December 18, 2013

**Sarnia Refinery – Toxic substance reduction plan summary**

Provincial legislation sets out requirements for business owners to inform Ontarians about the use and creation of reportable substances in their communities. Under the Toxics Reduction Act 2009 (TRA), companies are required to develop reduction plans for prescribed substances.

Petroleum refineries process crude oil to manufacture finished products, such as gasoline and heating oil, that are used and valued by our society. Crude oil may contain varying quantities of the substances covered under the TRA. Through the tightly controlled multi-step refinery operation, a variety of substances are used and modified within contained piping and vessels. Finished products are regulated for both content (sulphur levels, for example) and use (pollution controls and higher mileage vehicles). In addition, Imperial Oil has comprehensive programs in place at all of its facilities to reduce waste, to prevent spills and leaks, to reduce fugitive emissions, and to train personnel on the environmental responsibilities of their role.

The following summary of the reduction plans has been prepared in accordance with Section 8 of the TRA and the requirements of Section 24 of Ontario Regulation 455/09, as amended from time to time.
Plan Summary Preview

Company Details

Company Legal Name:

Imperial Oil

Company Address:

237 4th Avenue Southwest, Calgary (Alberta)

Report Details

Facility:

Sarnia Refinery Plant

Facility Address:

602 Christina Street South, Sarnia (Ontario)

Update Comments:

Activities

Facility Contacts

Public Contact:*  Jon Harding

Highest Ranking Employee:

Brian Fairley

Person responsible for preparing the toxic substance reduction plan:

Charles Mortley-Wood

Organization Validation

Company and Parent Company Information

Company Details

Company Legal Name:*  Imperial Oil

Company Trade Name:*  Imperial Oil
Business Number:* 121461107

Mailing Address

Delivery Mode: Post Office Box

PO Box

Rural Route Number

Address Line 1 237 4th Avenue Southwest

City* Calgary

Province/Territory** Alberta

Postal Code:** T2P3M9

Physical Address

Address Line 1 237 4th Avenue Southwest

City Calgary

Province/Territory Alberta

Postal Code T2P3M9

Additional Information

Land Survey Description

National Topographical Description

Parent Companies

Facility Validation

Facility Information

Facility:* Sarnia Refinery Plant

NAICS Id:* 324110

NPRI Id:* 3704

ON Reg 127/01 Id:
### Mailing Address

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<tbody>
<tr>
<td>PO Box</td>
<td>3004</td>
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<tr>
<td>Rural Route Number</td>
<td></td>
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<tr>
<td>Address Line 1</td>
<td>602  Christina Street South</td>
</tr>
<tr>
<td>City*</td>
<td>Sarnia</td>
</tr>
<tr>
<td>Province/Territory**</td>
<td>Ontario</td>
</tr>
<tr>
<td>Postal Code:**</td>
<td>N7T7M5</td>
</tr>
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</table>

### Physical Address

| Address Line 1         | 602  Christina Street South   |
| City                   | Sarnia                        |
| Province/Territory     | Ontario                       |
| Postal Code            | N7T7M5                        |

### Geographical Address

<table>
<thead>
<tr>
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Values entered for TRA and NPRI are reported to the first decimal place to represent their estimated accuracies while SWIM is designed to show the fourth decimal place.
# Contact Validation

## Contacts

### Public Contact:

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<thead>
<tr>
<th>Field</th>
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<tbody>
<tr>
<td>First Name:*</td>
<td>Jon</td>
</tr>
<tr>
<td>Last Name:*</td>
<td>Harding</td>
</tr>
<tr>
<td>Position:*</td>
<td>Public Contact</td>
</tr>
<tr>
<td>Telephone:*</td>
<td>5193394015</td>
</tr>
<tr>
<td>Ext:</td>
<td></td>
</tr>
<tr>
<td>Fax:</td>
<td>5193394491</td>
</tr>
<tr>
<td>Email:*</td>
<td><a href="mailto:jon.s.harding@esso.ca">jon.s.harding@esso.ca</a></td>
</tr>
</tbody>
</table>

### Mailing Address

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</tr>
<tr>
<td>City:*</td>
<td>Sarnia</td>
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<td>Ontario</td>
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## Highest Ranking Employee:

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<tr>
<td>First Name:*</td>
<td>Brian</td>
</tr>
<tr>
<td>Last Name:*</td>
<td>Fairley</td>
</tr>
<tr>
<td>Position:*</td>
<td>Refinery Manager</td>
</tr>
<tr>
<td>Telephone:*</td>
<td>5193392401</td>
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<tr>
<td>Ext:</td>
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<tr>
<td><strong>Person responsible for the Toxic Substance Reduction Plan preparation:</strong></td>
<td></td>
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<tr>
<td>---</td>
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</tr>
<tr>
<td><strong>First Name:</strong></td>
<td>Charles</td>
</tr>
<tr>
<td><strong>Last Name:</strong></td>
<td>Mortley-Wood</td>
</tr>
<tr>
<td><strong>Position:</strong></td>
<td>Technical Leader</td>
</tr>
<tr>
<td><strong>Telephone:</strong></td>
<td>5193392529</td>
</tr>
<tr>
<td><strong>Ext:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Fax:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:cmortley-wood@esso.ca">cmortley-wood@esso.ca</a></td>
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<tr>
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</tr>
</tbody>
</table>
City*  
Sarnia  

Province/Territory**  
Ontario  

Postal Code:**  
N7T7M5  

Employees  

Employees  

Number of Full-time Employees:*  
331  

Substances  

109-99-9, Tetrahydrofuran  
109-99-9, Tetrahydrofuran  

Substances Section Data  

Statement of Intent  

Use  

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*  
No  

If ‘yes’, provide the exact statement of intent:**  

If ‘no’, what rationale is specified in the plan for not using less of this substance?**  
Tetrahydrofuran is not currently used at the facility  

Creation  

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*  
No  

If ‘yes’, provide the exact statement of intent:**  

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**  
Tetrahydrofuran is not created at the facility
Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Tetrahydrofuran was not detected at measurable concentrations in any of the Refinery inputs or outputs and is not created. As such, no technically and economically feasible options to reduce use and/or creation were identified

Toxic Substance Use Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
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<td>No target</td>
<td>or</td>
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</table>

Timeframe target:*  

| No target | or |
| years    |

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<td>No target</td>
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</tbody>
</table>

Timeframe target:*  

| No target | or |
| years    |

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*  
This substance is not used at the facility

Summarize why this substance is used at the facility:**
Reasons for Creating this Toxic Substance

This substance is created at the facility:* 
This substance is not created at the facility

Summarize why this substance is created at the facility:** 

Tetrahydrofuran is not created at the facility

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

No reduction options were identified that are expected to reduce the use or creation of Tetrahydrofuran at Imperial Oil’s Sarnia refinery. Tetrahydrofuran was not detected in measureable concentrations in any inputs, outputs and is not created at the Refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Tetrahydrofuran at the Sarnia Refinery

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPxxxx):*

TSRP0071
License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

110-54-3, n-Hexane
110-54-3, n-Hexane

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Sarnia refinery is in the business of extracting and producing N-Hexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia refinery is in the business of extracting and producing N-Hexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*
While Imperial Oil has not identified any options to reduce the use or creation of N-Hexane at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of N-Hexane in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

### Toxic Substance Use Targets

**Reduction target:**

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**Timeframe target:**

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- No target
- or

Description of use targets:

### Toxic Substance Creation Targets

**Reduction target:**

<table>
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<tr>
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- No target
- or

**Timeframe target:**

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<th>Unit</th>
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</table>

- No target
- or

Description of creation targets:

### Reasons for Using this Toxic Substance

**This substance is used at the facility:**

- As a by-product

Summarize why this substance is used at the facility:

- N-Hexane is currently used at the facility and enters the refinery in various feedstock including crude oil.
- Sarnia refinery is in the business of extracting and producing N-Hexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.
Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**

N-Hexane is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing N-Hexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize N-Hexane from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of N-Hexane at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of N-Hexane in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this...
substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

115-07-1, Propylene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:*

If ‘no’, what rationale is specified in the plan for not using less of this substance?*

Propylene is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Propylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:*

If ‘no’, what rationale is specified in the plan for not creating less of this substance?*

Propylene is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Propylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Objectives, Targets and Description

Plan Objectives

Objectives in plan:* 

While Imperial Oil has not identified any options to reduce the use or creation of Propylene at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Propylene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:* 

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<td>or</td>
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Timeframe target:* 

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:* 

<table>
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<tbody>
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Timeframe target:* 

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<th>Quantity</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
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<td>or</td>
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</table>

