TOXICS REDUCTION ACT

Report on Toxic Substance Accounting Requirements

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

July 2020

Version Control

Version	Date Issued	Modifications
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Table of Contents

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 2019, the Sarnia Refinery employed 769 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 2019, 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 2019, 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)
- Pentene (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 6th 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	769 (as of December 31, 2019)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Meharey (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	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-12.51	-509.4883	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	6.97	3325.1859	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	5.03	2806.9499	No significant change
Air Releases (tonnes)	1.3800	1.3006	6.10	0.0794	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0.6025	0.5009	20.28	0.1016	Disposal of expired/unused chemicals
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.2 Ammonia (CAS# NA - 16)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-5.48	-1.1022	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	7.69	290.1042	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	6.1002	7.2694	-16.08	-1.1692	Increased downtime of HCC disengager Stack (59 days). No downtime in 2018.
Water Releases (tonnes)	8.8297	8.7537	0.87	0.0760	Increased 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 2019	Reporting Year 2018	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)	38.1100	6.230	511.72	31.8800	Refractory removal during 2019 T/A
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.4 Benzene (CAS# 71-43-2)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>1,000 to 10,000	>1,000 to 10,000	-6.39	-375.9378	No significant change
Created(tonnes)	>10,000 to 100,000	>10,000 to 100,000	15.04	4865.9932	Increase in production levels
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	11.74	4490.0554	Increase in production levels
Air Releases (tonnes)	5.4142	5.1905	4.31	0.2237	No significant change
Water Releases (tonnes)	0.0019	0.0015	26.67	0.0004	Less than 1 kg - annual concentration and flowrate variances
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposals	0.2382	0	100	0.2382	Increased flow of material to hydrocell (material disposal) / Tank 39 bottoms / Offsite tank disposals
Total Off-site transfer	0.4698	0.0755	522.25	0.3943	
Transferred for Recycling (tonnes)	0.0689	0.0592	16.39	0.0097	< 10 kg - insignificant

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 1 to 10	5.50	0.3348	No significant change
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	6.4248	6.1110	5.14	0.3138	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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-8.24	-1000.7904	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-9.08	-725.1698	No significant change
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-40.21	-3255.8477	Variation in crude feedstock
Air Releases (tonnes)	3.9752	3.7797	5.17	0.1955	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	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	-4.01	-33.4292	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	10.96	169.2247	Higher throughput to reformer
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	5.71	135.7954	No significant change
Air Releases (tonnes)	0.1435	0.2472	-41.95	-0.1037	Decreased dock loading of Naphtha
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0.0603	0	100	0.0603	Disposal of expired/unused chemicals
Total Off-Site Transfer (tonnes)	0	0.0417	-100	-0.0417	
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.8 Dicyclopentadiene (CAS# 77-73-6)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if>10%)
Use (tonnes)	> 1,000 to 10,000	0	100	1054.1503	Loading and usage of C9-C200 in blending
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	> 1,000 to 10,000	0	100	1054.1503	Loading and usage of C9-C200 in blending
Air Releases (tonnes)	0.0043	0.0030	43.33	0.0013	<2 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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	2.88	239.2974	No significant change
Created (tonnes)	>10,000 to 100,000	>10,000 to 100,000	12.28	2919.9701	Variation in crude feedstock
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	3.96	1337.0828	No significant change
Air Releases (tonnes)	1.3625	1.3760	-0.98	-0.0135	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0.3013	0	100	0.3013	Disposal of expired/unused chemicals & disposal of Tank 39 bottoms
Total Off-Site Transfer (tonnes)	0.0732	0.0670	9.25	0.0062	
Transferred for Recycling (tonnes)	0	0.0539	-100	-0.0539	Less waste containing material was recycled in 2019

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-19.40	-14.1249	Plant 1 and Alkylation shutdown in 2018
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.4711	0.3463	36.04	0.1248	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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	5.28	0.5288	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	8.28	4289.9053	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	1.4884	4.0722	-63.45	-2.5838	Maintenance Turnaround in 2018 - increased flaring
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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>10 to 100	66.65	55.6277	Increased throughput of Antifreeze tank
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0481	0.0360	33.61	0.0121	Increased throughput of 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	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>10 to 100	-68.17	-22.7591	Catalyst loading variability
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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	15.00	9288.0119	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-10.13	-2051.8192	Variation in crude feedstock
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	9.58	2986.1941	No significant change
Air Releases (tonnes)	0.0.1297	0.1528	-15.12	-0.0231	Decreased dock loading of Naphtha
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0.6025	0	100	0.6025	Disposal of expired/unused chemicals & disposal of Tank 39 bottoms
Total Off-Site Transfer (tonnes)	0.0946	0.0866	9.24	0.0080	
Transferred for Recycling (tonnes)	0	0.0697	-100	-0.0697	Less waste containing material was recycled in 2019

