



2013 TOXICS REDUCTION ACT

**Report on Toxic Substance
Accounting Requirements**

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

June 2014



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Table of Contents

| | |
|--|-----------|
| 1.0 INTRODUCTION | 1 |
| 2.0 REPORTING CRITERIA..... | 2 |
| 2.1 Class of Facility | 2 |
| 2.2 Number of Persons..... | 2 |
| 2.3 Amounts of Toxic Substance Used or Created..... | 2 |
| 2.4 Other Criteria | 3 |
| 3.0 GENERAL FACILITY INFORMATION | 5 |
| 4.0 SUBSTANCE REPORTING | 6 |
| 4.1 1,2,4 Trimethylbenzene (CAS# 95-63-6) | 7 |
| 4.2 Ammonia (CAS# NA - 16) | 8 |
| 4.3 Asbestos (CAS# 1332-21-4)..... | 8 |
| 4.4 Benzene (CAS# 71-43-2) | 9 |
| 4.5 Cadmium and its compounds (CAS# NA-03) | 9 |
| 4.6 Cyclohexane (CAS# 110-82-7)..... | 10 |
| 4.7 Ethylbenzene, (CAS# 100-41-4)..... | 10 |
| 4.8 Hydrofluoric Acid (CAS# 7664-39-3) | 11 |
| 4.9 Hydrogen Sulfide (CAS# 7783-06-4)..... | 11 |
| 4.10 Cumene (CAS# 98-82-8)..... | 12 |
| 4.11 Methanol (CAS# 67-56-1)..... | 12 |
| 4.12 Naphthalene (CAS#91-20-3)..... | 13 |
| 4.13 N-Hexane (CAS# 110-54-3) | 13 |
| 4.14 Nickel and its compounds (CAS# NA-11)..... | 14 |
| 4.15 Sulphuric Acid (CAS# 7664-93-9)..... | 14 |
| 4.16 Toluene (CAS# 108-88-3) | 15 |
| 4.17 Xylene, all isomers (CAS# 1330-20-7) | 15 |
| 4.18 Total Reduced Sulfur (CAS# NA-M14) | 16 |
| 4.19 Oxides of Nitrogen (CAS# 11104-93-1)..... | 16 |
| 4.20 Carbon Monoxide (CAS# 630-08-0) | 17 |
| 4.21 Sulfur Dioxide (CAS# 7446-09-5) | 17 |
| 4.22 Total Particulate Matter (CAS# NA - M08)..... | 17 |
| 4.23 PM10 - Particulate Matter <10 microns (CAS# NA – M09)..... | 18 |
| 4.24 PM2.5 - Particulate Matter < 2.5 microns (CAS# NA – M10)..... | 18 |
| 4.25 Propane (CAS# 74-98-6)..... | 18 |
| 4.26 Butane, all isomers (CAS# NA-24) | 19 |
| 4.27 Butene, all isomers (CAS# 25167-67-3)..... | 19 |
| 4.28 Heptane, all isomers (CAS# NA-31) | 19 |
| 4.29 Hexane, all isomers excluding n-hexane (CAS# NA-32) | 20 |
| 4.30 Nonane, all isomers (CAS# NA-33)..... | 20 |
| 4.31 Octane, all isomers (CAS# NA-34)..... | 20 |
| 4.32 Pentane, all isomers (CAS# NA-35) | 21 |
| 5.0 TOXIC SUBSTANCE REDUCTION PLAN SUMMARY | 22 |
| 6.0 ANNUAL CERTIFICATION STATEMENT | 23 |

LIST OF ATTACHMENTS

ATTACHMENT 1: COPY OF ELECTRONIC CERTIFICATION



1.0 INTRODUCTION

Suncor Energy Products 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 2013, the Sarnia Refinery employed 810 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 2013, 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 2013, 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
- Ethylbenzene
- Hydrofluoric acid
- Hydrogen Sulfide
- Cumene
- Methanol
- Naphthalene
- N-hexane
- Nickel compounds
- Sulphuric acid
- Toluene
- Xylene
- Total Reduced Sulfur

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
- 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)



