



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summaries**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees December 31, 2012



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## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR ASBESTOS**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan**

**Summary**

**For Asbestos**

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

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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.



## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Products Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Asbestos is the name given to a number of naturally occurring silicate materials that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. At the Suncor Sarnia refinery, asbestos is a constituent of insulation, gaskets, mastic, drywall, floor tiles and lab benches and is actively replaced as required.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken a program to remove or repair any asbestos containing materials (ACM) that are damaged or removed during maintenance activities.

Some of these initiative and actions are highlighted in the following sections.

### **4.1 Material or Feedstock Substitution**

Asbestos is actively being replaced with non-asbestos containing materials whenever maintenance personnel are required to work on systems that contain ACM.

### **4.2 Spill and Leak Prevention**

As required by O. Reg. 278/05, the asbestos inventory is inspected and updated at least annually to ensure that all asbestos containing materials are in good shape. If any friable asbestos is found not to be in good condition, repairs are completed or the ACM is replaced.

### **4.3 Training or Improved Operating Practices**

The facility has documented procedures regarding the handling and removal of friable asbestos. All procedures are available in the control rooms and also on the Suncor intranet.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no new technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia Refinery has already taken to reduce the presence of asbestos).

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the presence of asbestos on site; no new technically and economically feasible options were identified. Asbestos has been used at the



Suncor refinery in the past as an insulation material as well as in mastic, gaskets, drywall, lab benches, floor tiles etc. Suncor no longer uses asbestos and is actively removing this material and replacing it with non-asbestos containing materials. Suncor is committed to ensuring asbestos is managed in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.

## **7.0 OBJECTIVE**

The Suncor Sarnia refinery does not use or create asbestos in the manufacturing process. As such, the plan does not set objectives to reduce its use or creation; Asbestos containing materials are present in the facility's building materials. Wherever possible, the Sarnia refinery will safely reduce the presence of asbestos in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for asbestos, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.



## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Asbestos

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Asbestos

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR BENZENE**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Benzene**

Suncor Energy Products Inc.  
Sarnia Refinery  
1900 River Road  
Sarnia, Ontario  
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## 1.0 INTRODUCTION

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Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
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- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
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Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Benzene is an important industrial solvent and precursor to basic industrial chemicals including drugs, plastics, synthetic rubber and dyes. It is a natural constituent of crude oil. Benzene is a product sold by the Sarnia refinery and must meet product specifications prior to being released for sale. It is also a constituent in some of our other products.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use, creation, and release of benzene. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Equipment or Process Modification**

A number of pumps throughout the refinery have been changed out from single mechanical to double mechanical seals in order to minimize releases of hazardous substances to the atmosphere. Although this may not significantly reduce the use or creation of benzene, it does reduce the potential for losses to the environment.

Independent/redundant level switches have been installed on some tanks to help prevent overflow. This also reduces the risk of a spill and losses to the environment and enables Suncor to maximize product sales.

There are Internal Floating Roofs installed on some tanks containing volatile materials to minimize vapour space loss. This also helps to minimize the potential for losses to the environment.

Although not the intent of TRA, the facility is also reviewing opportunities to reduce benzene releases to air under O. Reg. 419/05.

### **4.2 Spill and Leak Prevention**

Where possible, proper sampling points have been installed to reduce spills and leaks during sample collection. The Sarnia refinery has identified hazardous sampling points and installed closed loop sampling points using industry-wide accepted DOPAK sample systems.

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

The plant has had a mature leak detection and repair (LDAR) program since 1996. Components (e.g., valves, flanges, open-ended lines, etc.) are tested on an annual basis with pumps and compressors tested on a quarterly basis. The LDAR program follows the CCME *"Environmental Code of Practice for the Measurement and Control of Fugitive Emission from Equipment Leaks, October 1993"*. When leaks are detected, the Maintenance department determines the best option for repair, which may include replacement of components with improved (less leak-prone) equipment.

### **4.3 Improved Inventory Management or Purchasing Techniques**

The facility employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability in the market.

