

# Toxics Reduction Plan Summary

## Phase II

December 2013

In compliance with the Toxics Reduction Act (2009) and Ontario Regulation 455/09

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## Introduction

NOVA Chemicals develops and manufactures chemicals, plastic resins and end-products that make everyday life safer, healthier and easier. NOVA Chemicals believes that sound environmental stewardship and the careful management of our natural resources -- such as air, land and water -- simply make good business sense. We have established companywide systems and procedures to ensure that we continuously improve our environmental performance and protect the well-being of our communities. Our employees work to ensure health, safety, security and environmental stewardship through our commitment to sustainability and Responsible Care®. Responsible Care® is the chemical industry's global voluntary initiative under which companies, through their national associations, work together to continuously improve their health, safety and environmental performance, and to communicate with stakeholders about their products and processes.

NOVA Chemicals has three sites located in Sarnia-Lambton: one petrochemical manufacturing site (Corunna Site), and two polyethylene sites (Moore Site and St. Clair River Site). These three sites are subject to the Toxics Reduction Program, implemented by the Ontario Ministry of the Environment (MOE) in 2009.

The Toxics Reduction Act (2009) (the Act) and its associated Ontario Regulation 455/09 (the Regulation) require regulated facilities to:

- Track and quantify the toxic substances used and created
- Develop plans to reduce the use and creation of these substances
- Make summary information available to the public

The Act and Regulation have been introduced in two phases. Phase I requires that 47 priority substances be included in the initial regulatory requirements for the 2010 and 2011 reporting years. Phase II, which includes all substances on the NPRI list, requires facilities to conduct reporting and planning for these substances in the 2012 reporting year. This Toxics Reduction Plan Summary has been prepared as specified in section 8 of the Act and in accordance with Sections 23 and 24 of the Regulation. For more information on the Toxics Reduction Act 2009 and Ontario Regulation 419/05 please visit:

[http://www.ene.gov.on.ca/environment/en/legislation/toxics\\_reduction\\_act/index.htm](http://www.ene.gov.on.ca/environment/en/legislation/toxics_reduction_act/index.htm)

## Corunna Site

### Basic Facility Information

Facility Name	NOVA Chemicals Corunna Site	
NPRI ID	1776	
MOE ID	n/a	
Facility Owner and Operator	Street Address: 786 Petrolia Line Corunna, Ontario N0N 1G0	Mailing Address: Post Office Box 3060 Sarnia, Ontario N7T 8C1
Full-Time Employee Equivalents	650	
NAICS ID	325110	
CDN SIC ID	3712	
U.S. SIC ID	2869	
Facility Public Contact	Krista Hagan, Community Relations Coordinator 519-481-2867	
Facility Company	NOVA Chemicals (Canada) Ltd.; NOVA Chemicals Corporation	
Facility Company Addresses	Street Address: 1000 7 <sup>th</sup> Ave Southwest Calgary, Alberta T2P 5L5	Mailing Address: Post Office Box 2518 Calgary, Alberta T2P 5C6
Percentage of Ownership	100%	

## Phenol(and its salts), 108-95-2

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of phenol (and its salts) henceforth known as “phenols” entering the process, created or contained in product at its Corunna Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that phenols are only used and manufactured under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that phenols are used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process phenols are created as a by-product.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of phenols used, created or contained in product at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of phenols used, created or contained in product at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for phenols at the Corunna Site.

## 1,2,4-Trimethylbenzene, 25551-13-7

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of 1,2,4-trimethylbenzene used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that 1,2,4-trimethylbenzene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that 1,2,4-trimethylbenzene is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

1,2,4-Trimethylbenzene enters as a component of the crude and condensate feedstock.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of 1,2,4-trimethylbenzene at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of 1,2,4-trimethylbenzene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for 1,2,4-trimethylbenzene at the Corunna Site.



