balance, published emission factors, site specific emission factors or engineering estimates, if no quantifications were required to be provided under the TRA Notice, and
  - ii. the amount of the substance that is contained in product, other than a substance that is identified as a criteria air contaminant or a volatile organic compound in the TRA Notice.
- 4) If the toxic substance is acetone, the calculations mentioned in subsection 4 (3) of Ontario Regulation 127/01 (Airborne Contaminant Discharge Monitoring and Reporting) made under the Environmental Protection Act.

For the purposes of maintaining confidentiality, the Suncor Sarnia Refinery has reported 'Use', 'Created' and 'Contained in Product' quantities in the bands and ranges prescribed by the Ontario Ministry of the Environment. The band and ranges specified by the Ontario Ministry of the Environment are summarized as follows:

- >0 to 1
- >1 to 10
- >10 to 100
- >100 to 1,000
- >1,000 to 10,000
- >10,000 to 100,000
- >100,000 to 1,000,000

The units of measure depend upon the substance being reported under the TRA and O. Reg. 127/01. Generally, release, disposal and recycling quantities are reported in tonnes. However, for substances with alternate reporting thresholds, these quantities are reported in kilograms or grams.

- TRA Part 1A – Substances listed at the original TRA threshold [tonnes]
- TRA Part 1B – Metals listed at an alternate threshold [kilograms]
- TRA Part 2 – Polycyclic aromatic compounds (PAHs), [kilograms]
- TRA Part 3 – Hexachlorobenzene (HCB), Dioxins/furans (toxic equivalent), [grams]
- TRA Part 4 – Criteria Air Contaminants (CACs) [tonnes]
- TRA Part 5 – Speciated volatile organic compounds [tonnes]
- O. Reg. 127/01 – Acetone [tonnes]



The following sections summarize the information outlined above for each substance.

**Note:**

'—' is equal to zero in the tables below

'0.0000' is a value greater than zero but greater than four (4) decimal places

n/a is not applicable

**4.1 1,2,4 Trimethylbenzene (CAS# 95-63-6)**

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	29.43	854.8204	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	8.12	4207.1885	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	8.58	5066.4044	No significant change
Air Releases (tonnes)	1.4336	1.2732	12.60	0.1604	Small increase in loading emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



## 4.2 Ammonia (CAS# NA - 16)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-18.87	-4.6464	Decreased concentration of ammonia and flow rate
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	9.26	360.0924	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	6.5937	6.6734	-1.20	-0.0800	No significant change
Water Releases (tonnes)	9.7636	9.1957	-37.90	-5.9592	Decreased concentration of ammonia and flow rate
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

## 4.3 Asbestos (CAS# 1332-21-4)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	—	—	—	—	n/a
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	13.6000	8.06	68.73	5.5400	More maintenance completed leading to increase in asbestos insulation removal.
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.4 Benzene (CAS# 71-43-2)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>1,000 to 10,000	>1,000 to 10,000	-3.36	-187.5548	No significant change
Created(tonnes)	>10,000 to 100,000	>10,000 to 100,000	5.91	2054.6897	No significant change
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	4.63	1867.1349	No significant change
Air Releases (tonnes)	5.4852	4.8575	12.92	0.6277	Slight increase in fugitive emissions
Water Releases (tonnes)	0.0014	0.0017	-17.65	-0.0003	Small amount, <1kg insignificant
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	6.3417	37.2459	-82.97	-30.9043	In 2016 waste was higher due to a benzene remediation project
Transferred for Recycling (tonnes)	0.0915	0.0031	2851.61	0.0884	Small amount, <10kg

#### 4.5 Cadmium and its compounds (CAS# NA-03)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 1 to 10	2.66	0.1617	No significant change
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	6.2319	6.0702	2.66	0.1617	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Transferred for Disposal (kg)	0	0	0	0	No significant change
Transferred for Recycling (kg)	0	0	0	0	No significant change