### **4.4 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All procedures are documented and available in the control rooms and also on the Suncor intranet. Also as part of Turnaround Management, the EH&S personnel are involved in the discussions pertaining to equipment preparation and purging procedures to ensure that the impact on the environment is minimized.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the release of benzene). Benzene use and creation is inherent in the manufacturing of some final products.

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use, creation and presence of benzene in products; no technically and economically feasible options were identified. Benzene use and creation is inherent in the manufacturing of our final products. However, Suncor is committed to ensuring benzene is manufactured in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.

## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, creation and release of benzene in full compliance with all federal and provincial regulations.



## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for benzene, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.



## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Samia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Benzene.

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Benzene

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler





## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR CADMIUM**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Cadmium**

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

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<b><u>8.0</u></b>	<b><u>PLAN SUMMARY STATEMENT</u></b>	<b>31</b>
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## 1.0 INTRODUCTION

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Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

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Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Cadmium is a by-product of fuel combustion; cadmium emissions at the Suncor Sarnia refinery are combustion products from the various heaters, boilers and incinerators. All of the cadmium is expected to be present in the incoming fuel gas as it is not created in the refinery nor is it a product.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the release of cadmium. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Material or Feedstock Substitution**

Feedstock is purchased based on market availability where the concentration of a substance cannot be controlled or is variable. Cadmium emissions have been associated with natural gas and refinery fuel gas combustion. Suncor has stopped burning fuel oil in the heaters and boilers and replaced this with cleaner burning natural gas and refinery fuel gas. This has reduced the cadmium emissions as a result of combusting a cleaner fuel.

### **4.2 Spill and Leak Prevention**

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

### **4.3 On-Site Reuse or Recycling**

Cadmium is not reused or recycled as it is a by-product in the incoming natural gas and refinery fuel gas. Refinery fuel gas however is an internal stream which is recycled for reuse to recover energy and optimize external purchases of natural gas.

### **4.4 Improved Inventory Management or Purchasing Techniques**

The facility employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability in the market.

### **4.5 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All procedures are documented and available in the control rooms and also on the Suncor intranet. Also as part of Turnaround Management, the EH&S personnel are involved in the discussions pertaining to equipment preparation and purging procedures to ensure that the impact on the environment is minimized.



The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia Refinery has already taken to reduce the releases of cadmium).

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the presence of cadmium emissions; no technically and economically feasible options were identified. Cadmium is not created at Suncor, but it is a component of natural gas and refinery fuel gas which are the fuels combusted in various heaters, boilers and incinerators. Suncor optimizes its consumption of fuel gas which in turn minimizes cadmium emissions. Cadmium is inherent in the petroleum refining process, however Suncor is committed to ensuring cadmium emissions are managed in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.

## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the release of cadmium in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for cadmium, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.





## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Samia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Cadmium

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Cadmium

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR ETHYLBENZENE**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Ethylbenzene**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees

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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.

## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Products Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7



### **3.0 DESCRIPTION OF SUBSTANCE**

Ethylbenzene is a natural constituent of crude oil and is also found in the Toluene-Xylene product that Suncor purchases externally. Residual ethylbenzene leaves the refinery in the gasoline pool and in some of our other products.

### **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use and release of ethylbenzene. Some of these initiative and actions are highlighted in the following sections.

#### **4.1 Equipment or Process Modification**

A number of pumps throughout the refinery have been changed out from single mechanical to double mechanical seals in order to minimize releases of hazardous substances to the atmosphere. Although this may not significantly reduce the use or creation of ethylbenzene, it does reduce the potential for losses to the environment.

Independent/redundant level switches have been installed on some tanks to help prevent overfill. This also reduces the risk of a spill and losses to the environment and enables Suncor to maximize product sales.

There are Internal Floating Roofs installed on some tanks containing volatile materials to minimize vapour space loss. This also helps to minimize the potential for losses to the environment.

#### **4.2 Spill and Leak Prevention**

Proper sampling points have been installed to reduce spills and leaks during sample collection. The Sarnia refinery has identified hazardous sampling points and installed closed loop sampling points using industry-wide accepted DOPAK sample systems.