## Cyclohexane, 110-82-7

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of cyclohexane used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that cyclohexane is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that cyclohexane is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Cyclohexane enters the facility as a component of the crude and condensate feeds to the Crude Unit.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of cyclohexane at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of cyclohexane at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for cyclohexane at the Corunna Site.

## Dicyclopentadiene, 77-73-6

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of dicyclopentadiene (DCPD) used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that DCPD is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that DCPD is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

DCPD enters the facility as a component of the external Pyrolysis Gasoline stream (Pygas). It is also generated on-site in the Olefins Hot Unit and is present in the produced pygas stream.

### *Reduction Options to Be Implemented*

No options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of DCPD at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for DCPD at the Corunna Site.

## Ethylene, 74-85-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of ethylene used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that ethylene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that ethylene is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Ethylene enters the facility as minor components of EP Mix, Propane and Butane feed streams from a nearby facility recycled stream. Ethylene is primarily created in the cracking heaters, located in the Olefins Hot Unit, due to the destruction of the larger hydrocarbons into the formation and subsequent recombination of radicals (steam cracking process).

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of ethylene at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of ethylene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for Ethylene at the Corunna Site.

## Isoprene, 78-79-5

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of isoprene used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that isoprene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that isoprene is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Isoprene enters the facility as a minor component within the purchased Pyrolysis Gasoline stream. It is primarily created in the cracking heaters located in the Olefins Hot Unit from the formation and recombination of radicals.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of isoprene at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of isoprene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for isoprene at the Corunna Site.

## n-Hexane, 110-54-3

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of n-hexane used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that n-hexane is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that n-hexane is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

n-Hexane is a component of the crude and condensate incoming feed streams which first enter the Crude Unit.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of n-hexane at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of n-hexane at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for n-hexane at the Corunna Site.

## Propylene, 115-07-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of propylene used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that propylene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that propylene is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Propylene enters the facility as minor components of EP Mix, Propane and Butane feed stocks. Propylene is primarily created in the cracking heaters in the Olefins Hot Unit from the destruction of the larger hydrocarbons into the formation and subsequent recombination of radicals.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of propylene at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of propylene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for propylene at the Corunna Site.

## Styrene, 100-42-5

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of styrene used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that styrene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that styrene is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Styrene enters the facility as a component of the Pygas feed stream into the cracking heaters. Styrene also enters as part of the light oil and drag benzene feed stocks into the DPG Aromatics Unit. In the DPG Aromatics unit styrene is hydrogenated into ethylbenzene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of styrene at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of styrene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for styrene at the Corunna Site.

## Hydrogen Sulfide, 7783-06-4

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of hydrogen sulphide used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that hydrogen sulphide is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that hydrogen sulphide is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Hydrogen sulphide enters the Corunna Site facility as a component of the crude and condensate feedstock.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of hydrogen sulphide at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of hydrogen sulphide at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for hydrogen sulphide at the Corunna Site.



## Total Reduced Sulphur

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of total reduced sulphur (TRS) used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that TRS is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that TRS is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

TRS enters the Corunna Site facility as a component of the crude and condensate feedstock as hydrogen sulphide, carbon disulphide and methyl mercaptan. TRS also enters the facility as carbon disulphide in the light oil stream.

### *Reduction Options to Be Implemented*

To reduce the use, creation and product content of TRS at the Corunna Site facility, NOVA Chemicals has considered many options. However, no additional options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to reduce the use, creation or product content of TRS.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for TRS at the Corunna Site.

## Ammonium (total)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of ammonia used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that ammonia is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that ammonia is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process, ammonia is created and destroyed on-site within the wastewater treatment plant from the microbial communities present (i.e the anaerobic digester).

### *Reduction Options to Be Implemented*

No options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of ammonia created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for Ammonium at the Corunna Site.

## Nitrate Ion

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of nitrate ions used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that nitrate ions are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that nitrate ions are used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process, nitrate ions are created and destroyed within the wastewater treatment facilities from the microbial communities present (i.e the anaerobic digester).

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of nitrate ions at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of nitrate ions at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for nitrate ions at the Corunna Site.

