
Imperial Oil
Products and Chemicals Division
Nanticoke Refinery
P.O. Box 500
Nanticoke, Ontario
N0A 1L0

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December 2013

Nanticoke Refinery – Reduction plan summary (OR 455/09)

Provincial regulations set out requirements for business owners to inform Ontarians about the use and creation of reportable substances in their communities. Under the Toxics Reduction Act (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, created and transformed 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 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:

Nanticoke Refinery

Facility Address:

225 2nd Concession, Nanticoke (Ontario)

Update Comments:

Activities

Facility Contacts

Facility Contacts

Public Contact:*

Jon Harding

Highest Ranking Employee:

Richard Henderson

Person responsible for preparing the toxic substance reduction plan:

Madhavi Patel

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

2480

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:*

Nanticoke Refinery

NAICS Id:*

324110

NPRI Id:*

3701

ON Reg 127/01 Id:

Mailing Address

Delivery Mode:	General Delivery
PO Box	500
Rural Route Number	
Address Line 1	225 2 Concession
City*	Nanticoke
Province/Territory**	Ontario
Postal Code:**	N0A1L0

Physical Address

Address Line 1	225 2nd Concession
City	Nanticoke
Province/Territory	Ontario
Postal Code	N0A1L0
Additional Information	
Land Survey Description	
National Topographical Description	

Geographical Address

Latitude	42.83750
Longitude	80.05170
UTM Zone**	17
UTM Easting**	578000
UTM Northing**	4743000

Contact Validation

Contacts

Public Contact:

First Name:*
 Last Name:*
 Position:*
 Telephone:*
 Ext:
 Fax:
 Email:*

Mailing Address

Delivery Mode:
 PO Box
 Rural Route Number
 Address Line 1
 City*
 Province/Territory**
 Postal Code:**

Highest Ranking Employee:

First Name:*
 Last Name:*
 Position:*
 Telephone:*
 Ext:
 Fax:

5195877210

Email:*

richard.r.henderson@exxonmobil.com

Mailing Address

Delivery Mode:

PO Box

500

Rural Route Number

Address Line 1

225 #2 Concession

City*

Nanticoke

Province/Territory**

Ontario

Postal Code:**

N0A 1L0

Person responsible for the Toxic Substance Reduction Plan preparation:

First Name:*

Madhavi

Last Name:*

Patel

Position:*

Environmental Advisor

Telephone:*

5195877403

Ext:

Fax:

Email:*

madhavi.patel@esso.ca

Mailing Address

Delivery Mode:

PO Box

500

Rural Route Number

Address Line 1

225 #2 Concession

City*

Nanticoke

Province/Territory**

Ontario

Postal Code:**

N0A 1L0

Employees

Employees

Number of Full-time Employees:*

296

Substances

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?**:

n-Hexane used at the facility is a component of the crude oil and 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?:**

The n-hexane created onsite is a byproduct of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

n-Hexane is naturally occurring in the crude oil required by the refinery to run its base business, and enters the refinery in various purchased feedstock. n-Hexane is created as a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of n-hexane were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	<input style="width: 100%;" type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or	<input style="width: 80%;" type="text"/> years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	<input style="width: 100%;" type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or	<input style="width: 80%;" type="text"/> years
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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

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

n-Hexane enters as a byproduct in the refinery's feedstock

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 as a byproduct of the complex chemical reactions occurring in conversion units 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:**

n-Hexane is naturally occurring in the crude oil required by the facility to run its base business and 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 n-hexane created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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

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?:**

Nanticoke refinery is in the business of producing propylene from feedstock to be 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?:**

Nanticoke refinery is in the business of producing propylene from feedstock to be used in other commercial and industrial applications.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Nanticoke refinery is in the business of producing propylene from purchased feedstock to be used in other commercial and industrial applications. However, various projects at Nanticoke refinery are expected to reduce fugitive emissions of propylene in the coming years. These projects include tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

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

Propylene enters the refinery in various feedstock. Nanticoke refinery is in the business of producing propylene from feedstock to be used in other commercial and industrial applications.

Reasons for Creating this Toxic Substance

This substance is created at the facility:*

For sale/distribution

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

Propylene is created in various conversion units at the facility. Nanticoke refinery is in the business of producing propylene from feedstock to be 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.**

Nanticoke refinery is in the business of producing propylene from purchased feedstock to be used in other commercial and industrial applications. Various projects at Nanticoke refinery are expected to reduce fugitive emissions of propylene in the coming years. These projects include 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)

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) 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?:**

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

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Butene (all isomers) 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 butene (all isomers) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite which cannot be controlled for individual substance creation. No reduction options were identified that are expected to reduce the use or creation of butene (all isomers) at the refinery.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

No target or years

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) enters as a byproduct in the refinery's feedstock.

