TOXICS REDUCTION ACT

Report on Toxic Substance Accounting Requirements

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

October 2021

Version Control

Version	Date Issued	Modifications
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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 2020, the Sarnia Refinery employed 482 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 2020, 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 2020, 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	482 (as of December 31, 2020)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Meharey Communications & Stakeholder Relations Advisor 1900 River Road Sarnia, Ontario N7T 7J3 Email: jmeharey@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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-5.68	-95.46	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	4.42	2257.40	No significant change
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	3.69	2166.83	No significant change
Air Releases (tonnes)	0.5934	1.3800	-57	-0.7866	Decrease in speciated tank emissions (Move to new Tanks ESP software)
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	0	0.6025	100	-0.5009	No disposal containing the chemical in 2020
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.2 Ammonia (CAS# NA - 16)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-4.87	-0.9275	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	2.17	88.2098	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	7.2912	6.1002	20	1.191	Increased downtime of HCC Stack in 2019. No downtime in 2020.
Water Releases (tonnes)	9.5803	8.8297	9	0.7506	No significant change
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 2020	Reporting Year 2019	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)	0	38.1100	0	38.1100	No disposal in 2020.
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.4 Benzene (CAS# 71-43-2)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>1,000 to 10,000	>1,000 to 10,000	-6.16	-339.8763	Decrease in speciated tank emissions (Move to new Tanks ESP software)
Created(tonnes)	>10,000 to 100,000	>10,000 to 100,000	-18.03	-6709.8292	Decrease in production levels
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	-16.50	-7049.7692	Decrease in production levels
Air Releases (tonnes)	5.4142	5.1905	47	0.2237	Decrease in speciated tank emissions (Move to new Tanks ESP software)
Water Releases (tonnes)	0.0013	0.0013	0	0	No significant change.
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposals	0.9696	0.7162	35	0.2534	Tank 28 waste, benzene remediation carbon change out waste
Transferred for Recycling (tonnes)	0.1025	0.0689	49	0.0337	< 10 kg - insignificant

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	> 1 to 10	> 1 to 10	-3.96	-0.2547	No significant change
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	6.1701	6.4248	-4	-0.2547	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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-3.2	-362.4914	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-22.89	-1661.8629	Variation in crude feedstock
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-1.9	-96.3801	No significant change
Air Releases (tonnes)	1.4803	3.9752	-63	-2.49	Decrease in dock loading and speciated emission from tanks
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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	-3.77	-30.2294	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	7.79	133.6101	Higher throughput to reformer
Contained in Product (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	4.11	103.38	No significant change
Air Releases (tonnes)	0.1233	0.1435	-14	-0.0202	Decrease in speciated emissions from tanks
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0.0603	100	-0.0603	No disposal in 2020
Total Off-Site Transfer (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.8 Dicyclopentadiene (CAS# 77-73-6)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if>10%)
Use (tonnes)	> 100 to 1,000	> 1,000 to 10,000	-5.9	-62.3836	No significant change.
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	> 100 to 1,000	> 1,000 to 10,000	-5.9	-62.3836	No significant change.
Air Releases (tonnes)	0.004	0.0043	-10	0.0004	<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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-3.02	-258.4057	No significant change
Created (tonnes)	>10,000 to 100,000	>10,000 to 100,000	4.25	1135.5864	No significant change
Contained in Product (tonnes)	>10,000 to 100,000	>10,000 to 100,000	2.56	899.6484	No significant change
Air Releases (tonnes)	0.7901	1.3625	-42	-0.5724	Reduced loading of products containing the contaminant
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0.3013	100	-0.3013	No disposal containing the chemical in 2020
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	0	0	No significant change.
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.2629	0.4711	-44	-0.2082	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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-3.76	-0.3963	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-5.44	-2770.9886	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	1.5002	1.4884	1	0.0118	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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>10 to 100	9.97	13.8750	No significant change.
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0462	0.0481	-4	-0.0019	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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	>10 to 100	>10 to 100	0	0	No significant change
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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-11.80	-8405.1249	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	27.14	4941.2847	Variation in crude feedstock
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-1.2	-430.4249	No significant change
Air Releases (tonnes)	0.1603	0.0.1297	24	.0306	Variability in the LDAR survey
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0.6025	-100	-0.6025	No waste sent for disposal in 2020.
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-2.79	-1057.1839	No significant change
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	5.08	503.6412	increase in production levels
Contained in Product (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	1.39	681.2451	No significant change
Air Releases (tonnes)	11.3445	14.2915	-21	-2.9470	Decrease in speciated tank emissions.
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1 to 10	> 1 to 10	0.10	0.0025	No significant change
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	0.0299	0.0274	9	0.0025	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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if>10%)
Use (tonnes)	> 100 to 1000	> 100 to 1000	-5.9	-262.3836	No significant change.
Created (tonnes)	—	—	—	—	n/a
Contained in Product (tonnes)	> 100 to 1000	> 100 to 1000	-5.9	-15.4124	Loading and usage of C9-C200 in blending
Air Releases (tonnes)	0.0020	0.0021	-69	-0.0014	Decrease in speciated tank emissions.
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10 to 100	> 10 to 100	-0.24	-23.884	Variation of warehouse stock.
Created (tonnes)	> 1 to 10	> 1 to 10	0.02	0.1366	No significant change
Contained in Product (tonnes)	—	—	—	—	n/a
Air Releases (tonnes)	5.8865	5.7499	2	0.1366	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	2.25	0	100	2.25	Large shipment of the chemical for disposal in 2020.
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.19 Toluene (CAS# 108-88-3)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-6.16	-339.8763	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-3.55	4881.1675	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	2.97	482733961	No significant change
Air Releases (tonnes)	19.2114	20.8452	-8	-1.6338	No significant change
Water Releases (tonnes)	0.0012	0.0018	-31	-0.0006	Less than 1 kg – insignificant.
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0.8130	-100	-0.8130	No disposal in 2020.
Transferred for Recycling (tonnes)	—	—	—	—	n/a