## Carbon Monoxide, 630-08-0

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of carbon monoxide entering the process and created at its Corunna Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that carbon monoxide is only created under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that carbon monoxide is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process carbon monoxide is created as a combustion product from boilers, heaters and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use or creation of carbon monoxide at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of carbon monoxide at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for carbon monoxide at the Corunna Site.

## Nitrogen Oxides

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of nitrogen oxides used or created at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that nitrogen oxides are used or created in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that nitrogen oxides are used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process nitrogen oxide is created as a combustion product from boilers, heaters, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of nitrogen oxides entering the process or created at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of nitrogen oxides created at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for nitrogen oxides at the Corunna Site.

## Particulate Matter (10µg or less)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter (10 µg or less) entering or created at its Corunna Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that particulate matter (10 µg or less) only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that particulate matter (10 µg or less) is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process particulate matter (10 µg or less) is created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of particulate matter (10 µg or less) used or created at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of particulate matter (10 µg or less) used or created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for particulate matter (10 µg or less) at the Corunna Site.

## Particulate Matter (2.5µg or less)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter (2.5 µg or less) entering or created at its Corunna Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that particulate matter (2.5 µg or less) only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that particulate matter (2.5 µg or less) is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process particulate matter (2.5 µg or less) is created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of particulate matter (2.5 µg or less) used or created at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of particulate matter (2.5 µg or less) used or created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for particulate matter (2.5 µg or less) at the Corunna Site.

## Total Particulate Matter

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of total particulate matter entering or created at its Corunna Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that total particulate matter only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that total particulate matter is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process total particulate matter is created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of total particulate matter used or created at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of total particulate matter used or created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for total particulate matter at the Coruna Site.



## Sulphur Dioxide, 7446-09-5

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of sulphur dioxide created at its Corunna Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that sulphur dioxide is only created or contained in product under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that sulphur dioxide is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process sulphur dioxide is created as a combustion product from boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of sulphur dioxide created at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of sulphur dioxide created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for sulphur dioxide at the Corunna Site.

## Propane, 74-98-6

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of propane used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that propane is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that propane is manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Propane enters the facility in multiple feed streams where it is fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of propane at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of propane at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for propane at the Corunna Site.

## **Butanes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of butanes (all isomers), henceforth known as “butanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that butanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that butanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Butanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of butanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of butanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for butanes at the Corunna Site.

## **Butenes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of butenes (all isomers), henceforth known as “butenes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that butenes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that butenes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Butenes enter the site as minor components of the butane feed stream fed to the cracking heaters. Butenes are created in the cracking heaters from recombination of radicals and fed to the cold unit. Butenes are a major component of the Crude Butadiene feed stream entering the cold unit. The mixed C4 stream is a product distilled off from the cold unit.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of butenes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of butenes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for butenes at the Corunna Site.

## **Pentanes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of pentanes (all isomers), henceforth known as “pentanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that pentanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that pentanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Pentanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of pentanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of pentanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for pentanes at the Corunna Site.

## Pentenenes (all isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of pentenes (all isomers), henceforth known as “pentenes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that pentenes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that pentenes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Pentenenes enter the facility as components of the purchased Pygas feed streams into the olefins hot unit where more is created in the formation and recombination of radicals. Some are distilled into the Mixed C4 product stream from the cold unit, while the remaining are distilled out in the DPG Aromatics Unit into the isoprene and C9-200 product streams.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of pentenes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of pentenes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for pentenes at the Corunna Site.

## Hexanes (all isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of hexanes (all isomers except n-), henceforth known as “hexanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that hexanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that hexanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Hexanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of hexanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of hexanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for hexanes at the Corunna Site.

## Hexenes (all Isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of hexenes (all isomers), henceforth known as “hexenes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that hexenes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that hexenes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Hexenes enter the facility as part of the purchased pygas feed stream into the cracking heaters where they are destroyed in the formation of radicals used to create products for the facility.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of hexenes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of hexenes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for hexenes at the Corunna Site.