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:* 

As a by-product
Summarize why this substance is used at the facility:*

Propylene is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Propylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Reasons for Creating this Toxic Substance

This substance is created at the facility:*

As a by-product

Summarize why this substance is created at the facility:*

Propylene is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Propylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:*

Sarnia refinery is in the business of producing finished products that utilize Propylene from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Propylene at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Propylene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:
Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

25167-67-3, Butene (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Butene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Butene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**
If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Butene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Butene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Butene (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Butene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*  

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Timeframe target:*  

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*  

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<tr>
<td>✗ No target</td>
<td>or years</td>
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</table>

Description of creation targets:
Reasons for Using this Toxic Substance
This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

Butene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Butene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Reasons for Creating this Toxic Substance
This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

Butene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Butene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

Sarnia refinery is in the business of producing finished products that utilize Butene (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Butene (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Butene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

25264-93-1, Hexene (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Hexene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Hexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Creation

Does the plan include a statement that stipulates the owner or operator's intent to create less of this toxic substance at their facility?*

No

If 'yes', provide the exact statement of intent:**

If 'no', what rationale is specified in the plan for not creating less of this substance?:**

Hexene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Hexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Hexene (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Hexene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*

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<th>Quantity</th>
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Timeframe target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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<th>Quantity</th>
<th>Unit</th>
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</table>

Environment Canada
Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**  
Hexene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Hexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**  
Hexene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Hexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*  
Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**
Sarnia refinery is in the business of producing finished products that utilize Hexene (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Hexene (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Hexene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

**Materials or feedstock substitution**

**Product design or reformulation**

**Equipment or process modifications**

**Spill or leak prevention**

**On-site reuse, recycling or recovery**

**Improved inventory management or purchasing techniques**

**Good operator practice or training**

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

25551-13-7, Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene)

Substances Section Data

Statement of Intent
Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*
 Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**

Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

 Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**
Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*
74-85-1, Ethylene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Ethylene is currently used at the facility and enters the refinery in various feedstock including crude oil. Sarnia refinery is in the business of extracting and producing Ethylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Ethylene is created at the facility through the complex chemical reactions occurring in the refineries conversion units. Sarnia refinery is in the business of extracting and producing Ethylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*
While Imperial Oil has not identified any options to reduce the use or creation of Ethylene at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Ethylene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

**Toxic Substance Use Targets**

**Reduction target:**

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Description of use targets:

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**Toxic Substance Creation Targets**

**Reduction target:**

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**Timeframe target:**

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</table>

Description of creation targets:

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**Reasons for Using this Toxic Substance**

This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

Ethylene is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Ethylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.
Reasons for Creating this Toxic Substance

This substance is created at the facility:*  

As a by-product

Summarize why this substance is created at the facility:**

Ethylene is created at the facility through the complex chemical reactions occurring in the refineries conversion units.  
Sarnia refinery is in the business of extracting and producing Ethylene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Ethylene from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Ethylene at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Ethylene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this
substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

74-98-6, Propane

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Propane is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Propane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Propane is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Propane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Objectives, Targets and Description

Plan Objectives

Objectives in plan:*  
While Imperial Oil has not identified any options to reduce the use or creation of Propane at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Propane in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*  

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Timeframe target:*  

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*  

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Timeframe target:*  

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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a by-product
Summary why this substance is used at the facility:

Propane is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Propane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summary why this substance is created at the facility:

Propane is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Propane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

Sarnia refinery is in the business of producing finished products that utilize Propane from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Propane at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Propane in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:
Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

95-63-6, 1,2,4-Trimethylbenzene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If 'yes', provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

1, 2, 4-Trimethylbenzene is currently used at the facility and enters the refinery in purchased feed, chemicals and additives.

1, 2, 4-Trimethylbenzene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products. Additionally, because of its solubility characteristics and accepted presence in motor gasoline, it is utilized by chemical vendors as a carrier fluid for many different refinery chemicals and additives that end up in refinery streams and products.

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**
Objectives, Targets and Description

Plan Objectives

Objectives in plan:

1, 2, 4-Trimethylbenzene enters the facility in purchased feedstock and additives, and is created as a byproduct from thermal cracking. No options to reduce the use or creation of 1, 2, 4-Trimethylbenzene were identified.

Toxic Substance Use Targets

Reduction target:

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Timeframe target:

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:

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Description of creation targets:

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:

The 1, 2, 4-Trimethylbenzene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized.
Reasons for Using this Toxic Substance

This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

1, 2, 4-Trimethylbenzene is currently used at the facility and enters the refinery in purchased feed, chemicals and additives.

1, 2, 4-Trimethylbenzene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products. Additionally, because of its solubility characteristics and accepted presence in motor gasoline, it is utilized by chemical vendors as a carrier fluid for many different refinery chemicals and additives that end up in refinery streams and products.

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

1, 2, 4-Trimethylbenzene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor.

The 1, 2, 4-Trimethylbenzene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

No reduction options were identified that are expected to reduce the use or creation of 1, 2, 4-Trimethylbenzene at Imperial Oil’s Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of 1, 2, 4-Trimethylbenzene at the Sarnia Refinery.

1, 2, 4-Trimethylbenzene used at the facility is a component of the purchased feedstock and additives that are required by the facility to meet market and contractual demands for the refinery’s products. The 1, 2, 4-Trimethylbenzene created at the facility is minimized.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention
On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

NA - 24, Butane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:*

If ‘no’, what rationale is specified in the plan for not using less of this substance?*

Butane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Butane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Butane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Butane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Butane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Butane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*  

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Timeframe target:*  

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*  

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Reasons for Using this Toxic Substance
This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**  
Butane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.  
Sarnia refinery is in the business of extracting and producing Butane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Reasons for Creating this Toxic Substance
This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**  
Butane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.  
Sarnia refinery is in the business of extracting and producing Butane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

Toxic Reduction Options for Implementation
Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*  
Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**
Sarnia refinery is in the business of producing finished products that utilize Butane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Butane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Butane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*
TSRP0071

Which version of the plan is reflected in this summary?*
New Plan

NA - 25, Cycloheptane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*
No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Cycloheptane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cycloheptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Cycloheptane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Cycloheptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Cycloheptane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Cycloheptane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*  

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Timeframe target:*
Toxic Substance Creation Targets

Reduction target:*  

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Timeframe target:*  

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Description of use targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**

Cycloheptane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cycloheptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**

Cycloheptane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Cycloheptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Cycloheptane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Cycloheptane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Cycloheptane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan
NA - 26, Cyclohexene (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance??

Cyclohexene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cyclohexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Cyclohexene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Cyclohexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Cyclohexene (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Cyclohexene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program
### Toxic Substance Use Targets

**Reduction target:**

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**Description of use targets:**

### Toxic Substance Creation Targets

**Reduction target:**

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**Description of creation targets:**

### Reasons for Using this Toxic Substance

**This substance is used at the facility:**

- As a by-product

**Summarize why this substance is used at the facility:**

Cyclohexene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cyclohexene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.

### Reasons for Creating this Toxic Substance

**This substance is created at the facility:**
Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

- Materials or feedstock substitution
- Product design or reformulation
- Equipment or process modifications
- Spill or leak prevention
- On-site reuse, recycling or recovery
- Improved inventory management or purchasing techniques
- Good operator practice or training

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*  
TSRP0071
License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

NA - 27, Cyclooctane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Cyclooctane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cyclooctane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Cyclooctane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Cyclooctane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Objectives, Targets and Description

Plan Objectives

Objectives in plan:*  
While Imperial Oil has not identified any options to reduce the use or creation of Cylcooctane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Cylcooctane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*  
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Description of use targets:

Toxic Substance Creation Targets

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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a by-product
Summarize why this substance is used at the facility:**

Cyclooctane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cyclooctane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  

As a by-product

Summarize why this substance is created at the facility:**

Cyclooctane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Cyclooctane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Cyclooctane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Cyclooctane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Cyclooctane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:
NA - 28, Decane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Decane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Decane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**
If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Decane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Decane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Decane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Decane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*

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Timeframe target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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Timeframe target:*

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Description of creation targets:
Reasons for Using this Toxic Substance
This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**
Decane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.
Sarnia refinery is in the business of extracting and producing Decane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance
This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**
Decane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.
Sarnia refinery is in the business of extracting and producing Decane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*
Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**
Sarnia refinery is in the business of producing finished products that utilize Decane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Decane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Decane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):* 
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):* 
TSRP0071

Which version of the plan is reflected in this summary?* 
New Plan

NA - 31, Heptane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?* 
No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Heptane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Heptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Heptane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Heptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Heptane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Heptane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*
Timeframe target:

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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

Heptane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Heptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

Heptane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Heptane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented: 
Sarnia refinery is in the business of producing finished products that utilize Heptane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Heptane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Heptane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*
TSRP0071