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 as a byproduct of the complex chemical reactions occurring in conversion units 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.**

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

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)

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 enters the facility as a component of the crude oil and 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?***

The hexene created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Hexene is a naturally occurring substance in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Hexene is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of hexene were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

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:**

Hexene enters as a byproduct in the refinery's feedstock.

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 is created as a byproduct of the complex chemical reactions occurring in conversion units 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.**

Hexene is naturally occurring in the crude oil required by the facility to run its base business. Hexene is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Hexene created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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)

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) used at the facility is a component of the feedstock that is required to meet market and contractual demands for the refinery's products. Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene) used at the facility is also an active ingredient in various additives. These additives are used to neutralize acids in crude, prevent corrosion and to protect unit interior. No viable alternatives were identified that would result in a reduction of Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene) 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?:**

Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene) is created as a by-product through complex chemical reactions in various processes at the facility. The operations of these units vary to meet market demands and product specifications and are not able to be adjusted to minimize the creation of one specific substance.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene) enter the facility in additives and feedstock including crude oil, and is created as a byproduct of the complex chemical reactions occurring in conversion units onsite. There were no technically and economically feasible options identified to reduce the use or creation of trimethylbenzene (all isomers excluding 1,2,4-trimethylbenzene) at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

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

Trimethylbenzene (all isomers excluding 1,2,4-trimethylbenzene) a naturally occurring component of crude oil and a component of various refinery feedstock, which are required by the refinery to run its base business. Trimethylbenzene (all isomers excluding 1,2,4-trimethylbenzene) is an active ingredient in various additives used to neutralize acids in crude, and to prevent corrosion to protect unit interior.

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 as a by-product through complex chemical reactions in various processes 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:**

Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene) is naturally occurring in the crude oil required by the facility to run its base business. Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene) is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Trimethylbenzene (all isomers excluding 1,2,4-trimethylbenzene) used onsite is found in various additives, no economical alternatives were identified that would reduce the overall quantity of toxic substances used by the refinery. Trimethylbenzene (all isomers excluding 1,2,4-trimethylbenzene) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite which cannot be controlled for individual substance creation.

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):*

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?*

74-85-1, Ethylene

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?*

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

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?*

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:*

Ethylene is currently used at the facility and enters the refinery in the alkylation unit feedstock. Ethylene is naturally created at the facility in the fluid catalytic cracking unit. No technically and economically feasible options to reduce the use of ethylene were identified. Nanticoke refinery is targeting to reduce the creation of ethylene onsite by 133 tonnes.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	<input style="width: 100%;" type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or	<input style="width: 100%;" type="text"/> years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input type="checkbox"/> No target	or	<input style="width: 100%; text-align: center; border: 1px solid black;" type="text" value="133"/> <input style="width: 100%; text-align: center; border: 1px solid black;" type="text" value="tonnes"/>

Timeframe target:*

<input type="checkbox"/> No target	or	<input style="width: 100%; text-align: center; border: 1px solid black;" type="text" value="1"/> years
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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

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

Ethylene enters the facility as a byproduct in the feedstock for alkylation unit.

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 as a byproduct of the complex chemical reactions occurring in conversion unit 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?*

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

Modified equipment, layout or piping

Which activities will be undertaken to implement these reduction options?

Select an option:*

Modified equipment, layout or piping

Describe the option:*

Reduce metals to fluid catalytic cracking unit by reducing entrainment in vacuum tower

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

tonnes

%

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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:

N/A tonnes %

Estimate of the amount by which the **disposals off-site** 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 **recycling off-site** 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 **use** of the toxic substance:

N/A

years

Anticipated timelines for achieving the estimated reduction of the creation of the toxic substance:

N/A

1 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:

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

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? **

Nanticoke refinery is in the business of producing propane from crude oil and purchased feedstock to be 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?: **

Nanticoke refinery is in the business of producing propane from crude oil and purchased feedstock to be used in other commercial and industrial applications.

Objectives, Targets and Description

Plan Objectives

Objectives in plan: *

Nanticoke refinery is in the business of producing propane from crude oil and purchased feedstock to be used in other commercial and industrial applications. However, various projects at Nanticoke refinery are expected to reduce fugitive emissions of propane in the coming years. These projects include tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target: *

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target: *

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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

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

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 used at the facility is a component of the feedstock that is required to meet market and contractual demands for the refinery's products. 1,2,4-Trimethylbenzene used at the facility is also an active ingredient in various additives. These additives are used to neutralize acids in crude, and to prevent corrosion to protect unit interior. No viable alternatives were identified that would result in a reduction of 1,2,4-Trimethylbenzene 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? **

1,2,4-Trimethylbenzene is created as a by-product through complex chemical reactions in various processes at the facility. The operations of these units vary to meet market demands and product specifications and are not able to be adjusted to minimize the creation of one specific substances.