## Heptanes (all isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of heptanes (all isomers), henceforth known as “heptanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that heptanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that heptanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Heptanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of heptanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of heptanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for heptanes at the Corunna Site.

## Octanes (all isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of octanes (all isomers), henceforth known as “octanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that octanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that octanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Octanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of octanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of octanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for octanes at the Corunna Site.

## **Nonanes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of nonanes (all isomers), henceforth known as “nonanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that nonanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that nonanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Nonanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of nonanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of nonanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for nonanes at the Corunna Site.

## **Decanes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of decanes (all isomers), henceforth known as “decanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that decanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that decanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Decanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of decanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of decanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for decanes at the Corunna Site.

## Cycloheptanes (all isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of cycloheptanes (all isomers), henceforth known as “cycloheptanes”, used, created or contained in product at its Corunna Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that cycloheptanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that cycloheptanes are manufactured in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Cycloheptanes enter the facility in multiple feed streams where they are fed to the cracking heaters and destroyed in the formation of hydrocarbon radicals used to create ethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of cycloheptanes at the Corunna Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of cycloheptanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for cycloheptanes at the Corunna Site.

## Moore Site

### Basic Facility Information

Facility Name	NOVA Chemicals Moore Site	
NPRI ID	1788	
MOE ID	n/a	
Facility Owner and Operator	Street Address: 510 Moore Line Mooretown, Ontario N0N 1M0	Mailing Address: Post Office Box 3042 Sarnia, Ontario N7T 8C9
Full-Time Employee Equivalents	252	
NAICS ID	325210	
CDN SIC ID	3712	
U.S. SIC ID	2869	
Facility Public Contact	Krista Hagan, Community Relations Coordinator 519-481-2867	
Facility Company	NOVA Chemicals (Canada) Ltd.; NOVA Chemicals Corporation	
Facility Company Addresses	Street Address: 1000 7 <sup>th</sup> Ave Southwest Calgary, Alberta T2P 5L5	Mailing Address: Post Office Box 2518 Calgary, Alberta T2P 5C6
Percentage of Ownership	100%	

## Acetone, 8006-64-2

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of acetone used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that acetone is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that acetone is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process acetone is created as part of the low density polyethylene polymerization process when isopropyl alcohol (IPA) is used as the chain transfer agent.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of acetone at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of acetone at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for acetone at the Moore Site.

## Carbon Monoxide, 630-08-0

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of carbon monoxide used or created at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that carbon monoxide is used or created in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that carbon monoxide is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process carbon monoxide is created as a combustion product from boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use or creation carbon monoxide at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use or creation of carbon monoxide at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for carbon monoxide at the Moore Site.



## Ethylene, 74-85-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of ethylene used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that ethylene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that ethylene is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Ethylene enters the facility as a major feedstock for polyethylene production.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of ethylene at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of ethylene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for ethylene at the Moore Site.

## Isopropyl Alcohol (IPA), 67-63-0

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of isopropyl alcohol (IPA) used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that IPA is used, created or contained in product in a responsible and efficient manner

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that IPA is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

IPA enters the facility as the major component of the IPA feedstock stream to be used as a chain transfer agent.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of IPA at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of IPA at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for IPA at the Moore Site.

## Nitrogen Oxides

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of nitrogen oxides used or created at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that Nitrogen Oxides are used or created in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that nitrogen oxides are used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process nitrogen oxides are created as combustion by-products from boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use or creation of nitrogen oxides at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use or creation of nitrogen oxides at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for nitrogen oxides at the Moore Site.

## Nonylphenol, 68152-92-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of nonylphenol used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that nonylphenol is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that nonylphenol is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Nonylphenol enters the facility as a liquid additive used in the polyethylene production process.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of nonylphenol at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of nonylphenol at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for nonylphenol at the Moore Site.