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-3.34	-1304.5779	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	13.91	1210.1874	increase in production levels
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	1.40	673.6858	No significant change
Air Releases (tonnes)	14.2915	13.4686	6.11	0.8229	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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1 to 10	> 1 to 10	-0.10	-0.0024	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0274	0.0297	-7.74	-0.0023	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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if>10%)
Use (tonnes)	> 100 to 1000	0	100	260.4371	Loading and usage of C9-C200 in blending
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	0	0	100	260.4371	Loading and usage of C9-C200 in blending
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	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-23.83	-30.4285	Warehouse overstock of material in 2018
Created (tonnes)	> 1 to 10	> 1 to 10	-3.21	-0.1907	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	5.7499	5.9406	-3.21	-0.1907	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0	0	0	0	No significant change
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.19 Toluene (CAS# 108-88-3)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	2.15	615.6487	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	10.00	12489.9428	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	2.16	3508.0293	No significant change
Air Releases (tonnes)	20.8452	24.2755	-14.13	-3.4304	Decreased loading of Naphtha & toluene / decreased throughput in tanks 40 & 43 / Tank 21 out of service for 2019
Water Releases (tonnes)	0.0018	0.0011			No significant change
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0.5103	0.2229	128.94	0.2874	Disposal of expired/unused chemicals, Stadis & disposal of Tank 39 bottoms
Total Off-Site Transfer (tonnes)	0.3027	0.2772	9.20	0.0255	
Transferred for Recycling (tonnes)	0	0.2229	-100	-0.2229	Less waste containing the contaminant was shipped offsite for recycle

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-9.13	-1498.9636	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	7.98	11231.9230	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-0.25	-415.7771	No significant change
Air Releases (tonnes)	17.1733	17.0746	0.58	0.0987	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	16.8003	0.5573	2914.59	16.2430	Disposal of expired/unused chemicals, DCI & disposal of Tank 39 bottoms
Total Off-Site Transfer (tonnes)	0.7568	3.3859	-77.65	-2.6291	
Transferred for Recycling (tonnes)	0	0.5573	-100	-0.5573	Less recycling containing the contaminant was shipped offsite for disposal

4.21 Total Reduced Sulfur (CAS# NA-M14)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	3.87	13.0936	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	8.28	4289.9052	No significant change
Contained in Product (tonnes)	> 10 to 100	> 10 to 100	6.24	2.2737	No significant change
Air Releases (tonnes)	1.4884	4.0722	-63.45	-2.5838	Maintenance Turnaround in 2018. No Plant 3/4 T/A in 2019.
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 2019 (kg)	Reporting Year 2018 (kg)	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 1 to 10	0.00	-0.0001	No significant change
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	0.7296	0.7517	-2.94	-0.0221	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 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	5.31	41.5711	No significant change
Air Releases (tonnes)	824.7151	783.1440	5.31	41.5711	No significant change

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-14.29	-556.5968	Increased downtime of HCC disengager stack (59 days). No downtime in 2018.
Air Releases (tonnes)	3338.6588	3895.2566	-14.29	-556.5968	Increased downtime of HCC disengager stack (59 days). No downtime in 2018.

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-49.16	-262.0927	Maintenance Turnaround in 2019 - increased flaring
Air Releases (tonnes)	271.0169	533.1096	-49.16	-262.0927	Higher 2018 SO2 emissions during turnaround

4.26 Total Particulate Matter (CAS# NA - M08)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-14.19	-21.7208	Increased downtime of HCC disengager stack (59 days). No downtime in 2018.
Air Releases (tonnes)	131.3251	153.0459	-14.19	-21.7208	Increased downtime of HCC disengager stack (59 days). No downtime in 2018.

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	-13.19	-10.6270	Increased downtime of HCC disengager stack (59 days). No downtime in 2018.
Air Releases (tonnes)	69.9522	80.5793	-13.19	-10.6270	Increased downtime of HCC disengager stack (59 days). No downtime in 2018.