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	0.8	125.0819	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	4.4	6825.8711	No significant change
Contained in Product (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	4.2	7068.3531	No significant change
Air Releases (tonnes)	13.5527	17.1733	-21	-3.6206	Decrease in loading activities.
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	1.92	17.5570	-89	-15.6370	Large decrease in waste sent for disposal.
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.21 Total Reduced Sulfur (CAS# NA-M14)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100 to 1,000	> 100 to 1,000	-3.08	-10.8203	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-5.44	-2700.9886	No significant change
Contained in Product (tonnes)	> 10 to 100	> 10 to 100	-6.7	-2.6088	No significant change
Air Releases (tonnes)	1.5002	1.4884	0.8	0.0118	No significant change
Water Releases (tonnes)	—	—	—	—	n/a
On-site Disposal (tonnes)	—	—	—	—	n/a
Transferred for Disposal (tonnes)	—	—	—	—	n/a
Transferred for Recycling (tonnes)	—	—	—	—	n/a

4.22 Cobalt (CAS# NA-05)

Required Information	Reporting Year 2020 (kg)	Reporting Year 2019 (kg)	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (kg)	> 0 to 1	> 1 to 10	-99	-6.7305	Catalyst loading variability.
Created (kg)	—	—	—	—	n/a
Contained in Product (kg)	—	—	—	—	n/a
Air Releases (kg)	0.7570	0.7	4	0.0274	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 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	-5.78	-47.6845	No significant change
Air Releases (tonnes)	777.0306	824.7151	-6	-47.6845	No significant change

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	15.4	514.9706	No downtime of HCC disengager stack in 2020.
Air Releases (tonnes)	3835.6295	3338.6588	15	514.9706	No downtime of HCC disengager stack in 2020.

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	0.9	2.4	No significant change.
Air Releases (tonnes)	310.9227	271.0169	15	39.9058	Increase due to addition of vac tower overheard gas stream to 25H01

4.26 Total Particulate Matter (CAS# NA - M08)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 100 to 1,000	> 100 to 1,000	15.4	20.2932	No downtime of HCC disengager stack in 2020.
Air Releases (tonnes)	151.6184	131.3251	16	21.1349	No downtime of HCC disengager stack in 2020.

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	14.7	10.2957	No downtime of HCC disengager stack in 2020.
Air Releases (tonnes)	80.2480	69.9522	15	10.5102	No downtime of HCC disengager stack in 2020.