Which version of the plan is reflected in this summary?*
New Plan

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

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

Printed on 17/12/2013 11:41:17 AM
Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Hexane (all isomers excluding n-hexane) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Hexane (all isomers excluding n-hexane) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*

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Timeframe target:*
Toxic Substance Creation Targets

Reasons for Using this Toxic Substance
This substance is used at the facility:* 
As a by-product

Summarize why this substance is used at the facility:**
Hexane (all isomers excluding n-hexane) is currently used at the facility and enters the refinery in various feedstock including crude oil.
Sarnia refinery is in the business of extracting and producing Hexane (all isomers excluding n-hexane) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance
This substance is created at the facility:* 
As a by-product

Summarize why this substance is created at the facility:**
Hexane (all isomers excluding n-hexane) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.
Sarnia refinery is in the business of extracting and producing Hexane (all isomers excluding n-hexane) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Hexane (all isomers excluding n-hexane) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Hexane (all isomers excluding n-hexane) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Hexane (all isomers excluding n-hexane) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan
Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Nonane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Nonane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Nonane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Nonane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Nonane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Nonane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program
Toxic Substance Use Targets

Reduction target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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No target

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

As a by-product

Summarize why this substance is used at the facility:**

Nonane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Nonane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*
Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

- Materials or feedstock substitution
- Product design or reformulation
- Equipment or process modifications
- Spill or leak prevention
- On-site reuse, recycling or recovery
- Improved inventory management or purchasing techniques
- Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*  
TSRP0071
License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*  

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

NA - 34, Octane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Octane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Octane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Octane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Octane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Octane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Octane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*

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<thead>
<tr>
<th>Quantity</th>
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☐ No target

Timeframe target:*

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<th>Quantity</th>
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☐ No target

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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<tr>
<th>Quantity</th>
<th>Unit</th>
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☐ No target

Timeframe target:*

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<tr>
<th>Quantity</th>
<th>Unit</th>
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</table>

☐ No target

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

As a by-product
Summarize why this substance is used at the facility:**

Octane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Octane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**

Octane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Octane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Octane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Octane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Octane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:
Summarize actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):

TSRP0071

Which version of the plan is reflected in this summary?

New Plan

NA - 35, Pentane (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?

No

If ‘yes’, provide the exact statement of intent:

If ‘no’, what rationale is specified in the plan for not using less of this substance?

Pentane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Pentane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?

No

If ‘yes’, provide the exact statement of intent:
If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Pentane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Pentane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Pentane (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Pentane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*

<table>
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<th>Quantity</th>
<th>Unit</th>
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<td>☒ No target</td>
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Timeframe target:*

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<tr>
<td>☒ No target</td>
<td>years</td>
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</table>

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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<th>Quantity</th>
<th>Unit</th>
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<td>☒ No target</td>
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Timeframe target:*

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<th>Quantity</th>
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<tbody>
<tr>
<td>☒ No target</td>
<td>years</td>
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</tbody>
</table>

Description of creation targets:
Reasons for Using this Toxic Substance

This substance is used at the facility:*

As a by-product

Summarize why this substance is used at the facility:***

Pentane (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Pentane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*

As a by-product

Summarize why this substance is created at the facility:***

Pentane (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Pentane (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:***

Sarnia refinery is in the business of producing finished products that utilize Pentane (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Pentane (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Pentane (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications
Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*
TSRP0071

Which version of the plan is reflected in this summary?*
New Plan

NA - 36, Pentene (all isomers)

NA - 36, Pentene (all isomers)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*
No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Pentene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Pentene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery.
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**


If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Pentene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Pentene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Pentene (all isomers) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Pentene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*

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<tr>
<th>Quantity</th>
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<tr>
<td>✔️ No target</td>
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Timeframe target:*

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<th>Quantity</th>
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<tbody>
<tr>
<td>✔️ No target</td>
<td>years</td>
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</tbody>
</table>

Description of use targets:


Toxic Substance Creation Targets

Reduction target:*
Reasons for Using this Toxic Substance
This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**  
Pentene (all isomers) is currently used at the facility and enters the refinery in various feedstock including crude oil.  
Sarnia refinery is in the business of extracting and producing Pentene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance
This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**  
Pentene (all isomers) is created at the facility through the complex chemical reactions occurring in the refineries conversion units.  
Sarnia refinery is in the business of extracting and producing Pentene (all isomers) from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*  
Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**
Sarnia refinery is in the business of producing finished products that utilize Pentene (all isomers) from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Pentene (all isomers) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Pentene (all isomers) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

NA - 16, Ammonia (total)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

Environment Canada

Printed on 17/12/2013 11:41:18 AM
Objectives, Targets and Description

Plan Objectives

Objectives in plan:

While Imperial Oil has not identified any feasible options to reduce the use or creation of Ammonia (total) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Ammonia (total) in the coming years. These projects include but are not limited to improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
<td>[ ] No target</td>
<td>or</td>
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</table>

Timeframe target:
Toxic Substance Creation Targets

Reduction target:*  
<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>No target</td>
<td>or</td>
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</tbody>
</table>

Timeframe target:*  
| | or | years |
| No target | or |

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a physical or chemical processing aid

Summarize why this substance is used at the facility:**

Ammonia (total) is used as ammonium hydroxide to neutralize acids in atmospheric and vacuum tower overhead circuits.

No economically feasible options to reduce the use or creation of Ammonia (total) were identified at this time

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**

Ammonia (total) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite which cannot be controlled for individual substance creation.

No economically feasible options to reduce the use or creation of Ammonia (total) were identified at this time
Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

No technically and economically feasible reduction options were identified that are expected to reduce the use or creation of Ammonia (total) at Imperial Oil’s Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Ammonia (total) at the Sarnia Refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Ammonia (total) in the coming years. These projects include but are not limited to improvements to the fugitive emission monitoring program.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan
630-08-0, Carbon monoxide

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Sarnia Refinery does not use Carbon Monoxide

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of Carbon Monoxide at this time

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*  
Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of Carbon Monoxide at this time

Toxic Substance Use Targets

Reduction target:*  

<table>
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<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
<td>☑ No target</td>
<td>or</td>
</tr>
</tbody>
</table>
Timeframe target:

- No target
- or
- years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:

- No target
- or
- years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:
- This substance is not used at the facility

Summarize why this substance is used at the facility:
- Sarnia Refinery does not use Carbon Monoxide

Reasons for Creating this Toxic Substance

This substance is created at the facility:
- As a by-product

Summarize why this substance is created at the facility:
- Carbon Monoxide is estimated to be released into the air, based on combustion emission factors for the combustion of various fuels in refinery equipment. Carbon Monoxide emissions are a function of fired equipment throughput. Sarnia refinery relies on combustion within fired equipment for the production of refinery products

Toxic Reduction Options for Implementation
Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

No technically or economically feasible options were identified that would be expected to reduce the creation of carbon monoxide at the facility. Therefore, Imperial Oil does not intend to implement any options to reduce the amount of carbon monoxide currently created at Sarnia Refinery.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

1319-77-3, Cresol (all isomers, and their salts)

Substances Section Data
Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

Yes

If ‘yes’, provide the exact statement of intent:**

Cresol (all isomers, and their salts) is primarily used in lube oil as blending additive that works as an antioxidant in engine oil formulations. Imperial Oil plans to stop lube oil blending operations at Sarnia Refinery and in doing so will eliminate the primary use of Cresol (all isomers, and their salts) at Sarnia Refinery

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

Cresol (all isomers, and their salts) is not created on site

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Cresol (all isomers, and their salts) primarily enters the Sarnia Refinery as a blend additive used in lube oil blending. Cresol (all isomers, and their salts) is not created at the Sarnia Refinery. Sarnia Refinery will be reducing the use of Cresol (all isomers, and their salts) with the planned closure of the lube oil blending operations of the refinery

Toxic Substance Use Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>tonnes</td>
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</tbody>
</table>
Toxic Substance Creation Targets

Reduction target:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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</table>

No target or 2 years

Reasons for Creating this Toxic Substance

This substance is not created on site

Cresol (all isomers, and their salts) is not created on site
Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

No

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Other

Which activities will be undertaken to implement these reduction options?