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	-8.35	-2.2658	No significant change
Air Releases (tonnes)	24.8561	27.1218	-8.35	-2.2658	No significant change

4.29 Propane (CAS# 74-98-6)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	13.39	1853.4661	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-4.64	-2734.6585	No significant change
Air Releases (tonnes)	19.7771	21.9100	-9.73	-2.1329	No significant change

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	1.45	2127.3394	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	1.19	1739.2213	No significant change
Air Releases (tonnes)	39.6713	58.1282	-37.75	-18.4568	Flare Gas Recovery Unit outage in 2019

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	8.53	4099.0736	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-25.76	-4033.9783	Less created in hydrocracker
Air Releases (tonnes)	6.6458	6.3831	4.12	0.2628	No significant change

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	69.87	20509.5986	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	11.25	8252.4531	No significant change
Air Releases (tonnes)		2.3978			Flare Gas Recovery Unit outage in 2019

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	4.06	1861.2572	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-2.28	-2376.9579	No significant change
Air Releases (tonnes)	5.6641	6.5935	-14.10	-0.9294	Flare Gas Recovery Unit outage in 2018

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-9.95	-4975.7657	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	4.45	2946.7491	No significant change
Air Releases (tonnes)		0.6577			No significant change

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-15.05	-8098.4040	Feedstock variability
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	6.69	12282.7081	No significant change
Air Releases (tonnes)	1.1729	3.0604	-61.67	-1.8875	Flare Gas Recovery Unit outage in 2018

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-14.28	-17709.4999	Feedstock variability
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	19.68	22884.0078	More created in hydrocracker
Air Releases (tonnes)	10.8372	13.3201	-18.64	-2.4829	Flare Gas Recovery Unit outage in 2018

4.37 Propylene (CAS# 115-07-1)

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	36.66	618.4549	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-10.36	-1734.2387	Less created in hydrocracker
Air Releases (tonnes)	2.4530	2.0979	16.93	0.3551	No significant change

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	>1 to 10	>1 to 10	1.52	0.0485	No significant change
Air Releases (tonnes)	0.1130	0.0649	74.11	0.0481	Only a change of 48 kg of increased fugitive emissions
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0	0	0	0	No significant change
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	Reporting Year 2019 (kg)	Reporting Year 2018 (kg)	Reporting Year 2018	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	15.31	0.0083	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	-2.82	-0.6275	No significant change
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	0.2317	0.2488	-6.84	-0.0170	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0	0	0	No significant change
Total Off-Site Transfer (tonnes)	21.4413	19.6335	9.21	1.8078	No significant change
Transferred for Recycling (kg)	0	15.7889	-100	-15.7889	Less recycled material in 2019

4.40 Phenanthrene (CAS# 85-01-8)

Required Information	Reporting Year 2019 (kg)	Reporting Year 2018 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	15.15	0.0466	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	-37.95	-22.9690	Fluctuates based on crude throughput and tank disposals
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	2.5967	2.4914	4.23	0.1053	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0	0	0	No significant change
Total Off-Site Transfer (tonnes)	35.3150	32.3375	9.21	2.9775	No significant change
Transferred for Recycling (kg)	0	26.0053	-100	-26.0053	Less recycle in 2019

4.41 Pyrene (CAS# 129-00-0)

Required Information	Reporting Year 2019 (kg)	Reporting Year 2018 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	15.20	0.0142	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	-38.49	-26.7336	Fluctuates based on crude throughput and tank disposals
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	2.4663	2.8683	-14.01	-0.4017	<0.5 kg - insignificant
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0	0	0	No significant change

Total Off-Site Transfer (tonnes)	40.3600	66.6775	-39.47	-26.3175	disposals dependent on tank sludge clean outs
Transferred for Recycling (kg)	0	35.3726	-100	-35.3726	Less recycle in 2019

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

Required Information	Reporting Year 2019	Reporting Year 2018	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>1000 to 10,000	>100 to 1,000	335.03	1987.7227	Variation in crude feedstock
Created(tonnes)	>1,000 to 10,000	>10,000 to 100,000	-14.54	-1535.2150	Less created in hydrocracker
Air Releases (tonnes)	2.8677	2.8677			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, 2019 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, 2019.

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

English

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

Suncor Energy Products Partnership

Certifying Official (or authorized delegate)

Conor Chell

Report Submitted by

Mark Hiseler

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 2020-07-30, 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
95-63-6	1,2,4-Trimethylbenzene

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 NO2)
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 (mixed 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

Period	Submission Date	Facility Name	Province	City	Programs

2019	2020-07-30	Sarnia Refinery	Ontario	Sarnia	NPRI,ON MECP 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.