



TOXICS REDUCTION ACT

**Report on Toxic Substance
Accounting Requirements**

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

July 2019



Version Control

Version	Date Issued	Modifications
Original	July 2019	Original version made available to the public and employees



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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 2018, the Sarnia Refinery employed 695 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 2018, 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 2018, 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
- 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 th 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	695 (as of December 31, 2018)	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: jjohnson@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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	8.29	311.8256	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-14.93	-8369.6588	Variation in crude feedstock
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-12.97	-8312.2400	Variation in crude feedstock
Air Releases (tonnes)	1.3006	1.4336	-9.28	-0.133	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.5009	—	—	—	Changes in composition of materials disposed
Transferred for Recycling (tonnes)	—	—	—	—	n/a



4.2 Ammonia (CAS# NA - 16)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	0.76	0.1511	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-11.27	-478.7767	Decrease in production levels
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	7.2694	6.5937	10.25	0.6757	Increased production time
Water Releases (tonnes)	8.7537	9.7636	-10.34	-1.0099	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	Reporting Year 2018	Reporting Year 2017	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)	6.230	13.6000	-54.19	-7.3700	Less maintenance completed in leading to decrease in asbestos insulation removal.
Transferred for Recycling (tonnes)	—	—	—	—	n/a



4.4 Benzene (CAS# 71-43-2)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>1,000 to 10,000	>1,000 to 10,000	9.10	491.0900	No significant change
Created(tonnes)	>10,000 to 100,000	>10,000 to 100,000	-12.13	-4463.2467	Decrease in production levels
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-9.41	-3972.1567	No significant change
Air Releases (tonnes)	5.1905	5.4852	-5.37	-0.2947	No significant change
Water Releases (tonnes)	0.0015	0.0014	7.14	0.0001	No significant change
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.0755	6.3417	-98.81	-6.2662	waste was higher due to a benzene remediation project
Transferred for Recycling (tonnes)	0.05593	0.0915	-35.26	-0.0323	Small amount, <10kg

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 1 to 10	-2.28	-0.1419	No significant change
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	6.1110	6.2319	-1.94	-0.1209	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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	12.26	1327.3184	Variation in crude feedstock
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-13.68	-1265.1957	Variation in crude feedstock
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	11.28	820.8019	Variation in crude feedstock
Air Releases (tonnes)	3.7797	3.2579	16.02	0.5218	Large gasoline tank in service for full year in ; it was out of service for 6 months in RY
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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	14.52	105.6773	Variation in crude feedstock
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-30.77	-686.1570	Lower throughput to reformer
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-19.62	-580.4795	Decrease in production levels
Air Releases (tonnes)	0.2472	0.2409	2.62	0.0063	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.0417	—	100	0.0417	Changes in composition of materials disposed
Transferred for Recycling (tonnes)	—	—	—	—	n/a



4.8 Dicyclopentadiene (CAS# 77-73-6)

Required Information	Reporting Year 2018	Reporting Year 2017	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)	0.0030	0.0023	30.43	0.0007	<1 kg - insignificant
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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-4.23	-366.2157	Variation in crude feedstock
Created (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-17.79	-5148.0660	Variation in crude feedstock
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-10.47	-3945.3366	Variation in crude feedstock
Air Releases (tonnes)	1.3760	2.1764	-36.78	-0.8004	Decrease in truck loading and fugitive emissions.
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.0670	0.1409	-52.45	-0.0739	No tank sludge disposal in
Transferred for Recycling (tonnes)	0.0539	0.0978	-44.89	-0.0439	No tank sludge disposal in



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-1.17	-0.8618	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.3463	0.4793	-27.75	-0.1330	Year over year change is mainly from analyzer variations.
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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-6.32	-0.6749	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-11.54	-6763.0257	Variation in feed composition and availability of sour crude
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	4.0722	1.5397	164.48	2.5325	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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>10 to 100	-2.75	-2.3604	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0360	0.0370	-2.70	-0.0010	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

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	0	100	33.3841	New catalyst loaded in 2018
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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-1.59	-1002.9146	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-4.40	-931.2036	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-0.76	-238.0724	No significant change
Air Releases (tonnes)	0.1528	0.1469	4.02	0.0059	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.0866	0.009	862.22	0.0776	More waste containing material was disposed of in 2018
Transferred for Recycling (tonnes)	0.0697	0.0779	-10.53	-0.0082	Less waste containing material was recycled in 2018