Select an option:*

Other

Describe the option:*  
Cresol (all isomers, and their salts) is primarily used in lube oil as blending additive that works as an antioxidant in engine oil formulations. Imperial Oil plans to stop lube oil blending operations at Sarnia Refinery and in doing so will eliminate the primary use of Cresol (all isomers, and their salts) at Sarnia Refinery

Estimates

Estimate of the amount by which the <strong>use</strong> of the toxic substance at the facility will be reduced as a result of implementing the option:

☐ N/A  
2 tonnes 100 %

Estimate of the amount by which the <strong>creation</strong> of the toxic substance at the facility will be reduced as a result of implementing the option:

☒ N/A

Estimate of the amount by which the toxic substance <strong>contained in the product</strong> leaving the facility will be reduced as a result of implementing the option:

☐ N/A  
2 tonnes 100 %
Estimate of the amount by which the total <strong>releases to air</strong> of the toxic substance at the facility will be reduced as a result of implementing the option:

| N/A | tonnes | % |

Estimate of the amount by which the total <strong>releases to water</strong> of the toxic substance at the facility will be reduced as a result of implementing the option:

| N/A | tonnes | % |

Estimate of the amount by which the total <strong>releases to land</strong> of the toxic substance at the facility will be reduced as a result of implementing the option:

| N/A | tonnes | % |

Estimate of the amount by which the <strong>disposals on-site</strong> (including tailing and waste rock) of the toxic substance at the facility will be reduced as a result on implementing this option:

| N/A | tonnes | % |

Estimate of the amount by which the <strong>disposals off-site</strong> of the toxic substance at the facility will be reduced as a result on implementing this option:

| N/A | tonnes | % |

Estimate of the amount by which total <strong>recycling off-site</strong> of the toxic substance at the facility will be reduced as a result on implementing this option:

| N/A | tonnes | % |

**Timelines**

Anticipated timelines for achieving the estimated reduction of the <strong>use</strong> of the toxic substance:

- N/A

  2 years

Anticipated timelines for achieving the estimated reduction of the <strong>creation</strong> of the toxic substance:

- N/A

  years

**Spill or leak prevention**
On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

business reasons unrelated to toxic reductions

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

110-82-7, Cyclohexane

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Cyclohexane is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting and producing Cyclohexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Cyclohexane is created at the facility through the complex chemical reactions occurring in the refineries conversion units.

Sarnia refinery is in the business of extracting and producing Cyclohexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

While Imperial Oil has not identified any options to reduce the use or creation of Cyclohexane at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Cyclohexane in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Toxic Substance Use Targets

Reduction target:*

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<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
<td>☑ No target</td>
<td>or</td>
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</table>

Timeframe target:*

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<tr>
<th>Quantity</th>
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<tr>
<td>☑ No target</td>
<td>or</td>
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</table>

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

<table>
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<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
</table>
No target

Timeframe target:

No target

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

Cyclohexane is currently used at the facility and enters the refinery in various feedstock including crude oil. Sarnia refinery is in the business of extracting and producing Cyclohexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

Cyclohexane is created at the facility through the complex chemical reactions occurring in the refineries conversion units. Sarnia refinery is in the business of extracting and producing Cyclohexane from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:
Sarnia refinery is in the business of producing finished products that utilize Cyclohexane from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Cyclohexane at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Cyclohexane in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

77-73-6, Dicyclopentadiene

Substances Section Data
Statement of Intent
Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*
**Creation**

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Dicyclopentadiene is not created at the facility

**Objectives, Targets and Description**

**Plan Objectives**

Objectives in plan:*

Dicyclopentadiene was not detected at measurable concentrations in any of the Refinery inputs or outputs and is not created. As such, no technically and economically feasible options to reduce use and/or creation were identified

**Toxic Substance Use Targets**

**Reduction target:**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td>or</td>
</tr>
</tbody>
</table>

**Timeframe target:**

<table>
<thead>
<tr>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
</tr>
</tbody>
</table>

Description of use targets:
Toxic Substance Creation Targets

Reduction target:* 

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td>or</td>
</tr>
</tbody>
</table>

Timeframe target:* 

| | 
|-----|------|
| ☒ No target | or |

No target

No target

No target

Description of creation targets:

Reasons for Using this Toxic Substance 

This substance is used at the facility:* 

☒ This substance is not used at the facility

Summarize why this substance is used at the facility:**

Dicyclopentadiene is not currently used at the facility

Reasons for Creating this Toxic Substance 

This substance is created at the facility:* 

☒ This substance is not created at the facility

Summarize why this substance is created at the facility:**

Dicyclopentadiene is not created at the facility

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?* 

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:** 

No reduction options were identified that are expected to reduce the use or creation of Dicyclopentadiene at Imperial Oil's Sarnia refinery. Dicyclopentadiene was not detected in measureable concentrations in any inputs, outputs and is not created at the Refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Dicyclopentadiene at the Sarnia Refinery.
Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):

TSRP0071

Which version of the plan is reflected in this summary?

New Plan

107-21-1, Ethylene glycol

107-21-1, Ethylene glycol

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?

Yes

If ‘yes’, provide the exact statement of intent:

Ethylene glycol is primarily used in lube oil as blending additive that works as a detergent for cleanliness in engine oil formulations. Imperial Oil plans to stop lube oil blending operations at Sarnia Refinery and in doing so will eliminate the primary use of Ethylene glycol at Sarnia Refinery
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Ethylene glycol is not created on site

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Ethylene glycol primarily enters the Sarnia Refinery as a blend additive used in lube oil blending. Ethylene glycol is not created at the Sarnia Refinery. Sarnia Refinery will be reducing the use of Ethylene glycol with the planned closure of the lube oil blending operations of the refinery

Toxic Substance Use Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>tonnes</td>
</tr>
</tbody>
</table>

Timeframe target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>years</td>
</tr>
</tbody>
</table>

Description of use targets:

Ethylene glycol is primarily used in lube oil as blending additive that works as a detergent for cleanliness in engine oil formulations. Imperial Oil plans to stop lube oil blending operations at Sarnia Refinery and in doing so will eliminate the primary use of Ethylene glycol at Sarnia Refinery

Toxic Substance Creation Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
</table>
Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a formulation component

Summarize why this substance is used at the facility:**  
Ethylene glycol is primarily used in lube oil as blending additive that works as a detergent for cleanliness in engine oil formulations.

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
This substance is not created at the facility

Summarize why this substance is created at the facility:**  
Ethylene glycol is not created on site

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*  
No

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**  

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications
Other

Which activities will be undertaken to implement these reduction options?

Select an option:*
Other

Describe the option:*

Ethylene glycol is primarily used in lube oil as blending additive that works as a detergent for cleanliness in engine oil formulations. Imperial Oil plans to stop lube oil blending operations at Sarnia Refinery and in doing so will eliminate the primary use of Ethylene glycol at Sarnia Refinery

Estimates

Estimate of the amount by which the **use** of the toxic substance at the facility will be reduced as a result of implementing the option:

☐ N/A

15 tonnes 100 %

Estimate of the amount by which the **creation** of the toxic substance at the facility will be reduced as a result of implementing the option:

☒ N/A

0 tonnes 0 %

Estimate of the amount by which the toxic substance **contained in the product** leaving the facility will be reduced as a result of implementing the option:

☐ N/A

15 tonnes 100 %

Estimate of the amount by which the total **releases to air** of the toxic substance at the facility will be reduced as a result of implementing the option:

☒ N/A

0 tonnes 0 %

Estimate of the amount by which the total **releases to water** of the toxic substance at the facility will be reduced as a result of implementing the option:

☒ N/A

0 tonnes 0 %

Estimate of the amount by which the total **releases to land** of the toxic substance at the facility will be reduced as a result of implementing the option:

☒ N/A

0 tonnes 0 %

Estimate of the amount by which the **disposals on-site** (including tailing and waste rock) of the toxic substance at the facility will be reduced as a result on implementing this option:
Estimate of the amount by which the <strong>disposals off-site</strong> of the toxic substance at the facility will be reduced as a result of implementing this option:

N/A tonnes %

Estimate of the amount by which total <strong>recycling off-site</strong> of the toxic substance at the facility will be reduced as a result of implementing this option:

N/A tonnes %

Timelines

Anticipated timelines for achieving the estimated reduction of the <strong>use</strong> of the toxic substance:

N/A 2 years

Anticipated timelines for achieving the estimated reduction of the <strong>creation</strong> of the toxic substance:

N/A years

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

business reasons unrelated to toxic reduction

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*
Which version of the plan is reflected in this summary?*

New Plan

7783-06-4, Hydrogen sulphide

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

HYDROGEN SULPHIDE is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting HYDROGEN SULPHIDE from crude oil and other hydrocarbons to meet finished product quality requirements. HYDROGEN SULPHIDE in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**

HYDROGEN SULPHIDE is created at the facility in the conversion units through both cracking and hydrofining processes.