#### 4.6 Cyclohexane (CAS# 110-82-7)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-0.75	-81.8503	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	11.23	933.9622	Increase in production levels
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-0.86	-63.0474	No significant change
Air Releases (tonnes)	3.2579	4.1496	-21.49	-0.8917	Reduced storage and handling emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.7 Cumene (CAS# 98-82-8)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	1.66	11.8695	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	29.44	507.2360	Increase in production levels
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	21.28	519.1054	Increase in production levels
Air Releases (tonnes)	0.2409	0.2331	3.35	0.0078	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.8 Dicyclopentadiene (CAS# 77-73-6)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0	0	0	0	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	0	0	0	0	No significant change
Air Releases (tonnes)	0.0023	0.0011	109.09	0.0012	Small increase in fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.9 Ethylbenzene (CAS# 100-41-4)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-2.18	-192.9117	No significant change
Created (tonnes)	>10,000 to 100,000	>10,000 to 100,000	11.64	3015.7468	Increase in production levels
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	7.54	2642.5393	No significant change
Air Releases (tonnes)	2.1764	1.9303	12.75	0.2461	Increase in fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.1409	0	100	0.1409	Tank sludge disposal in 2017
Transferred for Recycling (tonnes)	0.0978	—	100	0.0978	Tank sludge disposal in 2017



#### 4.10 Hydrofluoric Acid (CAS# 7664-39-3)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	0.78	0.5715	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.4793	0.5256	-0.0463	-8.81	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.11 Hydrogen Sulphide (CAS# 7783-06-4)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 1 to 10	8.70	0.8547	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	21.98	10559.7139	Variation in feed composition and availability of sour crude
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	1.5397	1.4435	6.66	0.0962	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a





#### 4.12 Methanol (CAS# 67-56-1)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>10 to 100	-1.88	-1.6406	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0370	0.0302	22.11	0.0067	Increased throughput in antifreeze tank
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.13 Molybdenum Trioxide (CAS# 1313-27-5)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0	>1 to 10	-100	-8.2013	No new catalyst loaded in 2017
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	—	—	—	—	n/a
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.14 Naphthalene (CAS# 91-20-3)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	19.34	10196.0304	Increased kerosene production
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	0.68	143.2302	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	10.79	3057.2644	Increased kerosene production
Air Releases (tonnes)	0.1469	0.1661	-11.56	-0.0192	Reduced fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.009	0	100	0.009	Waste containing naphthalene was generated
Transferred for Recycling (tonnes)	0.0779	—	100	0.0779	Tank waste containing naphthalene was recycled

#### 4.15 N-Hexane (CAS# 110-54-3)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-0.91	-335.5051	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	15.83	1631.6058	Increase in production levels
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	7.58	3543.1839	No significant change
Air Releases (tonnes)	13.4155	14.1306	-5.06	-0.7151	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.16 Nickel and its compounds (CAS# NA-11)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1 to 10	> 1 to 10	0.00	0.0001	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0283	0.0282	0.35	0.0001	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.17 Styrene (CAS# 100-42-5)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0	0	0.00	0.0000	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	0	0	0.00	0.0000	No significant change
Air Releases (tonnes)	0.0020	0.0021	-4.76	-0.0001	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.18 Sulphuric Acid (CAS# 7664-93-9)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	7.55	5.7556	
Created (tonnes)	> 1 to 10	> 1 to 10	16.56	0.8352	Increase in production levels
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	5.8796	5.044	16.56	0.8352	Increase in production levels
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	1.7910	-100	-1.7910	There was no disposal of waste sulphuric acid in 2017
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.19 Toluene (CAS# 108-88-3)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2.32	682.2838	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	7.40	9923.4695	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	5.84	9634.7277	No significant change
Air Releases (tonnes)	30.8843	28.8354	7.11	2.0489	No significant change
Water Releases (tonnes)	0.0011	0.0008	37.50	0.0003	<1 kg – insignificant
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.5286	0.0821	543.85	0.4465	Increase in tank waste quantities disposed in 2017
Transferred for Recycling (tonnes)	0.3792	—	100	0.3792	First time recycling of tank waste in 2017



#### 4.20 Xylene, all isomers (CAS# 1330-20-7)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-3.00	-476.6356	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	5.21	7931.1189	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	3.79	6428.2409	No significant change
Air Releases (tonnes)	19.7094	18.5215	6.41	1.1879	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.5764	0.0002	288100	0.5762	Increase in tank waste quantities disposed in 2017
Transferred for Recycling (tonnes)	0.7620	—	100	0.7620	First time recycling of tank waste in 2017

#### 4.21 Total Reduced Sulfur (CAS# NA-M14)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	7.81	25.8842	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	21.98	10559.7143	Variation in feed composition and availability of sour crude
Contained in Product (tonnes)	> 10 to 100	> 10 to 100	-13.64	-6.2082	Variation in feed composition and availability of sour crude
Air Releases (tonnes)	1.5397	1.4435	6.66	0.0962	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.22 Cobalt (CAS# NA-05)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 0 to 1	> 0 to 1	1.28	0.0093	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.7344	0.7251	1.28	0.0093	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