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	7.07	2580.2286	No significant change
Created (tonnes)	> 1,000 to 10,000	> 10,000 to 100,000	-27.12	-3237.9405	Decrease in production levels
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-4.15	2089.1481	No significant change
Air Releases (tonnes)	13.4686	13.4155	0.40	0.0531	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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1 to 10	> 1 to 10	0.06	0.0015	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0297	0.0283	4.95	0.0014	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	Reporting Year 2018	Reporting Year 2017	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)	0.0021	0.0020	5.00	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	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	55.66	45.6539	Warehouse overstock of material
Created (tonnes)	> 1 to 10	> 1 to 10	1.04	0.0610	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	5.9406	5.8796	1.04	0.0610	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	There was no disposal of waste sulphuric acid in
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.19 Toluene (CAS# 108-88-3)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-4.66	-19173.1035	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-13.31	12260.7030	
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-7.02	-1400.5137	No significant change
Air Releases (tonnes)	24.2755	30.8843	-21.40	-6.6089	
Water Releases (tonnes)	0.0011	0.0012	-8.33	-0.0001	No significant change
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.2772	0.5286	-47.57	-0.2515	Less waste containing the contaminant was shipped offsite for disposal.
Transferred for Recycling (tonnes)	0.2229	0.3792	-41.22	-0.1563	Less waste containing the contaminant was shipped offsite for recycle



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	6.69	1029.9339	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-12.23	-19597.5429	Decrease in production levels
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-5.55	-9775.3868	No significant change
Air Releases (tonnes)	17.0746	19.7094	-13.37	-2.6347	Decrease in truck loading and fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	3.3859	0.5764	487.42	2.8095	Increased waste containing material disposed in 2018
Transferred for Recycling (tonnes)	0.5573	0.7620	-26.86	-0.2047	Less recycling containing the contaminant was shipped offsite for disposal

4.21 Total Reduced Sulfur (CAS# NA-M14)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	-5.39	-19.2698	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-11.54	-6763.0257	Variation in feed composition and availability of sour crude
Contained in Product (tonnes)	> 10 to 100	> 10 to 100	-7.33	-7.33	No significant change
Air Releases (tonnes)	4.0722	1.5397	164.48	2.5325	Maintenance Turnaround in 2018
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	Reporting Year 2018 (kg)	Reporting Year 2017 (kg)	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 0 to 1	817.25	6.0019	New catalyst loaded in 2018
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	0.7517	0.7344	2.36	0.0173	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Transferred for Disposal (kg)	—	—	—	—	n/a
Transferred for Recycling (kg)	—	—	—	—	n/a

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-1.39	-11.0241	No significant change
Air Releases (tonnes)	783.1440	791.9843	-1.39	-11.0241	No significant change



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	8.98	321.0509	No significant change
Air Releases (tonnes)	3895.2566	3574.2047	8.98	321.0509	No significant change

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	97.18	262.7461	Maintenance Turnaround in 2018 increased flaring
Air Releases (tonnes)	533.1096	270.3635	97.18	262.7461	Increase in SO2 emissions from increase in flaring during Turnaround

4.26 Total Particulate Matter (CAS# NA - M08)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	9.02	12.6686	No significant change
Air Releases (tonnes)	153.0459	140.3773	9.02	12.6686	No significant change



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	8.45	6.2767	No significant change
Air Releases (tonnes)	80.5793	74.3026	8.45	6.2767	No significant change

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	5.73	1.4698	No significant change
Air Releases (tonnes)	27.1218	25.6520	5.73	1.4698	No significant change

4.29 Propane (CAS# 74-98-6)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-14.73	-2390.0920	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2.26	1302.5434	No significant change
Air Releases (tonnes)	21.9100	20.7603	5.54	1.1497	No significant change



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	23.98	28456.3026	Feedstock variability
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	7.64	10366.1161	No significant change
Air Releases (tonnes)	58.1282	46.8913	23.96	11.2369	Flare Gas Recovery Unit outage in 2018

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	11.58	4986.0974	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	27.05	3333.8651	More created in hydrocracker
Air Releases (tonnes)	6.3831	6.6827	-4.48	-0.2996	No significant change

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-49.25	-28491.6879	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-9.12	-7356.7709	No significant change
Air Releases (tonnes)	2.3978	1.4421	66.27	0.9557	Flare Gas Recovery Unit outage in 2018