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 | 810 (as of December 31, 2013) | 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 and greater than four (4) decimal places

n/a is not applicable

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 1,000 to 10,000 | > 1,000 to 10,000 | 1% | 72.6269 | No significant change |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 1% | 329.6241 | No significant change |
| Contained in Product (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 1% | 402.2510 | No significant change |
| Air Releases (tonnes) | 1.2064 | 1.1432 | -5% | -0.0632 | 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 | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|---|
| Use (tonnes) | > 10 to 100 | > 10 to 100 | 9% | 1.5331 | Feedstock variability |
| Created (tonnes) | > 1,000 to 10,000 | > 1,000 to 10,000 | 4% | 166.8927 | No significant change |
| Contained in Product (tonnes) | — | — | — | — | n/a |
| Air Releases (tonnes) | 6.4906 | 5.8461 | -10% | -0.6445 | Updated LDAR speciation; equipment outages |
| Water Releases (tonnes) | 9.0930 | 7.3583 | -19% | -1.7347 | Outage activities in 2013; less cooling water discharge |
| 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 | 2012 Reporting Year | 2013 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) | 9.5900 | 28.8700 | 201% | 19.2800 | Increased maintenance work requiring asbestos removal |
| Transferred for Recycling (tonnes) | — | — | — | — | n/a |



4.4 Benzene (CAS# 71-43-2)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|---|
| Use (tonnes) | >1,000 to 10,000 | >1,000 to 10,000 | 7% | 418.0695 | No significant change |
| Created(tonnes) | >10,000 to 100,000 | >10,000 to 100,000 | -2% | -512.5969 | No significant change |
| Contained in Product (tonnes) | >10,000 to 100,000 | >10,000 to 100,000 | -0.2% | -94.5274 | No significant change |
| Air Releases (tonnes) | 6.4398 | 5.8117 | -10% | -0.6281 | Updated LDAR speciation |
| Water Releases (tonnes) | 0.0013 | 0.0013 | 0.0000% | 0.0000 | No significant change |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | 0.1083 | 0.0391 | -64% | -0.0692 | Less tank cleaning in 2013 resulting in less disposal |
| Transferred for Recycling (tonnes) | 0.0056 | — | n/a | 0.0056 | No fuel blending of benzene waste |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (kg) | Rationale For Change (if >10%) |
|--------------------------------|---------------------|---------------------|------------|-------------|--------------------------------|
| Use (kg) | > 1 to 10 | > 1 to 10 | 9% | 0.5052 | No significant change |
| Created (kg) | — | — | — | — | n/a |
| Contained in Product (kg) | — | — | — | — | n/a |
| Air Releases (kg) | 5.5434 | 6.0486 | 9% | 0.5052 | 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 | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|---|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 21% | 2387.8995 | Feedstock variability |
| Created (tonnes) | > 1,000 to 10,000 | > 1,000 to 10,000 | 11% | 666.0870 | Increase in production levels |
| Contained in Product (tonnes) | > 1,000 to 10,000 | > 1,000 to 10,000 | 75% | 3790.3187 | Variability in analytical data in product streams |
| Air Releases (tonnes) | 5.9009 | 4.8567 | -18% | -1.0442 | Tank service change/outage and enhanced LDAR speciation |
| 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 Ethylbenzene (CAS# 100-41-4)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | >10,000 to 100,000 | >10,000 to 100,000 | 13% | 1986.7038 | Feedstock variability |
| Created (tonnes) | >10,000 to 100,000 | >10,000 to 100,000 | 2% | 429.0087 | No significant change |
| Contained in Product (tonnes) | >10,000 to 100,000 | >10,000 to 100,000 | 6% | 2415.7125 | No significant change |
| Air Releases (tonnes) | 2.5934 | 2.1078 | -19% | -0.4856 | Updated LDAR speciation |
| Water Releases (tonnes) | — | — | — | — | n/a |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | 0.3475 | 0.2025 | -72% | -0.1450 | Less tank cleaning and sludge disposal in 2013 |
| Transferred for Recycling (tonnes) | 0.0041 | 0.0064 | 56% | 0.0023 | Increased fuel blending of ethylbenzene waste |



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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10 to 100 | > 10 to 100 | -3% | -1.7477 | No significant change |
| Created (tonnes) | — | — | — | — | n/a |
| Contained in Product (tonnes) | — | — | — | — | n/a |
| Air Releases (tonnes) | 0.8771 | 1.6978 | 94% | 0.8207 | 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 |