#### 4.23 Tetrachloroethylene (CAS# NA-M14)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	1 to 10	1 to 10			Less purchased in 2017
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	—	—	—	—	n/a
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



#### 4.24 Oxides of Nitrogen (CAS# 11104-93-1)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	0.28	2.1838	No significant change
Air Releases (tonnes)	794.1681	791.9843	0.28	2.1838	No significant change



#### 4.25 Carbon Monoxide (CAS# 630-08-0)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	15.81	487.9518	Increase in production levels
Air Releases (tonnes)	3574.2047	3086.8529	15.81	487.9518	Increase in production levels

#### 4.26 Sulphur Dioxide (CAS# 7446-09-5)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-22.07	-76.5893	Decrease in flaring, especially acid gas flaring
Air Releases (tonnes)	270.3635	346.9528	-22.07	-76.5893	Decrease in flaring, especially acid gas flaring

#### 4.27 Total Particulate Matter (CAS# NA - M08)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-1.24	-1.7574	No significant change
Air Releases (tonnes)	140.3773	142.1347	-1.24	-1.7574	No significant change





#### 4.28 PM10 - Particulate Matter <10 microns (CAS# NA – M09)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	-1.32	-0.9910	No significant change
Air Releases (tonnes)	74.3026	75.2936	-1.32	-0.9910	No significant change

#### 4.29 PM2.5 - Particulate Matter < 2.5 microns (CAS# NA – M10)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	-1.72	-0.4488	No significant change
Air Releases (tonnes)	25.6520	26.1008	-1.72	-0.4488	No significant change

#### 4.30 Propane (CAS# 74-98-6)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-3.22	-539.7511	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-1.45	-847.2312	No significant change
Air Releases (tonnes)	20.7603	39.3245	-47.21	-18.5642	Flare Gas Recovery Unit outage in 2016



#### 4.31 Butane, all isomers (CAS# NA-24)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	5.97	6679.6684	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-11.07	-16896.8511	Less created in hydrocracker
Air Releases (tonnes)	46.8913	98.7886	-52.53	-51.8973	Flare Gas Recovery Unit outage in 2016

#### 4.32 Butene, all isomers (CAS# 25167-67-3)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-18.63	-9863.2253	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-20.09	-3099.0937	Less created in hydrocracker
Air Releases (tonnes)	6.6827	8.0913	-17.41	1.4086	Flare Gas Recovery Unit outage in 2016

#### 4.33 Heptane, all isomers (CAS# NA-31)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	10.67	5576.2838	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-12.38	-10944.7738	
Air Releases (tonnes)	1.4421	2.3846	-39.52	-0.9425	Flare Gas Recovery Unit outage in 2016



#### 4.34 Hexane, all isomers excluding n-hexane (CAS# NA-32)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-0.90	-421.5083	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	0.96	971.0490	No significant change
Air Releases (tonnes)	5.6477	9.9673	-43.34	-4.3196	Flare Gas Recovery Unit outage in 2016

#### 4.35 Nonane, all isomers (CAS# NA-33)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	4.10	1824.4786	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	9.93	7080.5063	No significant change
Air Releases (tonnes)	0.7190	0.6902	4.17	0.0288	No significant change

#### 4.36 Octane, all isomers (CAS# NA-34)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	12.65	5995.4185	Feedstock variability
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	0.17	334.7387	No significant change
Air Releases (tonnes)	1.8376	3.0310	-39.37	-1.1934	Flare Gas Recovery Unit outage in 2016



#### 4.37 Pentane, all isomers (CAS# NA-35)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2.44	2261.9948	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	5.66	7724.0421	No significant change
Air Releases (tonnes)	10.7306	22.4054	-52.11	-11.6748	Flare Gas Recovery Unit outage in 2016

#### 4.38 Propylene (CAS# 115-07-1)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-6.96	-140.2798	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	7.70	1174.4545	No significant change
Air Releases (tonnes)	2.2040	1.9194	14.83	0.2846	Increase in fugitive emissions



#### 4.39 Methyl ethyl ketone (CAS# 78-93-3)

Required Information	2017 Reporting Year	2016 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	>1 to 10	>1 to 10	-0.85	-0.0268	No significant change
Air Releases (tonnes)	0.0074	0.0351	-78.92	-0.0277	reduced fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.0010	12.4957	-99.99	-12.4947	Reactor cleanout in 2016
Transferred for Recycling (tonnes)					