Sarnia refinery is in the business of extracting HYDROGEN SULPHIDE from crude oil and other hydrocarbons to meet finished product quality requirements. HYDROGEN SULPHIDE in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications
Objectives, Targets and Description

Plan Objectives

Objectives in plan:

While Imperial Oil has not identified any feasible options to reduce the use or creation of HYDROGEN SULPHIDE at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of HYDROGEN SULPHIDE in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:

<table>
<thead>
<tr>
<th>Quantity</th>
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<tbody>
<tr>
<td>☒ No target</td>
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Timeframe target:

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<tr>
<td>☒ No target</td>
<td>or years</td>
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</table>

Description of use targets:

Toxic Substance Creation Targets

Reduction target:

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<tr>
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<th>Unit</th>
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Timeframe target:

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<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td>or years</td>
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</tbody>
</table>

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:

As a by-product
Summarize why this substance is used at the facility:**

HYDROGEN SULPHIDE is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting HYDROGEN SULPHIDE from crude oil and other hydrocarbons to meet finished product quality requirements. HYDROGEN SULPHIDE in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications.

Reasons for Creating this Toxic Substance

This substance is created at the facility:*

As a by-product

Summarize why this substance is created at the facility:**

HYDROGEN SULPHIDE is created at the facility in the conversion units through both cracking and hydrofining processes.

Sarnia refinery is in the business of extracting HYDROGEN SULPHIDE from crude oil and other hydrocarbons to meet finished product quality requirements. HYDROGEN SULPHIDE in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of removing HYDROGEN SULPHIDE from crude oil and intermediate products to meet finished product specifications. No reduction options were identified to reduce the use or creation of HYDROGEN SULPHIDE at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of HYDROGEN SULPHIDE in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Materials or feedstock substitution

Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

78-79-5, Isoprene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Isoprene is currently used at the facility and enters the refinery in various feedstock including crude oil. Sarnia refinery is in the business of extracting and producing Isoprene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**
Objectives, Targets and Description

Plan Objectives

Objectives in plan:

While Imperial Oil has not identified any options to reduce the use or creation of Isoprene at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Isoprene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:

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<th>Quantity</th>
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<tbody>
<tr>
<td>☒ No target</td>
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Timeframe target:

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<td>☒ No target</td>
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</table>

Description of use targets:

Toxic Substance Creation Targets

Reduction target:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td>or</td>
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</table>

Timeframe target:
Reasons for Using this Toxic Substance

This substance is used at the facility:*  
As a by-product

Summarize why this substance is used at the facility:**

Isoprene is currently used at the facility and enters the refinery in various feedstock including crude oil. Sarnia refinery is in the business of extracting and producing Isoprene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  
As a by-product

Summarize why this substance is created at the facility:**

Isoprene is created at the facility through the complex chemical reactions occurring in the refineries conversion units. Sarnia refinery is in the business of extracting and producing Isoprene from crude oil and hydrocarbon streams to be used in the finished products marketed by the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

Sarnia refinery is in the business of producing finished products that utilize Isoprene from crude oil to achieve finished product specifications. No reduction options were identified to reduce the use or creation of Isoprene at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Isoprene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program

Materials or feedstock substitution
Product design or reformulation

Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

1313-27-5, Molybdenum trioxide

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**
Molybdenum Trioxide is used as a component of solid catalyst in refinery operations. These types of catalysts are loaded into vessels, used over defined periods of time and then removed for recycling. The use of Molybdenum Trioxide containing catalysts is required in refining operations. No economically feasible options to reduce the use of Molybdenum Trioxide were identified at this time.

Creating

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Molybdenum Trioxide is not created at Sarnia Refinery

Objectives, Targets and Description

Plan Objectives

Objectives in plan:* While Imperial Oil has not identified any feasible options to reduce the use or creation of Molybdenum Trioxide at the Sarnia refinery, Molybdenum Trioxide is not released in products or to the environment from refinery operations. All Molybdenum Trioxide is contained in solid catalysts and recovered through recycling operations.

Toxic Substance Use Targets

Reduction target:* No target or

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets
Reduction target:

<table>
<thead>
<tr>
<th>Quantity</th>
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☑️ No target

☑️ No target

Timeframe target:

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<tr>
<th></th>
<th>years</th>
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</table>

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:

As a physical or chemical processing aid

Summarize why this substance is used at the facility:

Molybdenum Trioxide is used as a component of solid catalyst in refinery operations. These types of catalysts are loaded into vessels, used over defined periods of time and then removed for recycling. The use of Molybdenum Trioxide containing catalysts is required in refining operations. No economically feasible options to reduce the use of Molybdenum Trioxide were identified at this time

Reasons for Creating this Toxic Substance

This substance is created at the facility:

☑️ This substance is not created at the facility

Summarize why this substance is created at the facility:

Molybdenum Trioxide is not created at Sarnia Refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:
No technically and economically feasible reduction options were identified that are expected to reduce the use or creation of Molybdenum Trioxide at Imperial Oil’s Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Molybdenum Trioxide at the Sarnia Refinery.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):

TSRP0071

Which version of the plan is reflected in this summary?

New Plan

NA - 17, Nitrate ion in solution at pH >= 6.0

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?

No
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia Refinery does not use NITRATE ION IN SOLUTION AT PH >=6.0. Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of NITRATE ION IN SOLUTION AT PH >=6.0 at this time

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of NITRATE ION IN SOLUTION AT PH >=6.0 at this time

Toxic Substance Use Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
<td>No target</td>
<td>or</td>
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</table>

Timeframe target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
<td>No target</td>
<td>or</td>
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</table>

Description of use targets:
Toxic Substance Creation Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tr>
<td>☒ No target</td>
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</table>

Timeframe target:*  

<table>
<thead>
<tr>
<th>Years</th>
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</thead>
<tbody>
<tr>
<td>☒ No target</td>
</tr>
</tbody>
</table>

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*  

This substance is not used at the facility

Summarize why this substance is used at the facility:**

NITRATE ION IN SOLUTION AT PH >=6.0 is not used at Sarnia Refinery

Reasons for Creating this Toxic Substance

This substance is created at the facility:*  

As a by-product

Summarize why this substance is created at the facility:**

NITRATE ION IN SOLUTION AT PH >=6.0 is created in the waste water treating biological oxidation units of the refinery

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

No technically or economically feasible options were identified that would be expected to reduce the creation of NITRATE ION IN SOLUTION AT PH >=6.0 at the facility. Therefore, Imperial Oil does not intend to implement any options to reduce the amount of NITRATE ION IN SOLUTION AT PH >=6.0 currently created at Sarnia Refinery
Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*
TSRP0071

Which version of the plan is reflected in this summary?*
New Plan

7446-09-5, Sulphur dioxide

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?**
No

If ‘yes’, provide the exact statement of intent:**
If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Sarnia Refinery does not use Sulphur Dioxide

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of Sulphur Dioxide at this time

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of Sulphur Dioxide at this time

Toxic Substance Use Targets

Reduction target:*

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Timeframe target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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</table>
Reasons for Using this Toxic Substance

This substance is used at the facility:

This substance is not used at the facility

Summarize why this substance is used at the facility:

Sarnia Refinery does not use Sulphur Dioxide

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

Sulphur Dioxide is estimated to be released into the air, based on combustion emission factors for the combustion of various fuels in refinery equipment. Sulphur Dioxide emissions are a function of fired equipment throughput. Sarnia refinery relies on combustion within fired equipment for the production of refinery products

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

No technically or economically feasible options were identified that would be expected to reduce the creation of Sulphur Dioxide at the facility. Therefore, Imperial Oil does not intend to implement any options to reduce the amount of Sulphur Dioxide currently created at Sarnia Refinery

Materials or feedstock substitution

Product design or reformulation
Equipment or process modifications

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

NA - M09, PM10 - Particulate Matter <= 10 Microns

NA - M09, PM10 - Particulate Matter <= 10 Microns

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Sarnia Refinery does not use PM10 - PARTICULATE MATTER
**Creation**

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of PM10 - PARTICULATE MATTER

**Objectives, Targets and Description**

**Plan Objectives**

Objectives in plan:*  

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of PM10 - PARTICULATE MATTER

**Toxic Substance Use Targets**

**Reduction target:**

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**Timeframe target:**

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Description of use targets:

**Toxic Substance Creation Targets**

**Reduction target:**

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**Timeframe target:**
Reasons for Using this Toxic Substance

This substance is used at the facility:

- This substance is not used at the facility

Summarize why this substance is used at the facility:

Sarnia Refinery does not use PM10 - PARTICULATE MATTER

Reasons for Creating this Toxic Substance

This substance is created at the facility:

- As a by-product

Summarize why this substance is created at the facility:

PM10 - PARTICULATE MATTER

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

- Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

No technically or economically feasible options were identified that would be expected to reduce the creation of PM10 - PARTICULATE MATTER

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

NA - M10,  PM2.5 - Particulate Matter <= 2.5 Microns

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Sarnia Refinery does not use PM2.5 - PARTICULATE MATTER

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**
If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of PM2.5 - PARTICULATE MATTER

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of PM2.5 - PARTICULATE MATTER

Toxic Substance Use Targets

Reduction target:*

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Timeframe target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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Description of creation targets:

Reasons for Using this Toxic Substance
This substance is used at the facility:

This substance is not used at the facility

Summarize why this substance is used at the facility:

Sarnia Refinery does not use PM2.5 - PARTICULATE MATTER

Reasons for Creating this Toxic Substance
This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

PM2.5 - PARTICULATE MATTER

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

No technically or economically feasible options were identified that would be expected to reduce the creation of PM2.5 - PARTICULATE MATTER

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:
NA - M14, Total reduced sulphur (expressed as hydrogen sulphide)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) from crude oil and other hydrocarbons to meet finished product quality requirements. TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?**
TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) is created at the facility in the conversion units through both cracking and hydrofining processes.

