



2016 TOXICS REDUCTION ACT

**Report on Toxic Substance
Accounting Requirements**

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

July 2017



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 (TRIA) substances if reporting to the TRIA 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 TRIA. Specifically, the Suncor Sarnia Refinery met the reporting requirements for the following substances listed in Schedule A of O. Reg. 455/09:

TRIA 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

TRIA Part 1B Substances:

- Cobalt

TRIA 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



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	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: 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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-46%	-2505.5235	Decrease in C9-200 loading at the dock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	9%	4347.6013	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	4%	2260.5472	No significant change
Air Releases (tonnes)	1.2732	1.3169	-3%	0.0437	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



4.2 Ammonia (CAS# NA - 16)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	53%	8.5357	Increased concentration of NH3 and flowrate
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-5%	-213.7985	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	6.6737	6.6734	0%	0.0002	No significant change
Water Releases (tonnes)	9.1957	9.1957	41%	6.5274	Increased concentration of NH3 and flowrate
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	2016 Reporting Year	2015 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)	8.06	22.0400	-63%	-13.98	Less maintenance completed requiring asbestos insulation removal
Transferred for Recycling (tonnes)	—	—	—	—	n/a



4.4 Benzene (CAS# 71-43-2)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>1,000 to 10,000	>1,000 to 10,000	5%	240.6224	No significant change
Created(tonnes)	>10,000 to 100,000	>10,000 to 100,000	-9%	-3464.0639	No significant change
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-7%	-3223.4415	No significant change
Air Releases (tonnes)	4.8575	5.7404	-15%	-0.8828	Tk 31 and 32 outages in 2016
Water Releases (tonnes)	0.0017	0.0016	5%	0.0001	No significant change
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	37.2459	0.22919	16151%	31.07680	BTX turnaround waste
Transferred for Recycling (tonnes)	0.0031	0.0000	100%	0.0031	Tk 80 emulsion

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 1 to 10	-2%	-0.1077	No significant change
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	6.0702	6.5362	-7%	-0.4661	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



4.6 Cyclohexane (CAS# 110-82-7)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	11%	1050.7216	Increase cyclohexane in crude charge
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	6%	460.4866	No significant change
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	5%	338.0337	No significant change
Air Releases (tonnes)	4.1496	4.2120	-1%	-0.0624	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

4.7 Cumene (CAS# 98-82-8)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	9%	71.2646	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	16%	224.8399	Increase of amount created in HYC unit
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	7%	153.5753	No significant change
Air Releases (tonnes)	0.5792	0.4263	36%	0.1528	Increased dock loading of Naptha
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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0	> 1,000 to 10,000	-100%	-1315.4100	No C9-200 was purchased in 2016
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	0	> 1,000 to 10,000	-100%	-1315.4100	No C9-200 was purchased in 2016
Air Releases (tonnes)	0.0011	0.00073	47%	0.0003	<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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	>10,000 to 100,000	-7%	-634.7908	No significant change
Created (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-6%	-1672.5480	No significant change
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-9%	-3561.2881	No significant change
Air Releases (tonnes)	1.9303	2.2973	-16%	-0.3670	Decreased dock loading of naphtha
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0	0.0021	-16015%	-0.0021	Only 2kg difference (insignificant)
Transferred for Recycling (tonnes)	—	—	—	—	—



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-1%	-0.4990	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.5256	0.4040	30%	0.1217	Analyzer variation
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 Sulfide (CAS# 7783-06-4)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1 to 10	> 10 to 1000	-7%	-0.7313	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2%	792.7447	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	1.4435	1.6917	-15%	-0.2482	Unit outages and lower availability of sour crude
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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>100 to 1,000	-39%	-55.6217	Decreased throughput in antifreeze tank
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0302	0.0495	-39%	-0.0192	Decreased 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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	8.2013	0	100%	8.2013	Loaded as catalyst during the 2016 turnaround year
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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-25%	-17449.2433	Naphtha is DHT feed and crude charge decreased
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2%	421.0849	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-11%	-3370.4095	Naphtha is DHT feed and crude charge decreased
Air Releases (tonnes)	0.1661	0.3087	-46%	-0.1426	Decreased naphtha loading
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0	0.0378	-100%	-0.0378	Only 37 kg – insignificant
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-3%	-1097.5748	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-3%	-353.1903	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-8%	-4311.6852	No significant change
Air Releases (tonnes)	14.1306	14.4824	-2%	-0.3518	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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0 to 1	> 10 to 100	8435%	2.4521	No catalyst with nickel loading in 2015, loading in 2016
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0282	0.0291	-3%	-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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0 to 10	> 10 to 100	-100%	-77.9248	Significant decrease in C9-200 purchased in 2016
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	0 to 10	> 10 to 100	-100%	-77.9248	Significant decrease in C9-200 purchased in 2016
Air Releases (tonnes)	0.0021	0.0018	17%	0.0003	>1kg insignificant
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	11%	7.4400	More purchased in 2016 than 2015
Created (tonnes)	> 1 to 10	> 1 to 10	-14%	-0.7927	Unit outages and lower availability of sour crude
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	5.044	5.3872	-14%	-0.7927	Unit outages and lower availability of sour crude
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.19 Toluene (CAS# 108-88-3)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-11%	-3524.1709	Decrease in the amount of TX purchased in 2016
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-5%	-7694.8090	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-10%	-17920.8521	Decrease in the amount of TX purchased in 2016
Air Releases (tonnes)	28.8354	32.9591	-13%	-4.1237	Decrease in toluene loading and naphtha loading in 2016
Water Releases (tonnes)	0.0008	0.0024	-67%	-0.0016	<2 kg – insignificant
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-8%	-1390.3697	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-5%	-7590.7358	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-9%	-15884.6531	No significant change
Air Releases (tonnes)	18.5215	21.4159	-14%	-2.8945	Decreased dock loading of naphtha
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.21 Total Reduced Sulfur (CAS# NA-M14)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	-6%	-22.8505	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2%	792.7447	More produced in HYC and DHT because of turnaround in 2015 which depressed the values
Contained in Product (tonnes)	> 10 to 100	> 10 to 100	14%	5.5459	Less RSH transformed yielding higher TRS in finished product
Air Releases (tonnes)	1.4435	1.6917	-15%	-0.2482	Unit outages and lower availability of sour crude
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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	0 to 10	—	100%	0.0007	First year reporting
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.7251	—	100%	0.7251	First year reporting
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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	1 to 10	1 to 10	-25%	-1.66	Less purchased in 2016
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	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-4%	-31.5140	No significant change
Air Releases (tonnes)	791.9843	823.4982	-4%	-31.5140	No significant change