#### 4.40 Benzo(a)phenanthrene (CAS# 218-01-9)

Required Information	2017 Reporting Year (kg)	2012 Reporting Year (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>0 to 1	>0 to 1	12.70	0.0073	Fluctuates based on crude throughput and tank disposals
Created(tonnes)	>10 to 100	>10 to 100	-38.03	-13.6547	Fluctuates based on crude throughput and tank disposals
Contained in Product (tonnes)	0	0	0	0	No significant change
Air Releases (tonnes)	0.2436	0.229	6.24	0.0143	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	3.6105	35.7328	-89.90	-32.1223	Disposals dependent on tank sludge clean outs
Transferred for Recycling (tonnes)	18.4609	0	100	18.4609	No recycle in 2012



#### 4.41 Benzo(a)pyrene (CAS# 50-32-8)

Required Information	2017 Reporting Year (kg)	2012 Reporting Year (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>0 to 1	>0 to 1	13.64	0.0006	Fluctuates based on crude throughput and tank disposals
Created(tonnes)	>10 to 100	>10 to 100	92.78	20.4858	Fluctuates based on crude throughput and tank disposals
Contained in Product (tonnes)	0	0	0	0	No significant change
Air Releases (tonnes)	0.0369	0.0346	6.65	0.0023	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	34.0399	22.0503	54.37	11.9896	Disposals dependent on tank sludge clean outs
Transferred for Recycling (tonnes)	8.4944	0	100	8.4944	No recycle in 2012

#### 4.42 Fluorene (CAS# 86-73-7)

Required Information	2017 Reporting Year (kg)	2012 Reporting Year (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	0	0	0	0	No significant change
Created(tonnes)	>1 to 10	>10 to 100	-65.72	-15.5481	Fluctuates based on crude throughput and tank disposals
Contained in Product (tonnes)	0	0	0	0	No significant change
Air Releases (tonnes)	0.3110	0.2798	11.15	0.0312	
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a



Transferred for Disposal (tonnes)	6.2407	22.7455	-72.56	-16.5048	Disposals dependent on tank sludge clean outs
Transferred for Recycling (tonnes)	1.5569	0	100	1.5569	No recycle in 2012

#### 4.43 Phenanthrene (CAS# 85-01-8)

Required Information	2017 Reporting Year (kg)	2012 Reporting Year (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>0 to 1	>0 to 1	11.70	0.0372	Fluctuates based on crude throughput and tank disposals
Created(tonnes)	>10 to 100	>10 to 100	-21.23	-12.8168	Fluctuates based on crude throughput and tank disposals
Contained in Product (tonnes)	0	0	0	0	No significant change
Air Releases (tonnes)	2.4204	1.2775	89.46	1.1429	
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	13.7203	57.9555	-44.2352	-76.33	Dependent on tank sludge clean outs and disposal options
Transferred for Recycling (tonnes)	31.7649	1.4522	2087.36	30.3127	Minimal recycle in 2012

#### 4.44 Pyrene (CAS# 129-00-0)

Required Information	2017 Reporting Year (kg)	2012 Reporting Year (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>0 to 1	>0 to 1	11.69	0.0114	Fluctuates based on crude throughput and tank disposals
Created(tonnes)	>10 to 100	>10 to 100	10.22	4.3767	Fluctuates based on crude throughput and tank disposals
Contained in Product (tonnes)	0	0	0	0	No significant change
Air Releases (tonnes)	2.6424	2.5691	2.85	0.0733	No significant change
Water Releases (tonnes)	—	—	—	—	n/a



On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	9.2924	40.3501	-76.97	-31.0577	Disposals dependent on tank sludge clean outs
Transferred for Recycling (tonnes)	35.3726	0	100	35.3726	No recycle in 2012

#### 4.45 Pentene, all isomers (CAS# NA - 36)

Required Information	2017 Reporting Year (kg)		Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>100 to 1,000	—	—	—	First Year Reporting
Created(tonnes)	>1,000 to 10,000	—	—	—	First Year Reporting
Air Releases (tonnes)	2.7857	—	—	—	First Year Reporting

## 5.0 TOXIC SUBSTANCE REDUCTION PLAN SUMMARY

As described in the Toxic Substance Reduction Plan Summaries dated December 14, 2012, December 14, 2013 and December 24, 2016 there were no options identified for implementation, above and beyond the actions the Sarnia Refinery has already taken, at this time. The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

Finally, there have been no amendments to the Toxic Substance Reduction Plan Summaries dated December 14, 2012 and December 14, 2013, December 24, 2016, and December 1, 2017.