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

The plant has had a mature leak detection and repair (LDAR) program since 1996. Components (e.g., valves, flanges, open-ended lines, etc.) are tested on an annual basis with pumps and compressors tested on a quarterly basis. The LDAR program follows the CCME *"Environmental Code of Practice for the Measurement and Control of Fugitive Emission from Equipment Leaks, October 1993"*. When leaks are detected, the Maintenance department determines the best option for repair, which may include replacement of components with improved (less leak-prone) equipment.

### **4.3 Improved Inventory Management or Purchasing Techniques**

The refinery employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability. Ethylbenzene is a by-product in the Toluene-Xylene product which is purchased externally. It is shipped in bulk and meets quality specifications for ethylbenzene.

### **4.4 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All procedures are documented and available in the control rooms and also on the Suncor intranet. Also as part of Turnaround Management, the EH&S personnel are involved in the discussions pertaining to equipment preparation and purging procedures to ensure that the impact on the environment is minimized.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the release of ethylbenzene). Ethylbenzene use and creation is inherent in the manufacturing of some final products.

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use, creation and presence of ethylbenzene in products; no technically and economically feasible options were identified. Ethylbenzene use and creation is inherent in the manufacturing of our final products. Suncor is however committed to ensuring ethylbenzene is processed in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.



## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, creation and release of ethylbenzene in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for ethylbenzene, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.

## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Ethylbenzene.

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Ethylbenzene.

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR METHANOL**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Methanol**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees



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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.

## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Products Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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
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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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Methanol is not a product of the Suncor Sarnia Refinery. It is sourced externally and is primarily used as antifreeze in flare header, the refinery fuel gas system and in tank roof drains.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use and release of methanol. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Material or Feedstock Substitution**

Methanol is purchased externally and injected into the flare header system, the refinery fuel gas system and roof tank drains during the winter months to provide freeze protection of these systems. Methanol injection also prevents the formation of hydrates.

### **4.2 Equipment or Process Modification**

Procedures are in place for safe unloading of methanol tank trucks into the storage tank. The tank is gauged routinely and the level is logged. Methanol is injected into the headers from day tanks in each area using metering pumps. The day tank levels are checked regularly and procedures are followed when the day tanks are topped up. The volume of methanol injected is optimized – it is manually adjusted to increase the injection rate as the temperature drops.

Also, some of the methanol day tanks have breather valves installed which minimizes the loss of methanol vapours to the atmosphere.

### **4.3 Spill and Leak Prevention**

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

Methanol is injected into the headers from day tanks in each area using metering pumps. The day tank levels are checked regularly and procedures are followed when the day tanks are topped up. The days tanks have spill containment dykes around them to minimize the impact of any leaks or spills during offloading.

The plant has had a mature leak detection and repair (LDAR) program since 1996. Components (e.g., valves, flanges, open-ended lines, etc.) are tested on an annual basis with pumps and compressors tested on a quarterly basis. The LDAR program follows the CCME *“Environmental Code of Practice for the Measurement and Control of Fugitive Emission from Equipment Leaks, October 1993”*. When leaks are detected, the Maintenance department determines the best option for repair, which may include replacement of components with improved (less leak-prone) equipment.

#### **4.4 On-Site Reuse or Recycling**

Methanol is injected into the flare header and refinery fuel gas streams where it is eventually combusted in the flares or the heaters/boilers. Methanol is also injected into the tank roof drain system. Per the procedure, methanol is collected and re-used where possible from the roof drain system.

#### **4.5 Improved Inventory Management or Purchasing Techniques**

Methanol is purchased in tank truck loads for winter use only. It is offloaded into a storage tank for transfer into tote systems within the plants as needed. The refinery employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput and feedstock availability in the market.

#### **4.6 Training or Improved Operating Practices**

Procedures exist for offloading methanol trucks and transferring methanol to the plant injection systems. All procedures are documented and available in the control rooms and also on the Suncor intranet.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

### **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the use and release of methanol).

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

### **6.0 STATEMENT OF INTENT**

The Sarnia Suncor refinery has studied options to reduce the use and release of methanol; no technically and economically feasible options were identified. Methanol is purchased externally and used for freeze protection in various systems. Suncor is committed to ensuring methanol is used in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.