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

Required Information	2016 Reporting Year	2015 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	2%	110.4331	No significant change
Air Releases (tonnes)	3086.8529	2977.4373	4%	109.4156	No significant change

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	56%	122.7497	Increased flaring in 2016 due to unit outage
Air Releases (tonnes)	346.9528	224.2032	55%	122.7497	Increased flaring in 2016 due to unit outage

4.27 Total Particulate Matter (CAS# NA - M08)

Required Information	2016 Reporting Year	2015 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%	-0.0442	No significant change
Air Releases (tonnes)	142.1347	142.1789	-0%	-0.0442	No significant change



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	-0%	-0.0599	No significant change
Air Releases (tonnes)	75.2936	75.3535	-0%	-0.0599	No significant change

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	-0%	-0.0512	No significant change
Air Releases (tonnes)	26.1008	26.1520	-0%	-0.0512	No significant change

4.30 Propane (CAS# 74-98-6)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-7%	-1284.1016	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-5%	-2971.3084	No significant change
Air Releases (tonnes)	39.3245	5.2108	655%	34.1136	Flare Gas Recovery Unit outage in 2016



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-2%	-2065.5887	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-8%	-13535.6430	No significant change
Air Releases (tonnes)	98.7886	27.1534	264%	71.6352	Flare Gas Recovery Unit outage in 2016

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	13%	6249.5661	More butane in BB receipts in 2016
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2%	435.8266	No significant change
Air Releases (tonnes)	8.0913	4.0697	99%	4.0216	Flare Gas Recovery Unit outage in 2016

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-8%	-4888.8675	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-12%	-10944.7738	Less created in HYC in 2016
Air Releases (tonnes)	2.3846	2.4082	-1%	-0.0237	No significant change



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	3%	1346.2817	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-1%	-1038.3364	No significant change
Air Releases (tonnes)	9.9673	2.0672	382%	7.9001	Flare Gas Recovery Unit outage in 2016

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-16%	-8490.0247	Decreased in C9-200 purchased in 2016
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-10%	-7793.7893	Less nonane made in HYC in 2016
Air Releases (tonnes)	0.6902	0.6462	-7%	0.0440	No significant change

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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-12%	-6210.8489	Less octane in 2016 crude charge
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-11%	-23215.586	Lower HYC product flow
Air Releases (tonnes)	3.0310	3.0755	-1%	-0.0445	No significant change



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

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	4%	3713.7907	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	2%	3134.0828	No significant change
Air Releases (tonnes)	22.4054	5.8394	284%	16.5661	Flare Gas Recovery Unit outage in 2016

4.38 Propylene (CAS# 115-07-1)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	19%	320.6398	Higher amounts in crude charge
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	4%	589.4298	No significant change
Air Releases (tonnes)	1.9194	1.8083	6%	0.1111	No significant change



4.39 Methyl ethyl ketone (CAS# 7)

Required Information	2016 Reporting Year	2015 Reporting Year	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	0 to 10	—	100%	3.1329	First year reporting
Air Releases (tonnes)	0	—	n/a	n/a	First year reporting
Waste	12.4957	—	100%	12.4957	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, 2015 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, 2015.



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 30/05/2017, 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
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)
NA - M09	PM10 - Particulate Matter
NA - M10	PM2.5 - Particulate Matter
74-98-6	Propane
115-07-1	Propylene
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)

NA - M16

Volatile Organic Compounds (VOCs)

1330-20-7

Xylene (all isomers)

Company Name

Suncor Energy Products Partnership

Highest Ranking Employee

Mark Hiseler

Report Submitted by

Mark Hiseler

Website address

www.suncor.com

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 Date	Facility Name	Province	City	Programs
2016	30/05/2017	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.