4.9 Hydrogen Sulfide (CAS# 7783-06-4)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | > 1 to 10 | > 1 to 10 | 17% | 1.4891 | Increase in production levels |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 21% | 8611.7481 | Increase in production levels |
| Contained in Product (tonnes) | — | — | — | — | n/a |
| Air Releases (tonnes) | 4.0578 | 1.0986 | -73% | -2.9593 | Decreased tank emissions; new sour water tank storage with vent gas incineration |
| Water Releases (tonnes) | — | — | — | — | n/a |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Recycling (tonnes) | — | — | — | — | n/a |



4.10 Cumene (CAS# 98-82-8)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | > 1,000 to 10,000 | > 100 to 1,000 | -9% | -85.6349 | No significant change |
| Created (tonnes) | > 1,000 to 10,000 | > 1,000 to 10,000 | 13% | 161.0594 | Increase in production levels; feedstock variability |
| Contained in Product (tonnes) | > 1,000 to 10,000 | > 1,000 to 10,000 | 3% | 75.4245 | No significant change |
| Air Releases (tonnes) | 0.5091 | 0.5303 | 4% | 0.0212 | No significant change |
| Water Releases (tonnes) | — | — | — | — | n/a |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Recycling (tonnes) | — | — | — | — | n/a |

4.11 Methanol (CAS# 67-56-1)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | >100 to 1,000 | >100 to 1,000 | 65% | 73.2400 | Increased methanol usage for freeze protection in 2013 |
| Created (tonnes) | — | — | — | — | n/a |
| Contained in Product (tonnes) | — | — | — | — | n/a |
| Air Releases (tonnes) | 0.0419 | 0.0502 | 20% | 0.0083 | Increased methanol usage for freeze protection in 2013 |
| 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 Naphthalene (CAS#91-20-3)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 7% | 4056.6177 | No significant change |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | -11% | -2312.0065 | Feedstock variation |
| Contained in Product (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 7% | 2090.1752 | No significant change |
| Air Releases (tonnes) | 0.2801 | 0.2649 | -5% | -0.0152 | Updated LDAR speciation |
| Water Releases (tonnes) | — | — | — | — | n/a |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | 0.1234 | 0.0012 | -99% | -0.1222 | Less tank cleaning and sludge disposal in 2013 |
| Transferred for Recycling (tonnes) | 0.0003 | — | 100% | 0.0003 | No fuel blending of naphthalene waste in 2013 |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 7% | 2532.4480 | No significant change |
| Created (tonnes) | > 1,000 to 10,000 | > 10,000 to 100,000 | 28% | 2181.0611 | Increased production levels |
| Contained in Product (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 24% | 9239.7613 | Increased production levels |
| Air Releases (tonnes) | 15.2653 | 15.4959 | 2% | 0.2305 | 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 |



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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 0 to 1 | > 1 to 10 | -2% | -0.0006 | No significant change |
| Created (tonnes) | — | — | — | — | n/a |
| Contained in Product (tonnes) | — | — | — | — | n/a |
| Air Releases (tonnes) | 0.0267 | 0.0261 | -2% | -0.0006 | 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 |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10 to 100 | > 10 to 100 | 24% | 7.1000 | Change in production levels |
| Created (tonnes) | > 1 to 10 | > 1 to 10 | 9% | 0.4592 | No significant change |
| Contained in Product (tonnes) | — | — | — | — | n/a |
| Air Releases (tonnes) | 4.9329 | 5.3921 | 9% | 0.4592 | 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 Toluene (CAS# 108-88-3)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|------------------------|------------------------|------------|-----------------|--|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 7% | 3611.7524 | No significant change |
| Created (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 2% | 2048.8296 | No significant change |
| Contained in Product (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 3% | 5650.8124 | No significant change |
| Air Releases (tonnes) | 33.6640 | 28.9629 | -14% | -4.7011 | Decreased loading activities |
| Water Releases (tonnes) | 0.0011 | 0.0013 | 18% | 0.0002 | Analytical variation |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | 0.4190 | 0.0379 | -91% | 0.3811 | Less tank cleaning and sludge disposal in 2013 |
| Transferred for Recycling (tonnes) | 0.0139 | — | 100% | 0.0139 | No fuel blending of toluene waste |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|------------------------|------------------------|------------|-----------------|---|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 9% | 2253.6332 | No significant change |
| Created (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | -1% | -1802.2564 | No significant change |
| Contained in Product (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 0.3% | 451.3769 | No significant change |
| Air Releases (tonnes) | 21.0522 | 20.2420 | -4% | -0.8102 | No significant change |
| Water Releases (tonnes) | — | — | — | — | n/a |
| On-site Disposal (tonnes) | — | — | — | — | n/a |
| Transferred for Disposal (tonnes) | 0.3780 | 0.9222 | 144% | 0.5442 | More soil disposal in 2013 |
| Transferred for Recycling (tonnes) | 0.0152 | 0.0263 | 73% | 0.0111 | Increased fuel blending of xylene waste |