## **7.0 OBJECTIVE**

The Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, and release of methanol in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for methanol, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.



## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Methanol

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Methanol.

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR NAPHTHALENE**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Naphthalene**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees

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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.

## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Products Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Naphthalene is a component in the crude oil feed and also in various feedstocks that are purchased externally. Residual naphthalene leaves the refinery as a component of gasoline, solvents and diesel.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use, creation, and release of naphthalene. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Equipment or Process Modification**

A number of pumps throughout the refinery have been changed out from single mechanical to double mechanical seals in order to minimize releases of hazardous substances to the atmosphere. Although this may not significantly reduce the use or creation of naphthalene, it does reduce the potential for losses to the environment.

Independent/redundant level switches have been installed on some tanks to help prevent overflow. This also reduces the risk of a spill and losses to the environment and enables Suncor to maximize product sales.

There are Internal Floating Roofs installed on some tanks containing volatile materials to minimize vapour space loss. This also helps to minimize the potential for losses to the environment.

### **4.2 Spill and Leak Prevention**

Where possible, proper sampling points have been installed to reduce spills and leaks during sample collection. The Sarnia refinery has identified hazardous sampling points and installed closed loop sampling points using industry-wide accepted DOPAK sample systems.

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

The plant has had a mature leak detection and repair (LDAR) program since 1996. Components (e.g., valves, flanges, open-ended lines, etc.) are tested on an annual basis with pumps and compressors tested on a quarterly basis. The LDAR program follows the CCME *"Environmental Code of Practice for the Measurement and Control of Fugitive Emission from Equipment Leaks, October 1993"*. When leaks are detected, the Maintenance department determines the best option for repair, which may include replacement of components with improved (less leak-prone) equipment.



### **4.3 Improved Inventory Management or Purchasing Techniques**

The facility employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability in the market.

### **4.4 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All procedures are documented and available in the control rooms and also on the Suncor intranet. Also as part of Turnaround Management, the EH&S personnel are involved in the discussions pertaining to equipment preparation and purging procedures to ensure that the impact on the environment is minimized.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the release of naphthalene). Naphthalene use and creation is inherent in the manufacturing of some final products.

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use, creation and presence of naphthalene in products; no technically and economically feasible options were identified. Naphthalene use and creation is inherent in the manufacturing of our final products. However, Suncor is committed to ensuring naphthalene is manufactured in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.





## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, creation and release of naphthalene in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for naphthalene, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.

## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Naphthalene

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Naphthalene

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR NICKEL**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Nickel**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees

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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.



## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Products Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email:jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Nickel emissions at the Suncor Sarnia refinery are combustion products from the various heaters, boilers and incinerators on site. Nickel is expected to be present in the refinery fuel gas as well as being a component of some of the catalysts used in the refinery. Nickel is not created in the refinery nor is it a product.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use and release of nickel. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Material or Feedstock Substitution**

Feedstock is purchased based on market availability where the concentration of a substance cannot be controlled or is variable. Nickel emissions have been associated with natural gas and refinery fuel gas combustion. Suncor has stopped burning fuel oil in the heaters and boilers and replaced this with cleaner burning natural gas and refinery fuel gas. This has reduced the nickel emissions as a result of combusting a cleaner fuel.

### **4.2 Spill and Leak Prevention**

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

### **4.3 On-Site Reuse or Recycling**

Spent nickel catalysts are currently sent off-site for reclamation of nickel and nickel compounds. This has been part of the process for handling spent nickel catalysts for a number of years. Trace nickel concentrations in the flue gas emissions are not recycled however the refinery fuel gas is an internal stream which is recycled for reuse to recover energy and optimize external purchases of natural gas.

### **4.4 Improved Inventory Management or Purchasing Techniques**

The facility employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability in the market. Nickel catalysts are procured in a timely manner as part of the outage planning process.