Sarnia refinery is in the business of extracting TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) from crude oil and other hydrocarbons to meet finished product quality requirements. TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:* 

While Imperial Oil has not identified any feasible options to reduce the use or creation of TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:* 

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Description of use targets: 

Toxic Substance Creation Targets

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Description of creation targets:
Reasons for Using this Toxic Substance

This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) is currently used at the facility and enters the refinery in various feedstock including crude oil.

Sarnia refinery is in the business of extracting TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) from crude oil and other hydrocarbons to meet finished product quality requirements. TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications.

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) is created at the facility in the conversion units through both cracking and hydrofining processes.

Sarnia refinery is in the business of extracting TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) from crude oil and other hydrocarbons to meet finished product quality requirements. TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) in the refinery is then destroyed by converting it to molten sulphur which is used in other commercial and industrial applications.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

Sarnia refinery is in the business of removing TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) from crude oil and intermediate products to meet finished product specifications. No reduction options were identified to reduce the use or creation of TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) at Imperial Oil’s Sarnia refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE) in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.
Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

11104-93-1, Nitrogen oxides (expressed as NO2)

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?**

No

If ‘yes’, provide the exact statement of intent:**
If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Sarnia Refinery does not use Nitrogen oxides (expressed as NO2)

**Creation**

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of Nitrogen oxides (expressed as NO2) at this time

**Objectives, Targets and Description**

**Plan Objectives**

Objectives in plan:*

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of Nitrogen oxides (expressed as NO2) at this time

**Toxic Substance Use Targets**

**Reduction target:**

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**Timeframe target:**

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Description of use targets:

**Toxic Substance Creation Targets**

**Reduction target:**

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No technically or economically feasible options were identified that would be expected to reduce the creation of Nitrogen oxides (expressed as NO2) at the facility. Therefore, Imperial Oil does not intend to implement any options to reduce the amount of Nitrogen oxides (expressed as NO2) currently created at Sarnia Refinery.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*  
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*  
TSRP0071

Which version of the plan is reflected in this summary?*  
New Plan

NA - M08, Total Particulate Matter

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*  
No

If ‘yes’, provide the exact statement of intent:**  

If ‘no’, what rationale is specified in the plan for not using less of this substance?**  

Sarnia Refinery does not use TOTAL PARTICULATE MATTER

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of TOTAL PARTICULATE MATTER at this time

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*  

Sarnia Refinery has not identified any technically and economically feasible options to reduce creation of TOTAL PARTICULATE MATTER at this time

Toxic Substance Use Targets

Reduction target:*  

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Timeframe target:*  

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*  

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**Timeframe target:**

- [x] No target
  
  or
  
  [ ] ________ years

**Description of creation targets:**

**Reasons for Using this Toxic Substance**

This substance is used at the facility:

- [ ] This substance is not used at the facility

Summarize why this substance is used at the facility:

- Sarnia Refinery does not use TOTAL PARTICULATE MATTER

**Reasons for Creating this Toxic Substance**

This substance is created at the facility:

- As a by-product

Summarize why this substance is created at the facility:

- TOTAL PARTICULATE MATTER is created in fluid catalytic cracking and coking units, cooling towers, generated during combustion and general refinery operations

**Toxic Reduction Options for Implementation**

**Toxic substance reduction option(s) to be implemented:**

Does the plan specify that no toxic reduction option will be implemented?

- [ ] Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:

- No technically or economically feasible options were identified that would be expected to reduce the creation of TOTAL PARTICULATE MATTER at the facility. Therefore, Imperial Oil does not intend to implement any options to reduce the amount of TOTAL PARTICULATE MATTER currently created at Sarnia Refinery

**Materials or feedstock substitution**

**Product design or reformulation**

**Equipment or process modifications**
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

207-08-9, Benzo(k)fluoranthene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Benzo(k)fluoranthene is currently used at the facility and enters the refinery in purchased feed.

Benzo(k)fluoranthene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products.
Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Benzo(k)fluoranthene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor.

The Benzo(k)fluoranthene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Benzo(k)fluoranthene enters the facility in purchased feedstock, and is created as a byproduct from thermal cracking. No options to reduce the use or creation of Benzo(k)fluoranthene were identified

Toxic Substance Use Targets

Reduction target:*

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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

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Timeframe target:* 

- No target

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:* 

- As a by-product

Summarize why this substance is used at the facility:**

Benzo(k)fluoranthene is currently used at the facility and enters the refinery in purchased feed.

Benzo(k)fluoranthene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products.

Reasons for Creating this Toxic Substance

This substance is created at the facility:* 

- As a by-product

Summarize why this substance is created at the facility:**

Benzo(k)fluoranthene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor.

The Benzo(k)fluoranthene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

No reduction options were identified that are expected to reduce the use or creation of Benzo(k)fluoranthene at Imperial Oil’s Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Benzo(k)fluoranthene at the Sarnia Refinery.

Benzo(k)fluoranthene used at the facility is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery’s products. The Benzo(k)fluoranthene created at the facility is minimized.
Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

53-70-3, Dibenzo(a,h)anthracene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**


If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Dibenzo(a,h)anthracene is currently used at the facility and enters the refinery in purchased feed. Dibenzo(a,h)anthracene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products.

Creation

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Dibenzo(a,h)anthracene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor. The Dibenzo(a,h)anthracene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*  
Dibenzo(a,h)anthracene enters the facility in purchased feedstock, and is created as a byproduct from thermal cracking. No options to reduce the use or creation of Dibenzo(a,h)anthracene were identified

Toxic Substance Use Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ No target</td>
<td>or</td>
</tr>
</tbody>
</table>

Timeframe target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ No target</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>years</td>
</tr>
</tbody>
</table>

Description of use targets:
Toxic Substance Creation Targets

Reduction target:*

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td>or</td>
</tr>
</tbody>
</table>

Timeframe target:*

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td>or</td>
</tr>
</tbody>
</table>

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

As a by-product

Summarize why this substance is used at the facility:**

Dibenzo(a,h)anthracene is currently used at the facility and enters the refinery in purchased feed.
Dibenzo(a,h)anthracene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products.

Reasons for Creating this Toxic Substance

This substance is created at the facility:*

As a by-product

Summarize why this substance is created at the facility:**

Dibenzo(a,h)anthracene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor.

The Dibenzo(a,h)anthracene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized.

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?*

Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**
No reduction options were identified that are expected to reduce the use or creation of Dibenzo(a,h)anthracene at Imperial Oil's Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Dibenzo(a,h)anthracene at the Sarnia Refinery.

Dibenzo(a,h)anthracene used at the facility is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. The Dibenzo(a,h)anthracene created at the facility is minimized.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*  
TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*  
TSRP0071

Which version of the plan is reflected in this summary?*  
New Plan

74-90-8, Hydrogen cyanide

Substances Section Data
Statement of Intent
Use

Does the plan include a statement that stipulates the owner or operator's intent to use less of this toxic substance at their facility?*
Creation

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*  
While Imperial Oil has not identified any feasible options to reduce the use or creation of Hydrogen cyanide at the Sarnia refinery, various projects at Sarnia refinery are expected to reduce fugitive emissions of Hydrogen cyanide in the coming years. These projects include but are not limited to improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*  

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td></td>
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</tbody>
</table>

Timeframe target:*  

<table>
<thead>
<tr>
<th>Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ No target</td>
<td></td>
</tr>
</tbody>
</table>

Description of use targets:
Toxic Substance Creation Targets

Reduction target:*  
[ ] No target 

Timeframe target:*  
[ ] No target 

Reasons for Creating this Toxic Substance  
This substance is created at the facility:*  
As a by-product  

Summarize why this substance is created at the facility:**  
Hydrogen cyanide created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite which cannot be controlled for individual substance creation. No economically feasible options to reduce the use or creation of Hydrogen cyanide were identified at this time

Toxic Reduction Options for Implementation  
Toxic substance reduction option(s) to be implemented: 

Does the plan specify that no toxic reduction option will be implemented?*  
Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**
No technically and economically feasible reduction options were identified that are expected to reduce the use or creation of Hydrogen cyanide at Imperial Oil’s Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Hydrogen cyanide (total) at the Sarnia Refinery.