Objectives, Targets and Description

Plan Objectives

Objectives in plan: *

1,2,4-Trimethylbenzene enters the facility in additives and feedstock including crude oil, and is created as byproduct of the complex chemical reactions occurring in conversion units onsite. There were no technically and economically feasible options identified to reduce the use or creation of 1,2,4-trimethylbenzene at the facility.

Toxic Substance Use Targets

Reduction target: *

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	<input style="width: 100px; height: 20px;" type="text"/> <input style="width: 100px; height: 20px;" type="text"/>

Timeframe target: *

<input checked="" type="checkbox"/> No target	or	<input style="width: 150px; height: 20px;" type="text"/> years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

1,2,4-Trimethylbenzene is naturally occurring in the crude oil required by the facility to run its base business. 1,2,4-trimethylbenzene used onsite is found in various additives, no economical alternatives were identified that would reduce the overall quantity of toxic substance used by the refinery. The 1,2,4-trimethylbenzene created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite which cannot be controlled for individual substance creation.

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 - 24, Butane (all isomers)

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? **

Nanticoke refinery is in the business of producing butane from crude oil and purchased feedstock to be 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?:**

Nanticoke refinery is in the business of producing butane from crude oil and purchased feedstock to be used in other commercial and industrial applications.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Nanticoke refinery is in the business of producing butane from crude oil and purchased feedstock to be used in other commercial and industrial applications. However, various projects at Nanticoke refinery are expected to reduce fugitive emissions of butane in the coming years. These projects include tank upgrades and improvements to the fugitive emission monitoring program.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is used at the facility:*

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

Butane enters the refinery in various feedstock. Nanticoke refinery is in the business of producing butane from crude oil and feedstock to be used in other commercial and industrial applications.

Reasons for Creating this Toxic Substance

This substance is created at the facility:*

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

Butane is created in various conversion units at the facility. Nanticoke refinery is in the business of producing butane from crude oil and feedstock to be 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?*

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.**

Nanticoke refinery is in the business of producing butane from crude oil and purchased feedstock to be used in other commercial and industrial applications. Various projects at Nanticoke refinery are expected to reduce fugitive emissions of butane in the coming years. These projects include 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)

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 used at the facility is a component of the crude oil and 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?:**

The cycloheptane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Cycloheptane naturally occurs in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Cycloheptane is created as a product of the complex chemical reactions occurring in conversion units onsite. There were no technically and economically feasible options identified to reduce the use or creation of cycloheptane at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or <input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Cycloheptane is a naturally occurring substance in the crude oil required by the facility to run its base business and 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 cycloheptane created onsite is a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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 - 27, Cyclooctane (all isomers)

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 used at the facility is a component of the crude oil and 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?*

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

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

The cyclooctane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Cyclooctane naturally occurs in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Cyclooctane is created as a product of the complex chemical reactions occurring in conversion units onsite. There were no technically and economically feasible options identified to reduce the use or creation of cyclooctane at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or <input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Cyclooctane is a naturally occurring substance in the crude oil required by the facility to run its base business and 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 cyclooctane created onsite is a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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 - 28, Decane (all isomers)

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 enters the facility as a component of the crude oil and 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?:**

The Decane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Decane is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Decane is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of decane were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

<input checked="" type="checkbox"/> No target	or		years
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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Decane is naturally occurring in the crude oil required by the facility to run its base business. Decane is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Decane created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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)

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 enters the facility as a component of the crude oil and 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?:**

The Heptane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Heptane is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Heptane is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of heptane were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or <input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Heptane is naturally occurring in the crude oil required by the facility to run its base business. Heptane is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Heptane created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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)

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?*

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? **

Hexane (all isomers excluding n-Hexane) enters the facility as a component of the crude oil and 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?:**

The Hexane (all isomers excluding n-Hexane) created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Hexane (all isomers excluding n-Hexane) is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Hexane (all isomers excluding n-Hexane) is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of Hexane (all isomers excluding n-Hexane) were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Hexane (all isomers excluding n-Hexane) is naturally occurring in the crude oil required by the facility to run its base business. Hexane (all isomers excluding n-Hexane) is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Hexane (all isomers excluding n-Hexane) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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 - 33, Nonane (all isomers)