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-1.36	-633.9141	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	1.59	1631.5457	No significant change
Air Releases (tonnes)	6.5935	5.6477	16.75	0.9458	Flare Gas Recovery Unit outage in 2018

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	7.89	3655.1805	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-15.52	-12160.3408	Less created in hydrocracker
Air Releases (tonnes)	0.6577	0.7190	8.53	0.613	No significant change

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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	0.78	416.4174	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-5.78	-11268.6667	No significant change
Air Releases (tonnes)	3.0604	1.8376	66.54	1.2228	Flare Gas Recovery Unit outage in 2018



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	30.29	28825.4835	Feedstock variability
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-19.36	-27929.7434	Less created in hydrocracker
Air Releases (tonnes)	13.3201	10.7306	24.13	2.5895	Flare Gas Recovery Unit outage in 2018

4.37 Propylene (CAS# 115-07-1)

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-10.07	-188.7910	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	1.90	311.7669	No significant change
Air Releases (tonnes)	2.0979	2.2040	-4.81	-0.1061	No significant change



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

Required Information	Reporting Year 2018	Reporting Year 2017	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	>1 to 10	>1 to 10	1.80	0.0565	No significant change
Air Releases (tonnes)	0.0649	0.0074	777.03	0.0575	Only a change of 57 kg of increased fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	0.0010	-100	-0.0010	No waste containing the contaminant was shipped offsite for disposal.
Transferred for Recycling (tonnes)	—	—	—	—	

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

Required Information	Reporting Year 2018 (kg)	Reporting Year 2018 (kg)	Reporting Year 2017	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	-16.36	-0.0106	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	0.07	0.0159	No significant change
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	0.2488	0.2436	2.18	0.0053	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Transferred for Disposal (kg)	19.6335	3.6105	443.80	16.0231	Disposals dependent on tank sludge clean outs
Transferred for Recycling (kg)	15.7889	18.4609	-14.47	-2.6719	Less recycled material in 2018



4.40 Phenanthrene (CAS# 85-01-8)

Required Information	Reporting Year 2018 (kg)	Reporting Year 2018 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	-13.43	-0.0477	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	27.29	12.9763	Fluctuates based on crude throughput and tank disposals
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	2.4914	2.4204	2.94	0.0820	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Transferred for Disposal (kg)	32.3375	13.7203	135.69	18.6172	Dependent on tank sludge clean outs and disposal options
Transferred for Recycling (kg)	26.0053	31.7649	-18.13	-5.7596	Less recycle in 2018

4.41 Pyrene (CAS# 129-00-0)

Required Information	Reporting Year 2018 (kg)	Reporting Year 2018 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	-14.23	-0.0155	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	47.15	22.2538	Fluctuates based on crude throughput and tank disposals
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	2.8683	2.6424	8.55	0.2259	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Transferred for Disposal (kg)	36.9572	9.2924	297.71	27.6648	Disposals dependent on tank sludge clean outs
Transferred for Recycling (kg)	35.3726	35.3726	-15.98	-5.6523	Less recycle in 2018



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

Required Information	Reporting Year 2018	Reporting Year 2018	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>100 to 1,000	>100 to 1,000	93.40	286.5235	Variation in crude feedstock
Created(tonnes)	>1,000 to 10,000	>1,000 to 10,000	25.39	2138.7481	More created in hydrocracker
Air Releases (tonnes)	2.8677	2.7857	2.94	0.0820	No significant change

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, 2018 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, and December 24, 2018.



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 MECP TRA - Electronic Certification Statement

Annual Report Certification Statement

As of 28/06/2019, 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
NA - 24	Butane (all isomers)
25167-67-3	Butene (all isomers)
NA - 03	Cadmium (and its compounds)
630-08-0	Carbon monoxide
218-01-9	Chrysene
NA - 05	Cobalt (and its compounds)
98-82-8	Cumene
110-82-7	Cyclohexane
77-73-6	Dicyclopentadiene
100-41-4	Ethylbenzene
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 ₂)
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	PM10 - Particulate Matter
NA - M10	PM2.5 - 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)

*Due to reporting system limitations, for the 2018 annual report the TRA Substance List may included new Volatile Organic Compounds (VOCs) and/or Dioxins and Furans congeners reported to NPRI only.

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

Period	Submission	Facility Name	Province	City	Programs
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Date

2018	28/06/2019	Sarnia Refinery	Ontario	Sarnia	NPRI,ON MECP TRA,NFPRER
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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.