Various projects at Sarnia refinery are expected to reduce fugitive emissions of Hydrogen cyanide in the coming years. These projects include but are not limited to improvements to the fugitive emission monitoring program.

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan

198-55-0, Perylene

Substances Section Data

Statement of Intent

Use

Does the plan include a statement that stipulates the owner or operator’s intent to use less of this toxic substance at their facility?*
No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not using less of this substance?**

Perylene is currently used at the facility and enters the refinery in purchased feed.
Perylene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products.

**Creation**

Does the plan include a statement that stipulates the owner or operator’s intent to create less of this toxic substance at their facility?*

No

If ‘yes’, provide the exact statement of intent:**

If ‘no’, what rationale is specified in the plan for not creating less of this substance?:**

Perylene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor.
The Perylene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized.

**Objectives, Targets and Description**

**Plan Objectives**

Objectives in plan:*

Perylene enters the facility in purchased feedstock, and is created as a byproduct from thermal cracking. No options to reduce the use or creation of Perylene were identified.

**Toxic Substance Use Targets**

**Reduction target:**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
</table>

- No target

**Timeframe target:**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
</table>

- No target or years
Toxic Substance Creation Targets

Reduction target:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
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</table>

☒ No target

Timeframe target:

<table>
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<tr>
<th>or</th>
<th>years</th>
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<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

☒ No target

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:

As a by-product

Summarize why this substance is used at the facility:

Perylene is currently used at the facility and enters the refinery in purchased feed.
Perylene used at the facility is a component of the purchased feedstock that is required to meet market and contractual demands for the refinery’s products.

Reasons for Creating this Toxic Substance

This substance is created at the facility:

As a by-product

Summarize why this substance is created at the facility:

Perylene is created at the facility in the conversion units where thermal cracking occurs like the fluid catalytic cracking unit and the coker reactor.
The Perylene created onsite is a byproduct of the complex chemical reactions occurring during thermal cracking, and its creation is minimized

Toxic Reduction Options for Implementation

Toxic substance reduction option(s) to be implemented:

Does the plan specify that no toxic reduction option will be implemented?
Yes

If ‘No’, record the option(s) under the appropriate categories below (e.g., Materials or feedstock substitution; Product design or reformulation). If ‘Yes’, explain why no option will be implemented:**

No reduction options were identified that are expected to reduce the use or creation of Perylene at Imperial Oil’s Sarnia refinery. As such, Imperial Oil does not intend to implement any options to reduce the use or creation of Perylene at the Sarnia Refinery.

Perylene used at the facility is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery’s products. The Perylene created at the facility is minimized

Materials or feedstock substitution
Product design or reformulation
Equipment or process modifications
Spill or leak prevention
On-site reuse, recycling or recovery
Improved inventory management or purchasing techniques
Good operator practice or training

Rationale for choosing these options for implementation:

Summary of actions undertaken outside of the plan to reduce the use and creation of this toxic substance at the facility:

License number of the toxic substance reduction planner who made the recommendations for this substance (format TSRPXXXX):*

TSRP0071

License number of the toxic substance reduction planner who certified the plan for this substance (format TSRPXXXX):*

TSRP0071

Which version of the plan is reflected in this summary?*

New Plan
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of December 17, 2013, I, Brian Fairley, 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.

- 1319-77-3 Cresol (all isomers, and their salts)

Brian Fairley
Refinery Manager, Sarnia Refinery

Date
12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 1319-77-3 Cresol (all isomers, and their salts)

Scott Manser
Toxic Substance Reduction Planner

License Number
15RPO071

Date
12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of \( \textcolor{Crimson}{12/17/2013} \), I, Brian Fairley, 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.

- 107-21-1 Ethylene glycol

\[
\text{Brian Fairley} \\
\text{Refinery Manager, Sarnia Refinery}
\]

Date: \( \textcolor{Crimson}{12/17/2013} \)

Toxic Substance Reduction Planner

As of \( \textcolor{Crimson}{12/17/2013} \), I, \textcolor{Crimson}{Scott Manser} certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 \( \textcolor{Crimson}{12/17/2013} \) and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 107-21-1 Ethylene glycol

\[
\text{Scott Manser} \\
\text{Toxic Substance Reduction Planner}
\]

License Number: \( \textcolor{Crimson}{\text{TSP0071}} \)
Date: \( \textcolor{Crimson}{12/17/2013} \)
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of **12/17/2013**, I, Brian Fairley, 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.

- 77-73-6 Dicyclopentadiene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of **18/17/2013**, I, **Scott Manser**, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 **12/17/2013** and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 77-73-6 Dicyclopentadiene

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number TSR0071
Date 18/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 109-99-9 Tetrahydrofuran

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

12/17/2013

Date

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 109-99-9 Tetrahydrofuran

[Signature]
Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number
12/17/2013

Date
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 207-8-9 Benzo(k)fluoranthene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date
12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 207-8-9 Benzo(k)fluoranthene

[Signature]  
Scott Manser
Toxic Substance Reduction Planner

License Number
TSR0071

Date
12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 53-70-3 Dibenzo(a,h)anthracene

Brian Fairley
Refinery Manager, Sarnia Refinery

Date

12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 53-70-3 Dibenzo(a,h)anthracene

Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number

Date

12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 198-55-0 Perylene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date

12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 198-55-0 Perylene

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number
TSRAP0071

Date
12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 95-63-6 1, 2, 4-Trimethylbenzene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 95-63-6 1, 2, 4-Trimethylbenzene

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number: TSR0071
Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- **PM2.5 - PARTICULATE MATTER <= 2.5 MICRONS

Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes
at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- **PM2.5 - PARTICULATE MATTER <= 2.5 MICRONS

Scott Manser
Toxic Substance Reduction Planner

License Number T5R00071
Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- **PM10 - PARTICULATE MATTER <= 10 MICRONS

[Brian Fairley]
[Date]
Refinery Manager, Sarnia Refinery

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **PM10 - PARTICULATE MATTER <= 10 MICRONS

[Scott Manser]
[License Number]
[Date]
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of \( \text{12/17/2013} \), I, Brian Fairley, 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 \textit{Toxics Reduction Act, 2009} and Ontario Regulation 455/09 (General) made under that Act.

- **TOTAL PARTICULATE MATTER

\[ \text{Signature: } \text{Brian Fairley} \]  
\[ \text{Date: } \text{12/17/2013} \]

Refinery Manager, Sarnia Refinery

Toxic Substance Reduction Planner

As of \( \text{12/17/2013} \), I, \textbf{Scott Manser} certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the \textit{Toxics Reduction Act, 2009} that are set out in the plan dated \( \text{12/17/2013} \) and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **TOTAL PARTICULATE MATTER

\[ \text{Signature: } \text{Scott Manser} \]  
\[ \text{License Number: } \text{TSRP00071} \]  
\[ \text{Date: } \text{12/17/2013} \]
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 7783-06-4 HYDROGEN SULPHIDE

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 7783-06-4 HYDROGEN SULPHIDE

[Signature] Scott Manser
Toxic Substance Reduction Planner

License Number TSRP0071
Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- **TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE)**

Brian Fairley  
Refrinery Manager, Sarnia Refinery  
12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **TOTAL REDUCED SULPHUR (EXPRESSED AS HYDROGEN SULPHIDE)**

Scott Manser  
Toxic Substance Reduction Planner  
12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of \textbf{12/17/2013}, I, Brian Fairley, 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 \textit{Toxics Reduction Act, 2009} and \textit{Ontario Regulation 455/09 (General)} made under that Act.

- 630-08-0 Carbon Monoxide

\begin{flushright}
\textit{Brian Fairley} \\
Refinery Manager, Sarnia Refinery
\end{flushright}

Date: \textbf{12/17/2013}

Toxic Substance Reduction Planner

As of \textbf{18/17/2013}, I, \textit{Scott Manser} certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the \textit{Toxics Reduction Act, 2009} that are set out in the plan dated \textbf{12/17/2013} and that the plan complies with that Act and \textit{Ontario Regulation 455/09 (General)} made under that Act.