## Particulate Matter (10µg or less)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter (10 µg or less) entering or created at its Moore Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that particulate matter (10 µg or less) only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that particulate matter (10 µg or less) is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process particulate matter (10 µg or less) is created as a combustion product from boilers, furnaces, process stacks and the flare. Particulate matter (10 µg or less) is also generated in small quantities from the storage, loading and transfer of polyethylene pellets.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of particulate matter (10 µg or less) created at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of particulate matter (10 µg or less) created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for particulate matter (10 µg or less) at the Moore Site.

## Particulate Matter (2.5µg or less)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter (2.5 µg or less) entering or created at its Moore Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that particulate matter (2.5 µg or less) only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that particulate matter (2.5 µg or less) is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process particulate matter (2.5 µg or less) is created as a combustion product from boilers, furnaces, process stacks and the flare. Particulate matter (2.5 µg or less) is also generated in small quantities from the storage, loading and transfer of polyethylene pellets.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of particulate matter (2.5 µg or less) created at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of particulate matter (2.5 µg or less) created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for particulate matter (2.5 µg or less) at the Moore Site.

## Total Particulate Matter

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter total particulate matter entering or created at its Moore Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that total particulate matter only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that total particulate matter is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process total particulate matter is created as a combustion product from boilers, furnaces, process stacks and the flare. Total particulate matter is also generated in small quantities from the storage, loading and transfer of polyethylene pellets.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of total particulate matter created at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of total particulate matter created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for total particulate matter at the Moore Site.

## Propylene, 115-07-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of propylene used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that propylene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that propylene is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Propylene enters the facility as a major component of the propylene feedstock used as a chain transfer agent for the production of polyethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of propylene at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of propylene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for propylene at the Moore Site.



## Sulphur Dioxide, 7446-09-5

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of sulphur dioxide created at its Moore Site facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that sulphur dioxide is only created or contained in product under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that sulphur dioxide is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process sulphur dioxide is created as a combustion product from boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of sulphur dioxide created at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of sulphur dioxide created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for sulphur dioxide at the Moore Site.

## **Pentanes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of pentanes (all isomers), henceforth known as “pentanes”, used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that pentanes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that pentanes are used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Pentanes are used as components of catalysts mixing agent streams and catalyst activation streams in the polyethylene production process.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of pentanes at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of pentanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for pentanes at the Moore Site.

## Hexenes (all isomers)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of hexenes (all isomers), henceforth known as “hexenes”, used, created or contained in product at its Moore Site facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that hexenes are used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that hexenes are used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Hexenes enter the facility as components of the Hexene-1 stream used as a comonomer to control the density of the polyethylene produced.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of hexenes at the Moore Site. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of hexenes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for hexenes at the Moore Site.

## St. Clair River Site

### Basic Facility Information

Facility Name	NOVA Chemicals St. Clair Site	
NPRI ID	4700	
MOE ID	n/a	
Facility Owner and Operator	Street Address: 285 Albert Street Corunna, Ontario N0N 1G0	Mailing Address: Post Office Box 3081 Sarnia, Ontario N7T 8C1
Full-Time Employee Equivalents	169	
NAICS ID	325210	
CDN SIC ID	3731	
U.S. SIC ID	2821	
Facility Public Contact	Krista Hagan, Community Relations Coordinator 519-481-2867	
Facility Company	NOVA Chemicals (Canada) Ltd.; NOVA Chemicals Corporation	
Facility Company Addresses	Street Address: 1000 7 <sup>th</sup> Ave Southwest Calgary, Alberta T2P 5L5	Mailing Address: Post Office Box 2518 Calgary, Alberta T2P 5C6
Percentage of Ownership	100%	

## Ethylene, 74-85-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of ethylene used, created or contained in product at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that ethylene is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that ethylene is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Ethylene enters the facility as a major feedstock for the production of polyethylene.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of ethylene at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of ethylene at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for ethylene at the St. Clair River Site.