## **6.0 ANNUAL CERTIFICATION STATEMENT**

In accordance with s.19 of O. Reg. 455/09, the highest ranking employee at the facility electronically certified the toxic substance plan. A copy of the electronic certification is provided in Attachment 1.



## **Attachment 1: Copy of Electronic Certification**

# Report Submission and Electronic Certification

## NPRI - Electronic Statement of Certification

Specify the language of correspondence

Comments (optional)

I hereby certify that I have exercised due diligence to ensure that the submitted information is true and complete. The amounts and values for the facility(ies) identified below are accurate, based on reasonable estimates using available data. The data for the facility(ies) that I represent are hereby submitted to the programs identified below using the Single Window Reporting Application.

I also acknowledge that the data will be made public.

Note: Only the person identified as the Certifying Official or the authorized delegate should submit the report(s) identified below.

Company Name

Certifying Official (or authorized delegate)

Report Submitted by

I, the Certifying Official or authorized delegate, agree with the statements above and acknowledge that by pressing the "Submit Report(s)" button, I am electronically certifying and submitting the facility report(s) for the identified company to its affiliated programs.

## ON MOE TRA - Electronic Certification Statement

### Annual Report Certification Statement

As of 31/05/2018, I, Mark Hiseler, certify that I have read the reports on the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the information contained in the reports is factually accurate and the reports comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

### TRA Substance List

**CAS RN**

**Substance Name**

NA - 16	Ammonia (total)
1332-21-4	Asbestos (friable form only)
71-43-2	Benzene
218-01-9	Benzo(a)phenanthrene
50-32-8	Benzo(a)pyrene
NA - 24	Butane (all isomers)
25167-67-3	Butene (all isomers)
NA - 03	Cadmium (and its compounds)
630-08-0	Carbon monoxide
NA - 05	Cobalt (and its compounds)
98-82-8	Cumene
110-82-7	Cyclohexane
77-73-6	Dicyclopentadiene
100-41-4	Ethylbenzene
86-73-7	Fluorene
NA - 31	Heptane (all isomers)
NA - 32	Hexane (all isomers excluding n-hexane)

7664-39-3	Hydrogen fluoride
7783-06-4	Hydrogen sulphide
67-56-1	Methanol
78-93-3	Methyl ethyl ketone
1313-27-5	Molybdenum trioxide
91-20-3	Naphthalene
110-54-3	n-Hexane
NA - 11	Nickel (and its compounds)
11104-93-1	Nitrogen oxides (expressed as NO <sub>2</sub> )
NA - 33	Nonane (all isomers)
NA - 34	Octane (all isomers)
NA - 35	Pentane (all isomers)
NA - 36	Pentene (all isomers)
85-01-8	Phenanthrene
NA - M09	PM <sub>10</sub> - Particulate Matter
NA - M10	PM <sub>2.5</sub> - Particulate Matter
74-98-6	Propane

115-07-1	Propylene
129-00-0	Pyrene
100-42-5	Styrene
7446-09-5	Sulphur dioxide
7664-93-9	Sulphuric acid
108-88-3	Toluene
NA - M08	Total Particulate Matter
NA - M14	Total reduced sulphur (expressed as hydrogen sulphide)
1330-20-7	Xylene (all isomers)

Company Name

Suncor Energy Products Partnership

Highest Ranking Employee

Mark Hiseler

Report Submitted by

Mark Hiseler

Website address

I, the highest ranking employee, agree with the certification statement(s) above and acknowledge that by checking the box I am electronically signing the statement(s). I also acknowledge that by pressing the 'Submit Report(s)' button I am submitting the facility record(s)/report(s) for the identified facility to the Director under the Toxics Reduction Act, 2009. I also acknowledge that the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 provide the authority to the Director under the Act to make certain information as specified in subsection 27(5) of Ontario Regulation 455/09 available to the public.

## Submitted Report

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Period	Submission Date	Facility Name	Province	City	Programs
2017	31/05/2018	Sarnia Refinery	Ontario	Sarnia	NPRI, ON MOE TRA, NFPRER

Note: If there is a change in the contact information for the facility, a change in the owner or operator of the facility, if operations at the facility are terminated, or if information submitted for any previous year was mistaken or inaccurate, please update this information through SWIM or by contacting the National Pollutant Release Inventory directly.