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	> 10 to 100	> 10 to 100	8.5	2.1183	No significant change
Air Releases (tonnes)	26.9744	24.8561	9	2.1398	No significant change

4.29 Propane (CAS# 74-98-6)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-33.2	-5214.4878	Variation in crude feedstock
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-0.56	-315.5042	No significant change
Air Releases (tonnes)	16.5269	19.7771	-16.4	-3.2502	Variation in crude feedstock

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-10.8	-16195.2582	Variation in crude feedstock
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	6.09	9017.5056	No significant change
Air Releases (tonnes)	32.7100	39.6713	-17.5	-6.9613	Increase in Flare Gas Recovery in 2020

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-0.5	-312.5283	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	53.3	6199.0500	More created in hydrocracker
Air Releases (tonnes)	5.6170	6.6458	-15.5	-1.0288	Increase in Flare Gas Recovery in 2020

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	5.63	2810.1467	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	0.91	745.9585	No significant change
Air Releases (tonnes)	1.1294	0.9350	20.8	0.1944	Increase in Flare Gas Recovery in 2020

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	7.84	3740.4220	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	56.04	57018.2007	Increase in production
Air Releases (tonnes)	3.6468	5.6641	-35.6	-2.0173	Increase in Flare Gas Recovery in 2020

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	-2.9	-1309.5760	No significant change
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	0.28	164.7388	No significant change
Air Releases (tonnes)	0.4795	0.6577	-30.1	-0.2066	Increase in Flare Gas Recovery in 2020

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	5.46	2498.9061	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	5.63	11042.4731	No significant change
Air Releases (tonnes)	1.4243	1.1729	21.4	0.2515	Variability in LDAR

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	-7.68	-8171.3278	No significant change
Created (tonnes)	> 100,000 to 1,000,000	> 100,000 to 1,000,000	4.66	6492.5957	More created in hydrocracker
Air Releases (tonnes)	8.4637	10.8372	-21.9	-2.3734	Reduction in flaring emissions from all main plant flares

4.37 Propylene (CAS# 115-07-1)

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	> 1,000 to 10,000	> 1,000 to 10,000	-17.84	-411.4741	Feedstock variability
Created (tonnes)	> 10,000 to 100,000	> 10,000 to 100,000	7.74	1160.9418	No significant change
Air Releases (tonnes)	2.2304	2.4530	-9.1	-0.2226	No significant change

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (tonnes)	Rationale For Change (if >10%)
Use (tonnes)	—	—	—	—	n/a
Created (tonnes)	>0 to 1	>1 to 10	-96.49	-3.1239	Feedstock variability
Air Releases (tonnes)	0	0	0	0	0
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 2020 (kg)	Reporting Year 2019 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	4.33	0.0028	No significant change
Created(kg)	>10 to 100	>10 to 100	-54	-21.49	Variability in feedstock
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	0.2602	0.2317	16	0.0432	Variability in feedstock
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)	0	21.4413	-100	-21.4413	No disposal in 2020
Transferred for Recycling (kg)	—	—	—	—	n/a

4.40 Phenanthrene (CAS# 85-01-8)

Required Information	Reporting Year 2020 (kg)	Reporting Year 2019 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	10.3	0.0337	Fluctuates based on crude throughput and tank disposals
Created(kg)	>10 to 100	>10 to 100	-4.8	-35.75	Fluctuates based on crude throughput and tank disposals
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	2.2709	2.5967	8.7	-0.3258	No significant change
Water Releases (kg)	—	—	—	—	n/a
On-site Disposal (kg)	—	—	—	—	n/a
Total Off-site Disposal (tonnes)	0	0	0	0	n/a
Total Off-Site Transfer (tonnes)	0	35.3150	-100	-35.3150	No off site transfers in 2020
Transferred for Recycling (kg)	—	—	—	—	n/a

4.41 Pyrene (CAS# 129-00-0)

Required Information	Reporting Year 2020 (kg)	Reporting Year 2019 (kg)	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (kg)	>0 to 1	>0 to 1	5.20	0.0142	No significant change
Created(kg)	>10 to 100	>10 to 100	-59.43	-40.4562	Fluctuates based on crude throughput and tank disposals
Contained in Product (kg)	0	0	0	0	No significant change
Air Releases (kg)	2.8971	2.4663	17	0.4308	<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)	0	40.3600	-100	-40.36	No disposal in 2020
Transferred for Recycling (kg)	—	—	—	—	n/a

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

Required Information	Reporting Year 2020	Reporting Year 2019	Change (%)	Change (kg)	Rationale For Change (if >10%)
Use (tonnes)	>1000 to 10,000	>100 to 1,000	12.6	325.5620	Variation in crude feedstock
Created(tonnes)	>1,000 to 10,000	>10,000 to 100,000	615.3	55542.3134	More created in hydrocracker
Air Releases (tonnes)	2.0391	2.6815	-24	-0.6424	Reduction in flaring emissions from all main plant flares

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, and December 24 2020.