NA - 33, Nonane (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?*

Nonane enters the facility as a component of the crude oil and 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?:**

The Nonane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Nonane is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Nonane is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of Nonane were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or <input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Nonane is naturally occurring in the crude oil required by the facility to run its base business. Nonane is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Nonane created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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)

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 enters the facility as a component of the crude oil and 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?:**

The Octane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Octane is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Octane is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of Octane were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

<input checked="" type="checkbox"/> No target	or		years
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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Octane is naturally occurring in the crude oil required by the facility to run its base business. Octane is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Octane created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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 - 35, Pentane (all isomers)

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 enters the facility as a component of the crude oil and 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?:**

The Pentane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Pentane is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Pentane is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of Pentane were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or <input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Pentane is naturally occurring in the crude oil required by the facility to run its base business. Pentane is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Pentane created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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 enters the facility as a component of the crude oil and 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?:**

The Pentene created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Pentene is naturally occurring in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Pentene is created as a product of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of pentene were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

<input checked="" type="checkbox"/> No target	or		years
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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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.**

Pentene is naturally occurring in the crude oil required by the facility to run its base business. Pentene is a component of the purchased feedstock that is required by the facility to meet market and contractual demands for the refinery's products. Pentene created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified.

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)

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?*

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? **

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 of ammonia (total) were identified at this time.

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?*

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

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

The ammonia (total) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No economically feasible options to reduce the creation of ammonia (total) were identified at this time.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Ammonia (total) is used as ammonium hydroxide to neutralize acids in atmospheric and vacuum tower overhead circuits. The ammonia (total) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of ammonia (total) were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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:**

Ammonia (total) is used as ammonium hydroxide to neutralize acids in atmospheric and vacuum tower overhead circuits; no viable alternatives found that could replace ammonium hydroxide. The ammonia (total) created onsite is a byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible reduction options were identified for reduction in use or creation of ammonia (total).

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)

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?*

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? **

Cresol (all isomers, and their salts) is not used in measureable quantities.

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 at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Cresol (all isomers, and their salts) enters the facility at concentrations in the refinery feedstock that are below the measurement detection limit. Cresol (all isomers, and their salts) is not created at the facility. No reduction options were identified at this time.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or <input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or <input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

<input checked="" type="checkbox"/> No target	or		years
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Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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

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

110-82-7, Cyclohexane

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 used at the facility is a component of the crude oil and 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?:**

The cyclohexane created onsite is a product of the complex chemical reactions occurring in conversion units. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Cyclohexane naturally occurs in the crude oil required by the refinery to run its base business, and enter the refinery in various purchased feedstock. Cyclohexane is created as a product of the complex chemical reactions occurring in conversion units onsite. There were no technically and economically feasible options identified to reduce the use or creation of cyclohexane at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

Quantity	Unit
<input type="text"/>	<input type="text"/>

No target

or

Timeframe target:*

No target

or

years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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

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

111-42-2, Diethanolamine (and its salts)

111-42-2, Diethanolamine (and its 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:**

Imperial Oil intends to reduce the use of diethanolamine (and its salts) at the facility.

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?:**

Diethanolamine (and its salts) is not created at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Diethanolamine (and its salts) enters the facility as a DEA makeup for acid gas impurities removal. Diethanolamine (and its salts) is not created at the facility. Nanticoke refinery is targeting to reduce the use of diethanolamine (and its salts) by 0.06 tonnes.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input type="checkbox"/> No target	or	
	0.06	tonnes

Timeframe target:*

<input type="checkbox"/> No target	or	2	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

No target

or

years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Other

Which activities will be undertaken to implement these reduction options?

Select an option:*

Other

Describe the option:*

Optimize amine usage in each treater

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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:

N/A tonnes %

Estimate of the amount by which the disposals off-site 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 recycling off-site 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 use of the toxic substance:

N/A years

Anticipated timelines for achieving the estimated reduction of the creation of the toxic substance:

N/A years

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

75-45-6, HCFC-22

75-45-6, HCFC-22

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?*

HCFC-22 is used at the facility as a refrigerant at SRU-LRF. SRU-LRF recovers propane and heavier hydrocarbons from fuel gas to be used in other commercial and industrial applications. No economically feasible options to reduce the use of HCFC-22 were identified at this time.

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?:**

HCFC-22 is not created at the refinery.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

HCFC-22 is used as a method of refrigeration in the Sulphur Recovery Unit Liquid Recovery Facility (SRU-LRF) to recover propane and heavier hydrocarbons from refinery fuel gas. Nanticoke refinery has Best Management Practices Plan in place as a preventative measure to limit the fugitive emissions of HCFC-22. There were no technically and economic feasible options identified to reduce the use of HCFC-22 as the method of refrigeration.