- 630-08-0 Carbon Monoxide

\begin{flushright}
\textit{Scott Manser} \\
Toxic Substance Reduction Planner
\end{flushright}

License Number: \textit{TSRP0071} \\
Date: \textbf{12/17/2013}
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 11104-93-1 Nitrogen oxides (expressed as NO2)

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 11104-93-1 Nitrogen oxides (expressed as NO2)

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number: TSRP0041
Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 1446-09-5 Sulphur Dioxide

[Signature]

Brian Fairley
Refinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 1446-09-5 Sulphur Dioxide

[Signature]

Scott Manser
Toxic Substance Reduction Planner

License Number: [Redacted]

Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of **12/17/2013**, I, Brian Fairley, 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.

- 1313-27-5 Molybdenum Trioxide

Brian Fairley
Refinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of **12/17/2013**, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 **12/17/2013** and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 1313-27-5 Molybdenum Trioxide

Scott Manser
Toxic Substance Reduction Planner

License Number: TSRP0071

Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- ** Ammonia (total)

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- ** Ammonia (total)

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number: TSAP0071
Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of \(12/17/2013\), I, Brian Fairley, 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.

- 74-90-8 Hydrogen cyanide

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

[Signature]
12/17/2013
Date

Toxic Substance Reduction Planner

As of \(12/17/2013\), I, Scott Manser, certify that I am familiar with the processes
at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 \(12/17/2013\) and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- 74-90-8 Hydrogen cyanide

[Signature]
Scott Manser
Toxic Substance Reduction Planner

[Signature]
15RP0031
License Number
12/17/2013
Date
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 2013/12/12, I, Brian Fairley, 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.

- **NITRATE ION IN SOLUTION AT PH >=6.0

\[\text{Brian Fairley} \quad \text{12/17/2013} \]
Refinery Manager, Sarnia Refinery

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **NITRATE ION IN SOLUTION AT PH >=6.0

\[\text{Scott Manser} \quad \text{TSR0071} \quad \text{12/17/2013} \]
Toxic Substance Reduction Planner
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of **2013/12/17**, I, Brian Fairley, 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.

- **Butane (all isomers)**

Brian Fairley  
Refinery Manager, Sarnia Refinery

Date: **12/17/2013**

Toxic Substance Reduction Planner

As of **12/17/2013**, I, **Scott Manser**, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 **12/17/2013** and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **Butane (all isomers)**

Scott Manser  
Toxic Substance Reduction Planner

License Number: **TSRP0071**  
Date: **12/17/2013**
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of \underline{12/17/2013}, I, Brian Fairley, 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.

- ** Cycloheptane (all isomers)

\[Signature\]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date 2013/12/17

Toxic Substance Reduction Planner

As of \underline{12/17/2013}, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 \underline{12/17/2013} and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- ** Cycloheptane (all isomers)

\[Signature\]
Scott Manser
Toxic Substance Reduction Planner

License Number \underline{TSR00071}

Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- ** Cyclohexene (all isomers)

[Signature]

Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- ** Cyclohexene (all isomers)

[Signature]

Scott Manser
Toxic Substance Reduction Planner

 License Number TSR90071
  Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- ** Cyclooctane (all isomers)

[Signature]

Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 1/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- ** Cyclooctane (all isomers)

[Signature]

Scott Manser
Toxic Substance Reduction Planner

[License Number] 18/17/2013

Date
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013 I, Brian Fairley, 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.

- ** Decane (all isomers)

Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013 I, Scott Manser certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- ** Decane (all isomers)

Scott Manser
Toxic Substance Reduction Planner

License Number T5RF0071

Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of __12/17/2013__ Date, I, Brian Fairley, 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.

- **Heptane (all isomers)**

[Signature]

Brian Fairley
Refinery Manager, Sarnia Refinery

12/17/2013

Date

Toxic Substance Reduction Planner

As of __12/17/2013__ Date, I, __Scott Manser__ Planner Name certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 __12/17/2013__ and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **Heptane (all isomers)**

[Signature]

Scott Manser
Toxic Substance Reduction Planner

TSRP0071 License Number 12/17/2013 Date
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of [12/17/2013], I, Brian Fairley, 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.

- **Hexane (all isomers excluding n-hexane)**

[Signature]

Brian Fairley
Refinery Manager, Sarnia Refinery

[Date]

12/17/2013

Toxic Substance Reduction Planner

As of [12/17/2013], I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 [12/17/2013] and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **Hexane (all isomers excluding n-hexane)**

[Signature]

Scott Manser
Toxic Substance Reduction Planner

[License Number] [Date]

TSR-0071 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- ** Nonane (all isomers)

   [Signature]
   Brian Fairley
   Refinery Manager, Sarnia Refinery
   12/17/2013
   Date

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- ** Nonane (all isomers)

   [Signature]
   Scott Manser
   Toxic Substance Reduction Planner
   License Number: TSR0071
   12/17/2013
   Date
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of _12/17/2013_, I, Brian Fairley, 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 Redution Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

- **Octane (all isomers)**

[Brian Fairley]
Refinery Manager, Sarnia Refinery

[Signature]

(Date)

12/17/2013

Toxic Substance Reduction Planner

As of _12/17/2013_, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 _12/17/2013_ and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **Octane (all isomers)**

[Signature]

Scott Manser
Toxic Substance Reduction Planner

[License Number]

TSRP0071

(Date)

12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- **Pentane (all isomers)

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date
12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **Pentane (all isomers)

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number
TSRP0071

Date
12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of **12/17/2013**, I, Brian Fairley, 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.

- **Pentene (all isomers)**

[Signature]

Brian Fairley
Refinery Manager, Sarnia Refinery

Date: **12/17/2013**

Toxic Substance Reduction Planner

As of **12/17/2013**, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 **12/17/2013** and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- **Pentene (all isomers)**

[Signature]

Scott Manser
Toxic Substance Reduction Planner

License Number: **TSRP0071**

Date: **12/17/2013**
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 25167-67-3 Butene (all isomers)

[Signature]
Brian Fairley
Refrinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes
at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- 25167-67-3 Butene (all isomers)

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number: TSR0071
Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of __12/17/2013__, I, Brian Fairley, 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.

- 110-82-7 Cyclohexane

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date __12/17/2013__

Toxic Substance Reduction Planner

As of __12/17/2013__, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 __12/17/2013__ and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 110-82-7 Cyclohexane

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number __TSRP0071__

Date __12/17/2013__
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 74-85-1 Ethylene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 74-85-1 Ethylene

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number TSRP0071
Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of [12/17/2013], I, Brian Fairley, 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.

- 25264-93-1 Hexene (all isomers)

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

[Signature]
12/17/2013
Date

Toxic Substance Reduction Planner

As of [12/17/2013], I, Scott Manser, certify that I am familiar with the processes
at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 [12/17/2013] and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- 25264-93-1 Hexene (all isomers)

[Signature]
Scott Manser
Toxic Substance Reduction Planner

[Signature]
TSRP0071
License Number

12/17/2013
Date
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of \(12/17/2013\), I, Brian Fairley, 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.

- 78-79-5 Isoprene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date \(12/17/2013\)

Toxic Substance Reduction Planner

As of \(12/17/2013\), I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 \(12/17/2013\) and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 78-79-5 Isoprene

[Signature]
Scott Manser
License Number TSRP0071
Date \(12/17/2013\)
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 110-54-3 N-Hexane

Brian Fairley  
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 110-54-3 N-Hexane

Scott Manser  
Toxic Substance Reduction Planner

License Number J5R/0071  
Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of ___/17/2013, I, Brian Fairley, 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.

- 74-98-6 Propane

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date: 12/17/2013

Toxic Substance Reduction Planner

As of ___/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 74-98-6 Propane

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number: TSRP0071
Date: 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of ___12/17/2013____, I, Brian Fairley, 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.

- 115-07-1 Propylene

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

Date 12/17/2013

Toxic Substance Reduction Planner

As of ___12/17/2013____, I, ___Scott Manser___ certify that I am familiar with the processes at Imperial Oil's Sarnia Refinery that use or create the toxic substances 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 ___12/17/2013____ and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 115-07-1 Propylene

[Signature]
Scott Manser
Toxic Substance Reduction Planner

License Number 15R10071
Date 12/17/2013
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 12/17/2013, I, Brian Fairley, 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.

- 25551-13-7 Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene)

[Signature]
Brian Fairley
Refinery Manager, Sarnia Refinery

12/17/2013
Date

Toxic Substance Reduction Planner

As of 12/17/2013, I, Scott Manser, certify that I am familiar with the processes at Imperial Oil’s Sarnia Refinery that use or create the toxic substances 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 12/17/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- 25551-13-7 Trimethylbenzene (all isomers excluding 1, 2, 4-Trimethylbenzene)

[Signature]  
License Number
TSR6671

Date
12/17/2013