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 Preview

Report Details

Report Year	2020
Report Type:	NPRI,ON MECP TRA,NFPRER
Report Status:	Submitted
Modified Date/Time:	2021-09-29 8:45 AM

Company and Facility Details

Company Name:	Suncor Enery Products Partenership
Business Number:	836581322
DUNS Number	241804681
Website	www.suncor.com
Mailing Address:	Delivery Mode: PostOfficeBox PO Box: 2844 Address Line 1: 150 6th Avenue Southwest City: Calgary Province/Territory: Alberta Postal Code: T2P 3E3 Country: Canada
Facility Name:	Sarnia Refinery
NAICS Code:	324110
NPRI ID:	3071
Portable:	No
Physical Address:	Address Line 1: 1900 River Road City: Sarnia Province/Territory: Ontario Postal Code: N7T 7J3 Country: Canada Latitude: 42.9306 Longitude: -82.4433 UTM Zone: 17 UTM Easting: 382225 UTM Northing: 4754118

Parent Companies

Company Name:	Suncor Energy Inc.
Business Number:	104168083
DUNS Number	241804681
Website	www.suncor.com

Percentage owned:	100.00
Civic Address:	Address Line 1: 150 6th Avenue Southwest City: Calgary Province/Territory: Alberta Postal Code: T2P 3E3 Country: Canada

Permits

Number or Permit Number:	000490102
Government Department, Agency, or Program Name:	Ontario Clean Water Regulation (MISA)
Number or Permit Number:	OHWGR#ON0004901
Government Department, Agency, or Program Name:	Ontario MOE - Hazardous Waste Generator Number

Contacts Details

Contact Type	Technical Contact, Person who prepared the report, Person who coordinated the preparation of the Toxics Reduction Plan
Name:	Kelsey Henry
Position:	Environmental Advisor
Telephone:	2263492410
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Contact Type	Certifying Official
Name:	Darryl Downey
Position:	Director Central Environment & Regulatory and E&P
Telephone:	4032964183
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Contact Type	Company Coordinator
Name:	Rekha Nambiar
Position:	Specialist EH&S - Air
Telephone:	4032966140
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Contact Type	Contractor Contact
Name:	Bill Bradshaw
Position:	Montrose Environmental Group Ltd.
Telephone:	5193364101
Fax:	5193364311
Email:	BiBradshaw@montrose-env.com
Independent contractor/consultant company name:	Montrose Environmental Group Ltd.
Contact Type	Highest Ranking Employee

Name:	Conor Poutney
Position:	Vice President, Sarnia Refinery
Telephone:	9058045980
Email:	cpoutney@Suncor.com
Contact Type	Public Contact
Name:	Sneh Seetal
Position:	Director Corporate Communications
Telephone:	4032966034
Email:	sseetal@suncor.com

General Information

Number of employees:	482
Activities for Which the 20,000-Hour Employee Threshold Does Not Apply:	Discharge of treated or untreated wastewater (>= 10,000 m3/day)
Activities Relevant to Reporting Dioxins, Furans and Hexacholorobenzene:	None of the above
Activities Relevant to Reporting of Polycyclic Aromatic Hydrocarbons (PAHs):	Wood preservation using creosote: No
Does this facility release less than the reporting threshold for each Part 4 substance AND have one or more light or medium crude oil batteries with a total oil throughput for the battery components of the facility of ≥1,900 m3 per year?	No
Did the facility operate one or more electricity generation units that had a capacity of 25 MW or more and that distributed or sold to the grid 33% or more of its potential electrical output in the calendar year?	No
Is this the first time the facility is reporting to the NPRI (under current or past ownership):	No
Is the facility controlled by another Canadian company or companies:	Yes
Did the facility report under other environmental regulations or permits?	Yes
Does this facility solely consist of compression equipment in the oil and gas extraction sector?	No
Is the facility required to report one or more NPRI Part 4 substances (Criteria Air Contaminants):	Yes
Was the facility shut down for more than one week during the year:	No
Operating Schedule - Days of the Week:	Mon, Tue, Wed, Thu, Fri, Sat, Sun
Usual Number of Operating Hours per day:	24
Usual Daily Start Time (24h) (hh:mm):	07:00
General Comments for Facility:	The refinery operates 24/7 year round. Individual plants are shutdown for maintenance outages however at no time was the entire facility shut down. Facility storage tank emissions are estimated using TankESP software product suite that uses the updated 2019 emission estimation procedures from Chapter 7 of U.S. EPA's Compilation of Air Pollutant Emission Factors (AP-42).

Shutdown Periods:

From 2020-09-19 To 2020-09-28

Will the shutdown period occur at or around the same time in future years?	No