Toxic Substance Use Targets

Reduction target:*

Quantity

Unit

No target

or

Timeframe target:*

No target

or

years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

Quantity

Unit

No target

or

Timeframe target:*

No target

or

years

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:**

HCFC-22 is used as a refrigerant in the Sulphur Recovery Unit Liquid Recovery Facility (SRU-LRF).

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:**

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.**

HCFC-22 is used as a method of refrigeration in the Sulphur Recovery Unit Liquid Recovery Facility (SRU-LRF). SRU-LRF recovers propane and heavier hydrocarbons from fuel gas to be used in other commercial and industrial applications. Nanticoke refinery has Best Management Practices Plan in place as a preventative measure to limit the fugitive emissions of HCFC-22. HCFC-22 is not created at the facility.

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

7783-06-4, Hydrogen sulphide

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 used at the facility is a component of the crude oil and purchased feedstock that is required to run its base business and 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?**:**

Hydrogen sulphide is created as byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of hydrogen sulphide were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Hydrogen sulphide enters the facility in feedstock including crude oil, and is created as byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of hydrogen sulphide were identified.

Toxic Substance Use Targets

Reduction target:*

Quantity

Unit

No target

or

Timeframe target:*

No target

or

years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

No target

or

Unit

Timeframe target:*

No target

or

years

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 enters as a byproduct in the refinery's feedstock.

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 as a byproduct of the complex chemical reactions occurring in conversion units 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.**

Hydrogen sulphide used at the facility is a component of the crude oil and purchased feedstock that is required to run its base business and meet market and contractual demands for the refinery's products. No technically and economically feasible options were identified.

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 \geq 6.0

NA - 17, Nitrate ion in solution at pH \geq 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

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

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

Nitrate Ion in Solution at pH ≥ 6.0 is not 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?***

Nitrate Ion in Solution at pH ≥ 6.0 is created due to biodegradation of ammonia, which is a byproduct of complex chemical reactions occurring in conversion units onsite. These units cannot be controlled for individual substance creation. No technically and economically feasible options to reduce the creation of nitrate ion in solution at pH ≥ 6.0 were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Nitrate Ion in Solution at pH ≥ 6.0 is created due to biodegradation of ammonia in process wastewater, which is created during complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the creation of nitrate ion in solution at pH ≥ 6.0 were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target

or

years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

Quantity

Unit

No target

or

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:*

As a by-product

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

Nitrate Ion in Solution at pH ≥ 6.0 is created due to biodegradation of ammonia in process wastewater, which is created during complex chemical reactions occurring in conversion units onsite.

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:**

Nitrate Ion in Solution at pH ≥ 6.0 is created due to biodegradation of ammonia, which is a byproduct of complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the creation of nitrate ion in solution at pH ≥ 6.0 were identified.

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):*

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?*

630-08-0, Carbon monoxide

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?*

Carbon Monoxide is not 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?:**

The carbon monoxide created onsite is a byproduct of the complex combustion processes occurring in conversion units. No economically and technically feasible options were identified to reduce the creation of carbon monoxide at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Carbon Monoxide is created as a byproduct of the complex chemical reactions occurring in conversion units onsite. Carbon Monoxide is not used at the refinery. No technically and economically feasible options to reduce the creation of carbon monoxide were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or	<input type="text"/> years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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:**

The carbon monoxide created onsite is a byproduct of the complex combustion processes occurring in conversion units onsite which cannot be controlled for individual substance creation. No technically and economically feasible reduction options were identified.

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 - M14, Total reduced sulphur (expressed as hydrogen sulphide)

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:**

[Empty text box]

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

Total Reduced Sulphur used at the facility is a component of the crude oil and purchased feedstock that is required to run its base business and 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: **

[Empty text box]

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

Total Reduced Sulphur is created as byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of hydrogen sulphide were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan: *

Total Reduced Sulphur enters the facility in feedstock including crude oil, and is created as byproduct of the complex chemical reactions occurring in conversion units onsite. No technically and economically feasible options to reduce the use or creation of Total Reduced Sulphur were identified.