4.18 Total Reduced Sulfur (CAS# NA-M14)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|------------------------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | > 100 to 1,000 | > 100 to 1,000 | 14% | 42.1028 | Increase in production levels |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 21% | 8500.3939 | Increase in production levels |
| Contained in Product (tonnes) | > 10 to 100 | > 10 to 100 | 3% | 1.5129 | No significant change |
| Air Releases (tonnes) | 4.0578 | 1.0986 | -73% | -2.9593 | Decreased tank emissions; new sour water tank storage with vent incineration |
| 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 Oxides of Nitrogen (CAS# 11104-93-1)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | — | — | — | — | n/a |
| Created (tonnes) | > 100 to 1,000 | > 100 to 1,000 | 11% | 76.7034 | Increase in production levels |
| Air Releases (tonnes) | 674.5341 | 751.2375 | 11% | 76.7034 | Increase in production levels |



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

| Required Information | 2012 Reporting Year | 2013 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 | -8% | -391.4824 | No significant change |
| Air Releases (tonnes) | 4712.5230 | 4321.0406 | -8% | -391.4824 | No significant change |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|------------------------------------|
| Use (tonnes) | — | — | — | — | n/a |
| Created (tonnes) | > 100 to 1,000 | > 100 to 1,000 | -28% | -85.7197 | No acid gas flaring events in 2013 |
| Air Releases (tonnes) | 301.5585 | 215.8388 | -28% | -85.7197 | No acid gas flaring events in 2013 |

4.22 Total Particulate Matter (CAS# NA - M08)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | — | — | — | — | n/a |
| Created (tonnes) | > 10 to 100 | > 10 to 100 | -7% | -5.5143 | No significant change |
| Air Releases (tonnes) | 74.4647 | 68.9504 | -7% | -5.5144 | No significant change |



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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | — | — | — | — | n/a |
| Created (tonnes) | > 10 to 100 | > 10 to 100 | -6% | -2.4474 | No significant change |
| Air Releases (tonnes) | 40.7967 | 38.3493 | -6% | -2.4474 | No significant change |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | — | — | — | — | n/a |
| Created (tonnes) | > 10 to 100 | > 10 to 100 | -1% | -0.2456 | No significant change |
| Air Releases (tonnes) | 16.8951 | 16.6495 | -1% | -0.2456 | No significant change |

4.25 Propane (CAS# 74-98-6)

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 53% | 5499.2990 | Feedstock variability |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 4% | 2151.8969 | No significant change |
| Air Releases (tonnes) | 5.3497 | 4.6632 | -13% | -0.6865 | Updated LDAR speciation |



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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|------------------------|------------------------|------------|-----------------|--|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 8% | 8196.5980 | No significant change |
| Created (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 3% | 3880.6886 | No significant change |
| Air Releases (tonnes) | 27.1735 | 31.1735 | 15% | 3.9985 | Updated LDAR speciation and inclusion of brine degassing emissions |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | -22% | -7968.2808 | Less butene receipts |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 40% | 5119.8883 | Variation in available analytical data |
| Air Releases (tonnes) | 1.1551 | 15.2544 | 1220% | 14.0993 | Updated LDAR speciation and inclusion of brine degassing emissions |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 37% | 18230.3332 | Feedstock variability |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | -2% | -1575.5264 | No significant change |
| Air Releases (tonnes) | 3.1442 | 2.8692 | -9% | -0.2750 | No significant change |