### **4.5 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All

procedures are documented and available in the control rooms and also on the Suncor intranet. Also as part of Turnaround Management, EH&S personnel are involved in the discussions pertaining to the handling of wastes such that potential recycling options are considered in advance of disposal.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the use and release of nickel). Nickel use and release is inherent in the manufacturing of some final products.

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use and presence of nickel in the petroleum refining process; no technically and economically feasible options were identified. Nickel is not created at the Sarnia refinery, but it is a component of natural gas and refinery fuel gas which are the fuels combusted in various heaters, boilers and incinerators on site. The facility optimizes its consumption of fuel gas which in turn minimizes nickel emissions. Nickel is also a component of various hydrocracking catalysts used at the facility. Nickel is inherent in the petroleum refining process, however Suncor is committed to ensuring nickel emissions and nickel catalyst handling are managed in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.

## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use and release of nickel in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for nickel, prepared by the Suncor Sarnia refinery dated December 1, 2012.



## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.



## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Samia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Nickel

A handwritten signature in blue ink, appearing to read "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Nickel

A handwritten signature in black ink, appearing to read "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR SULFURIC ACID**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Sulfuric Acid**

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

December 14, 2012





## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees

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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.

## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
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Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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
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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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email:jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Water must be treated to remove the hardness (calcium and magnesium ions) in order to prevent scaling on boiler tubes and steam generating equipment. Regeneration of the resin used in the water treatment plant requires the use of sulfuric acid. For this purpose, sulfuric acid is procured from outside sources.



Sulfuric acid emissions are the result of conversion of sulfur in the combustion fuel under moist conditions and adequate temperature in the stacks. Sulfuric acid therefore is also a by-product of the petroleum refining process.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use, creation, and release of sulfuric acid. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Material or Feedstock Substitution**

In the past, Suncor has actively substituted sulfuric acid for pH correction in the Cooling Tower with water treatment chemicals. This has reduced the usage of sulfuric acid on site.

### **4.2 Spill and Leak Prevention**

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

### **4.3 Improved Inventory Management or Purchasing Techniques**

The facility employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability in the market. Sulfuric acid is purchased in bulk tanker truck loads and offloaded into a storage tank following appropriate procedures.

### **4.4 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All procedures are documented and available in the control rooms and also on the Suncor intranet.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the use, creation and release of sulfuric acid). Sulfuric acid emissions are inherent in the manufacturing of some final products.

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use and creation of sulfuric acid in the petroleum refining process; no technically and economically feasible options were identified. Sulfuric acid is created as a result of the combustion of sulfur-containing fuels and it is also purchased externally for regeneration of resin in the Water Treatment Plant. Suncor optimizes fuel combustion and monitors acid consumption in the treatment plant. Suncor is committed to ensuring sulfuric acid is handled in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.

## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, creation and release of sulfuric acid in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for sulfuric acid, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.

## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance – Sulfuric Acid

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance – Sulfuric Acid

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler





## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR TOLUENE**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Toluene**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees

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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

Located at 1900 River Road, the Sarnia Refinery is situated on the shore of the St. Clair River beside a residential community. Like our residential neighbours, we want a clean and safe environment and a prosperous community.

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.

We respect the important balance between economic growth and environmental stewardship and work diligently to:

- conduct our activities with sound environmental management and conservation practices;
- prevent risk to community health and safety from our operations or our products; and
- transfer expertise in environmental protection to host communities.

In keeping with our commitment to meet the latest quality standards and practices, the Sarnia refinery is ISO 14001 registered.

As part of our environmental stewardship, we will:

- demonstrate our commitment by maintaining our ISO 9001 and ISO 14001 registrations;
- ensure our operations comply with customer requirements, specific performance standards, government legislation, corporate policy and applicable industry standards;
- monitor the environmental impacts of our business during the start-up, normal operation and shutdown of our facilities, and through project planning, implementation and decommissioning to minimize any impact on the environment;
- ensure all employees and affiliates are informed, trained and authorized to meet our quality and environmental performance requirements;
- continually improve our products through design, manufacturing, delivery and service processes, achieved through our Quality and Environmental Management Systems; and
- continue to strive to establish quality and environmental objectives and targets, and periodically review performance through the Management Review Process.