Toxic Substance Use Targets

Reduction target: *

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	[Empty text box]	[Empty text box]

Timeframe target: *

No target or [Empty text box] years

Description of use targets:

[Empty text box]

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

Summarize why this substance is 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?*

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

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)

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?*

Nitrogen oxides (expressed as NO2) is not 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?:**

The nitrogen oxides (expressed as NO2) created onsite is a result of onsite combustion processes. No economically and technically feasible options were identified to reduce the creation of nitrogen oxides (expressed as NO2) at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Nitrogen oxides (expressed as NO2) is created on site by the combustion processes in the refinery heaters and boilers and combustion of coke in fluid catalytic cracking unit. Nitrogen oxides (expressed as NO2) is not used at the refinery. No technically and economically feasible options to reduce the creation of nitrogen oxides (expressed as NO2) were identified.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

<input checked="" type="checkbox"/> No target	or		years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
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No target

or

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:**

Nitrogen oxides (expressed as NO₂) is not used at the facility

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:**

Nitrogen oxides (expressed as NO₂) is created on site by the combustion processes in the refinery heaters and boilers and combustion of coke in fluid catalytic cracking unit.

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:**

The nitrogen oxides (expressed as NO₂) created onsite is a result of onsite combustion processes. No economically and technically feasible options were identified to reduce the creation of nitrogen oxides (expressed as NO₂) at the facility.

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

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?***

PM2.5 - Particulate Matter is not 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?:**

PM2.5 - Particulate Matter created onsite is a result of combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalytic cracking unit, during cooling tower operations and general refinery operations. No economically and technically feasible options were identified to reduce the creation of PM2.5 - Particulate Matter at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

PM2.5 - Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalytic cracking unit and during cooling tower operations. No economically and technically feasible options were identified to reduce the creation of PM2.5 - Particulate Matter at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or	<input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

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:*

As a by-product

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

PM2.5 - Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit and during cooling tower 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:**

PM2.5 - Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalytic cracking unit and during cooling tower operations. No economically and technically feasible options were identified to reduce the creation of PM2.5 - Particulate Matter at the facility.

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?***

PM10 - Particulate Matter is not 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?:**

PM10 - Particulate Matter created onsite is a result of combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit, during cooling tower operations and general refinery operations. No economically and technically feasible options were identified to reduce the creation of PM10 – Particulate Matter at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

PM10 - Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit and during cooling tower operations. No economically and technically feasible options were identified to reduce the creation of PM10 - Particulate Matter at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

Timeframe target:*

<input checked="" type="checkbox"/> No target	or	<input type="text"/>	years
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Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	
	<input type="text"/>	<input type="text"/>

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:*

As a by-product

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

PM10 - Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit and during cooling tower 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:**

PM10 - Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalytic cracking unit and during cooling tower operations. No economically and technically feasible options were identified to reduce the creation of PM10 - Particulate Matter at the facility.

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

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?***

Sulphur Dioxide is not used at 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?*

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:*

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	<input type="text"/>

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input type="checkbox"/> No target	or	<input type="text" value="75"/>
		<input type="text" value="tonnes"/>

Timeframe target:*

No target

or

2

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:*

As a by-product

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

Sulphur Dioxide is created at the facility as a result of combustion of sulphur-containing fuels produced by the refinery (refinery fuel gas (RFG), vacuum off gas (VOG), heavy fuel oil (HFO)). Sulphur Dioxide is also created due to combustion of coke in the fluid catalytic cracking unit (FCCU) and catalytic reforming unit (CRU).

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

Spill or leak prevention

On-site reuse, recycling or recovery

Improved inventory management or purchasing techniques

Good operator practice or training

Improved maintenance scheduling, record keeping or procedures

Which activities will be undertaken to implement these reduction options?

Select an option:*

Improved maintenance scheduling, record keeping or procedures

Describe the option:*

site is currently working to increase the sour water stripper (SWS) reliability and reduce acid gas flaring, resulting in less SO2 release.

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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 tonnes %

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:

N/A tonnes %

Estimate of the amount by which the disposals off-site 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 recycling off-site 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 use of the toxic substance:

N/A years

Anticipated timelines for achieving the estimated reduction of the creation of the toxic substance:

N/A years

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

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?***

Total Particulate Matter is not 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?***

Total Particulate Matter created onsite is a result of combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit, during cooling tower operations and general refinery operations. No economically and technically feasible options were identified to reduce the creation of Total Particulate Matter at the facility.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Total Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit and during cooling tower operations. No economically and technically feasible options were identified to reduce the creation of Total Particulate Matter at the facility.

Toxic Substance Use Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

No target or years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

	Quantity	Unit
<input checked="" type="checkbox"/> No target	or	

Timeframe target:*

No target or years

Description of creation targets:

Reasons for Using this Toxic Substance

This substance is 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:*

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

Total Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalyst cracking unit and during cooling tower 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.**

Total Particulate Matter is created onsite by combustion processes in the refinery heaters and boilers, movement of catalysts in fluid catalytic cracking unit and during cooling tower operations. No economically and technically feasible options were identified to reduce the creation of Total Particulate Matter at the facility.