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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|------------------------|------------------------|------------|-----------------|--|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | -9% | -4485.4684 | No significant change |
| Created (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 7% | 7073.6202 | No significant change |
| Air Releases (tonnes) | 2.5771 | 3.1152 | 21% | 0.5381 | Updated LDAR speciation and inclusion of brine degassing emissions |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|---------------------|---------------------|------------|-----------------|--|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 9% | 4551.8845 | No significant change |
| Created (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 13% | 7981.8947 | Variation in available analytical data |
| Air Releases (tonnes) | 5.2523 | 0.8635 | -84% | -4.3888 | Updated LDAR speciation |

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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|------------------------|------------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 38% | 16879.8770 | Feedstock variability |
| Created (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 1% | 1200.8432 | No significant change |
| Air Releases (tonnes) | 3.5426 | 3.1731 | -10% | -0.3695 | Updated LDAR speciation |



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

| Required Information | 2012 Reporting Year | 2013 Reporting Year | Change (%) | Change (tonnes) | Rationale For Change (if >10%) |
|-----------------------|------------------------|------------------------|------------|-----------------|--------------------------------|
| Use (tonnes) | > 10,000 to 100,000 | > 10,000 to 100,000 | 7% | 5674.9413 | No significant change |
| Created (tonnes) | > 100,000 to 1,000,000 | > 100,000 to 1,000,000 | 6% | 7965.5808 | No significant change |
| Air Releases (tonnes) | 7.4965 | 7.5330 | 0.5% | 0.0365 | No significant change |



5.0 TOXIC SUBSTANCE REDUCTION PLAN SUMMARY

As described in the Toxic Substance Reduction Plan Summaries dated [December 14, 2012](#) and [December 14, 2013](#), 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.



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)

Ken Bisgrove

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 MOE TRA - Electronic Certification Statement

Annual Report Certification Statement

TRA Substance List

CAS RN

Substance Name

100-41-4

Ethylbenzene

108-88-3

Toluene

110-54-3

n-Hexane

| | |
|------------|---|
| 110-82-7 | Cyclohexane |
| 11104-93-1 | Nitrogen oxides (expressed as NO ₂) |
| 1330-20-7 | Xylene (all isomers) |
| 1332-21-4 | Asbestos (friable form only) |
| 630-08-0 | Carbon monoxide |
| 67-56-1 | Methanol |
| 7446-09-5 | Sulphur dioxide |
| 7664-39-3 | Hydrogen fluoride |
| 7664-93-9 | Sulphuric acid |
| 7783-06-4 | Hydrogen sulphide |
| 91-20-3 | Naphthalene |
| 95-63-6 | 1,2,4-Trimethylbenzene |
| 98-82-8 | Cumene |
| NA - 03 | Cadmium (and its compounds) |
| NA - 11 | Nickel (and its compounds) |
| NA - 16 | Ammonia (total) |
| NA - M08 | Total Particulate Matter |

| | |
|----------|--|
| NA - M09 | PM10 - Particulate Matter |
| NA - M10 | PM2.5 - Particulate Matter |
| NA - M14 | Total reduced sulphur (expressed as hydrogen sulphide) |
| NA - M16 | Volatile Organic Compounds (VOCs) |
| 71-43-2 | Benzene |

Exit Record Certification Statement

TRA Exit Record Substances

| CAS RN | Substance Name |
|----------|----------------------|
| 86-73-7 | Fluorene |
| 129-00-0 | Pyrene |
| 191-24-2 | Benzo(g,h,i)perylene |
| 206-44-0 | Fluoranthene |
| 207-08-9 | Benzo(k)fluoranthene |
| 83-32-9 | Acenaphthene |
| 50-32-8 | Benzo(a)pyrene |
| 56-55-3 | Benzo(a)anthracene |
| 85-01-8 | Phenanthrene |
| 218-01-9 | Benzo(a)phenanthrene |

Company Name

Suncor Energy Products Partnership

Highest Ranking Employee

Mark Hiseler

Report Submitted by

Mark Hiseler

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 |
|--------|-----------------|-----------------|----------|--------|--------------------------|
| 2013 | 30/05/2014 | 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.