This toxic substance reduction plan summary has been prepared to meet the regulatory obligations specified in Section 8 of the Act and has been prepared in accordance with the requirements of s. 24 of Ontario Regulation (O. Reg.) 455/09, as amended from time to time. It meets the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

To learn more about our business please visit our website at <http://www.suncor.com/default.aspx>.

## 2.0 BASIC FACILITY INFORMATION

Table 2-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

**Table 2-1: General Facility Information**

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	Suncor Energy Products Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	150 6 <sup>th</sup> Avenue SW Calgary, Alberta T2P 3E3	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	Suncor Energy Products Partnership - Sarnia Refinery	O. Reg. 455/09 s.18(2) subparagraph 4
Facility Address	1900 River Road P.O. Box 307 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	337 (as of December 31, 2011)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7

## 3.0 DESCRIPTION OF SUBSTANCE

Toluene is an important industrial solvent and precursor to basic industrial chemicals including drugs, plastics, synthetic rubber and dyes. It is a natural constituent of crude oil. Toluene is a



product sold by the Sarnia refinery and must meet product specifications prior to being released for sale. It is also a constituent in some of our other products.

## **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use, creation and release of toluene. Some of these initiative and actions are highlighted in the following sections.

### **4.1 Equipment or Process Modification**

A number of pumps throughout the refinery have been changed out from single mechanical to double mechanical seals in order to minimize releases of hazardous substances to the atmosphere. Although this may not significantly reduce the use or creation of toluene, it does reduce the potential for losses to the environment.

Independent/redundant level switches have been installed on some tanks to help prevent overfill. This also reduces the risk of a spill and losses to the environment and enables Suncor to maximize product sales.

There are Internal Floating Roofs installed on some tanks containing volatile materials to minimize vapour space loss. This also helps to minimize the potential for losses to the environment.

### **4.2 Spill and Leak Prevention**

Where possible, proper sampling points have been installed to reduce spills and leaks during sample collection. The Sarnia refinery has identified hazardous sampling points and installed closed loop sampling points using industry-wide accepted DOPAK sample systems.

Suncor has established spill prevention, containment and contingency plans for each area of the plant. Operations routinely monitor the various production areas, storage and transfer areas. Preventive maintenance plans also include non-destructive inspections to prevent spills before they occur.

The plant has had a mature leak detection and repair (LDAR) program since 1996. Components (e.g., valves, flanges, open-ended lines, etc.) are tested on an annual basis with pumps and compressors tested on a quarterly basis. The LDAR program follows the CCME *"Environmental Code of Practice for the Measurement and Control of Fugitive Emission from Equipment Leaks, October 1993"*. When leaks are detected, the Maintenance department determines the best option for repair, which may include replacement of components with improved (less leak-prone) equipment.

### **4.3 Improved Inventory Management or Purchasing Techniques**

The facility employs a just in time delivery inventory management process; raw materials and feedstocks are purchased based on unit throughput, sales forecasts and feedstock availability in the market. Toluene/Xylene is also purchased externally and is shipped to the refinery by pipeline as required.

### **4.4 Training or Improved Operating Practices**

The facility has documented procedures regarding the proper preparation of equipment for maintenance. This reduces the amount of material that could be released to the atmosphere. All procedures are documented and available in the control rooms and also on the Suncor intranet. Also as part of Turnaround Management, the EH&S personnel are involved in the discussions pertaining to equipment preparation and purging procedures to ensure that the impact on the environment is minimized.

The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the releases of toluene).

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use, creation and presence of toluene in products; no technically and economically feasible options were identified. Toluene use and creation is inherent in the manufacturing of our final products. However, Suncor is committed to ensuring toluene is manufactured in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.





## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, creation and release of toluene in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for toluene, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.

## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Toluene

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Toluene

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler



## **TOXIC SUBSTANCE REDUCTION PLAN SUMMARY FOR XYLENE**



**2011 TOXICS REDUCTION ACT**

**Toxic Substance Reduction Plan  
Summary  
For Xylene**

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

December 14, 2012



## Version Control

Version	Date Issued	Modifications
Original	December 14, 2012	Original version made available to the public and employees



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## 1.0 INTRODUCTION

Suncor Energy Products Inc. Sarnia Refinery is a crude oil refinery that produces a number of fuel products including gasoline, jet and diesel fuels, residual oils for industrial use, as well as chemical feedstock.

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Facility Public Contact	Jennifer Johnson Communications and Stakeholder Relations Advisor Tel: (519) 346-2419 Email: jnjohnson@suncor.com	O. Reg. 455/09 s.18(2) subparagraph 7



### **3.0 DESCRIPTION OF SUBSTANCE**

Xylene is an important industrial solvent and precursor to basic industrial chemicals including drugs, plastics, synthetic rubber and dyes. It is a natural constituent of crude oil. Xylene is a product sold by the Sarnia refinery and must meet product specifications prior to being released for sale. It is also a constituent in some of our other products.

### **4.0 ACTIONS TAKEN TO-DATE**

As part of our environmental stewardship, the Sarnia Refinery has already undertaken and/or completed a number of initiatives and actions that have reduced the use, creation and release of xylene. Some of these initiative and actions are highlighted in the following sections.

#### **4.1 Equipment or Process Modification**

A number of pumps throughout the refinery have been changed out from single mechanical to double mechanical seals in order to minimize releases of hazardous substances to the atmosphere. Although this may not significantly reduce the use or creation of xylene, it does reduce the potential for losses to the environment.

Independent/redundant level switches have been installed on some tanks to help prevent overflow. This also reduces the risk of a spill and losses to the environment and enables Suncor to maximize product sales.

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The refinery has an incident reporting system which is used to document losses of containment (i.e., spills), trigger root cause investigations and identify action plans such that these incidents do not recur.

## **5.0 TOXIC SUBSTANCE REDUCTION PLAN OPTION TO BE IMPLEMENTED**

There were no technically and economically feasible options identified for implementation at this time (above and beyond the actions the Sarnia refinery has already taken to reduce the releases of xylene).

The plan will be reviewed in accordance with the Act and regulation, at which time new options may be identified and considered for implementation.

## **6.0 STATEMENT OF INTENT**

The Sarnia refinery has studied options to reduce the use, creation and presence of xylene in products; no technically and economically feasible options were identified. Xylene use and creation is inherent in the manufacturing of our final products. However, Suncor is committed to ensuring xylene is manufactured in the most responsible and efficient manner, in full compliance with all federal and provincial regulations.



## **7.0 OBJECTIVE**

Suncor Sarnia refinery is committed to producing high quality products in an environmentally responsible manner. Wherever feasible, the Sarnia refinery will endeavour to reduce the use, creation and release of xylene in full compliance with all federal and provincial regulations.

## **8.0 PLAN SUMMARY STATEMENT**

This Toxic Substance Reduction Plan Summary reflects the content of the Toxic Substance Reduction Plan for xylene, prepared by the Suncor Sarnia refinery dated December 1, 2012.

## **9.0 PLAN CERTIFICATION STATEMENT**

The reduction plan certifications by the Highest Ranking Employee and the Licensed Planner are provided in Appendix 1 of this report, as required by the Act and regulation.



## **APPENDIX 1 – TOXIC SUBSTANCE REDUCTION PLAN CERTIFICATION**



## 9.0 CERTIFICATION BY PLANNER

As of December 1, 2012, I Mark Roehler certify that I am familiar with the processes at Suncor Energy Sarnia Refinery that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 1, 2012 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Xylene

A handwritten signature in blue ink that reads "Mark Roehler".

Mark Roehler TSRP0128

## 10.0 CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 1, 2012, I, Mark Hiseler, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic substance - Xylene

A handwritten signature in black ink that reads "Mark Hiseler".

Mark Hiseler