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

208-96-8, Acenaphthylene

208-96-8, Acenaphthylene

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?**:**

Acenaphthylene 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?:**

The acenaphthylene created onsite is a byproduct of the complex chemical reactions occurring in the fluid catalytic cracking unit. No technically and economically feasible options were identified.

Objectives, Targets and Description

Plan Objectives

Objectives in plan:*

Acenaphthylene enters the facility in purchased feedstock, and is created as a byproduct of the complex chemical reactions occurring in fluid catalytic cracking unit. No technically and economically feasible options to reduce the use or creation of acenaphthylene were identified.

Toxic Substance Use Targets

Reduction target:*

Quantity

Unit

No target

or

Timeframe target:*

No target

or

years

Description of use targets:

Toxic Substance Creation Targets

Reduction target:*

Quantity

Unit

No target

or

Timeframe target:*

No target

or

years

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:**

Acenaphthylene enters as a byproduct in the refinery's feedstock.

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:**

Acenaphthylene is created as a byproduct of the complex chemical reactions occurring in conversion units 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.**

Acenaphthylene 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. No alternative low acenaphthylene feed available. The acenaphthylene created onsite is a byproduct of the complex chemical reactions occurring in conversion unit onsite. No technically and economically feasible reduction options were identified.

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 6 Dec 2013, I, Richard Henderson, certify that I have read the toxic substance
Date
reduction plan for the toxic substances 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
- NA - 25, Cycloheptane (all isomers)
- NA - 27, Cyclooctane (all isomers)



Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
Date

Toxic Substance Reduction Planner

As of 12/4/2013, I, Scott Manser certify that I am familiar with the processes
Date Planner Name
at Imperial Oil's Nanticoke 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 12/3/2013 and that the plan complies with that
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- 110-82-7, Cyclohexane
- NA - 25, Cycloheptane (all isomers)
- NA - 27, Cyclooctane (all isomers)


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number


12/4/2013
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- 25167-67-3 Butene (all isomers)



Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
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Toxic Substance Reduction Planner

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Act and Ontario Regulation 455/09 (General) made under that Act.

- 25167-67-3 Butene (all isomers)


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number

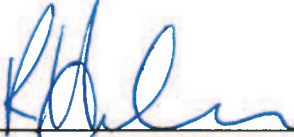
12/4/2013
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- 2025884 Sulphur Dioxide



Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
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Act and Ontario Regulation 455/09 (General) made under that Act.

- 2025884 Sulphur Dioxide


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number

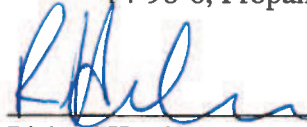
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Highest Ranking Employee

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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
- 115-07-1, Butane (all isomers)
- 74-98-6, Propane


Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
Date

Toxic Substance Reduction Planner

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Act, 2009* that are set out in the plan dated 12/3/2013 and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- 115-07-1, Propylene
- 115-07-1, Butane (all isomers)
- 74-98-6, Propane


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number


12/14/2013
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knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario
Regulation 455/09 (General) made under that Act.

- NA - M10, PM2.5 - Particulate Matter
- NA - M09, PM10 - Particulate Matter
- NA - M08, Total Particulate Matter


Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
Date

Toxic Substance Reduction Planner

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Act, 2009* that are set out in the plan dated 12/3/2013 and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- NA - M10, PM2.5 - Particulate Matter
- NA - M09, PM10 - Particulate Matter
- NA - M08, Total Particulate Matter


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number

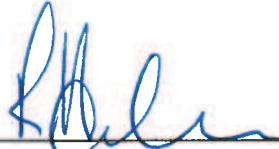
12/4/2013
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Highest Ranking Employee

As of 6 Dec 2013, I, Richard Henderson, certify that I have read the toxic substance
Date
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)




Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
Date

Toxic Substance Reduction Planner

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Date Planner Name
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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 12/3/2013 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)



Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number


12/4/2013
Date

9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 6 Dec 2013, I, Richard Henderson, certify that I have read the toxic substance
Date
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.

- NA - 17 Nitrate Ion in Solution at pH ≥ 6.0



Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
Date

Toxic Substance Reduction Planner

As of 12/4/2013, I, Scott Manser certify that I am familiar with the processes
Date Planner Name
at Imperial Oil's Nanticoke 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 12/3/2013 and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- NA - 17 Nitrate Ion in Solution at pH ≥ 6.0


Scott Manser
Toxic Substance Reduction Planner

TSR20071
License Number

12/4/2013
Date

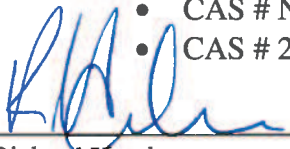
9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

As of 6 Dec 2013, I, Richard Henderson, certify that I have read the toxic substance
Date

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.

- CAS # 110-54-3, n-Hexane
- CAS # NA-35, Pentane (all isomers)
- CAS # NA-32, Hexane (all isomers excluding n-Hexane)
- CAS # NA-31, Heptane (all isomers)
- CAS # NA-34, Octane (all isomers)
- CAS # NA-33, Nonane (all isomers)
- CAS # NA-28, Decane (all isomers)
- CAS # NA-36, Pentene (all isomers)
- CAS # 25264-93-1, Hexene (all isomers)


Richard Henderson
Refinery Manager, Nanticoke Refinery


6 Dec 2013
Date

Toxic Substance Reduction Planner

As of 12/4/2013, I, Scott Manser certify that I am familiar with the processes
Date Planner Name

at Imperial Oil's Nanticoke 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 12/3/2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

- CAS # 110-54-3, n-Hexane
- CAS # NA-35, Pentane (all isomers)
- CAS # NA-32, Hexane (all isomers excluding n-Hexane)
- CAS # NA-31, Heptane (all isomers)
- CAS # NA-34, Octane (all isomers)
- CAS # NA-33, Nonane (all isomers)
- CAS # NA-28, Decane (all isomers)
- CAS # NA-36, Pentene (all isomers)
- CAS # 25264-93-1, Hexene (all isomers)


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number


12/4/2013
Date

9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

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Date
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.

- 2148878 Hydrogen sulphide
- NA - M14, Total reduced sulphur (expressed as hydrogen sulphide)



Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
Date

Toxic Substance Reduction Planner

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Act, 2009* that are set out in the plan dated 12/3/2013 and that the plan complies with that
Act and Ontario Regulation 455/09 (General) made under that Act.

- 2148878 Hydrogen sulphide
- NA - M14, Total reduced sulphur (expressed as hydrogen sulphide)


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number


12/4/2013
Date

9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

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Date
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
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- 75-45-6 HCFC-22



Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
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- 75-45-6 HCFC-22


Scott Manser
Toxic Substance Reduction Planner

TSRPG071
License Number

12/4/2013
Date

9. TOXIC REDUCTION PLAN CERTIFICATION

Highest Ranking Employee

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knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario
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- 74-85-1 Ethylene



Richard Henderson
Refinery Manager, Nanticoke Refinery

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- 74-85-1 Ethylene


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number

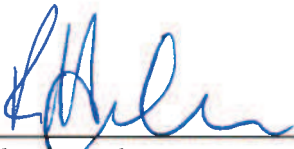
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As of 6 Dec 2013, I, Richard Henderson, certify that I have read the toxic substance
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reduction plan for the toxic substance referred to below and am familiar with its contents, and to my
knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario
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- 111-42-2 Diethanolamine (and its salts)



Richard Henderson
Refinery Manager, Nanticoke Refinery

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Act and Ontario Regulation 455/09 (General) made under that Act.

- 111-42-2 Diethanolamine (and its salts)


Scott Manser
Toxic Substance Reduction Planner

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


Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
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- 630-08-0 Carbon Monoxide



Richard Henderson
Refinery Manager, Nanticoke Refinery

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- 630-08-0 Carbon Monoxide


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Toxic Substance Reduction Planner

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- NA - 16 Ammonia (total)


Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
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- NA - 16 Ammonia (total)


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
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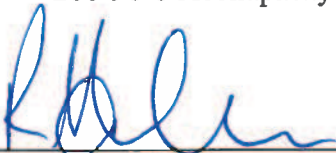
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- 208-96-8 Acenaphthylene



Richard Henderson
Refinery Manager, Nanticoke Refinery

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- 208-96-8 Acenaphthylene


Scott Manser
Toxic Substance Reduction Planner

TSRP0071
License Number

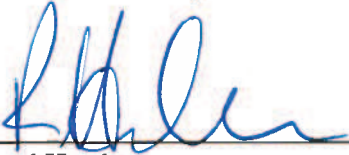
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my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and
Ontario Regulation 455/09 (General) made under that Act.

- 95-63-6, 1,2,4-Trimethylbenzene
- 25551-13-7, Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene)


Richard Henderson
Refinery Manager, Nanticoke Refinery

6 Dec 2013
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- 95-63-6, 1,2,4-Trimethylbenzene
- 25551-13-7, Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene)


Scott Manser
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