## Particulate Matter (10µg or less)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter (10 µg or less) entering or created at its St. Clair River Site (SCRS) facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that particulate matter (10 µg or less) only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that particulate matter (10 µg or less) is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process particulate matter (10 µg or less) is created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of particulate matter (10 µg or less) used or created at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of particulate matter (10 µg or less) used or created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for particulate matter (10 µg or less) at the St. Clair River Site.

## Particulate Matter (2.5µg or less)

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of particulate matter (2.5 µg or less) entering or created at its St. Clair River Site (SCRS) facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that particulate matter (2.5 µg or less) only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that particulate matter (2.5 µg or less) is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process particulate matter (2.5 µg or less) is created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of particulate matter (2.5 µg or less) used or created at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of particulate matter (2.5 µg or less) used or created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for particulate matter (2.5 µg or less) at the St. Clair River Site.

## Total Particulate Matter

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of total particulate matter entering or created at its St. Clair River Site (SCRS) facility as this is currently not both technically and economically feasible. NOVA Chemicals is committed to ensuring that total particulate matter only enters or is created at the facility under necessary and restricted circumstances.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that total particulate matter is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Within this facility's process total particulate matter is created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the amount of total particulate matter used or created at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the amount of total particulate matter used or created.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for total particulate matter at the St. Clair River Site.



## Nitrogen Oxides

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of nitrogen oxides used or created at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring nitrogen oxides are created in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that nitrogen oxides are created in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

At the SCRS facility nitrogen oxides are created as a combustion by-product from the boilers, furnaces, process stacks and the flare.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use or creation of nitrogen oxides at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use or creation of nitrogen oxides at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for nitrogen oxides at the St. Clair River Site.

## Carbon Monoxide, 630-08-0

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of carbon monoxide used or created at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that carbon monoxide is used and created in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that carbon monoxide is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Carbon monoxide is present at one stage and in one process at the SCRS facility: the polyethylene manufacturing stage and the polyethylene production process.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use and creation of carbon monoxide at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use or creation of carbon monoxide at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for carbon monoxide at the St. Clair River Site.

## Acetone, 67-64-1

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of acetone used, created or contained in product at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that acetone is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that all acetone present on-site is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Acetone is created as part of the polymerization process when acetyl acetone is used as a secondary deactivator.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of acetone at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of acetone at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for acetone at the St. Clair River Site.

## Cyclohexane, 110-82-7

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of cyclohexane used, created or contained in product at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that cyclohexane is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that cyclohexane is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Cyclohexane is a component of the incoming cyclohexane feed stream which is shipped via rail and used as a process solvent.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of cyclohexane at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of cyclohexane at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for cyclohexane at the St. Clair River Site.

## **Butenes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of butenes (all isomers), henceforth known as “butenes”, used, created or contained in product at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that butenes is used, created or contained in product in a responsible and efficient manner.

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that all butenes present on-site is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Butenes enter the facility as a component of the Butene-1 feedstream used as a comonomer to control the density of the polyethylene produced.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of butenes at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of butenes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for cyclohexane at the St. Clair River Site.

## **Pentanes (all isomers)**

### *Statement of Intent*

NOVA Chemicals does not intend to reduce the amount of pentanes (all isomers), henceforth known as “pentanes”, used, created or contained in product at its St. Clair River Site (SCRS) facility as this is currently not both economically and technically feasible. NOVA Chemicals is committed to ensuring that pentanes are used, created or contained in product in a responsible and efficient manner

### *Objectives of Reduction Plan*

NOVA Chemicals intends to continue to ensure that all pentanes present on-site is used in a responsible and efficient manner.

### *Explanation for Substance Use or Creation*

Pentanes are created in the reaction and emitted to the atmosphere when cyclohexane is used as a process solvent.

### *Reduction Options to Be Implemented*

Many options have been considered to reduce the use, creation and product content of pentanes at the SCRS. However, no options could be identified that were both technically and economically feasible at this time. Therefore, NOVA Chemicals does not intend to implement reduction options for the use, creation or product content of pentanes at this time.

### *Reflection of Current Plan*

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction plan for cyclohexane at the St. Clair River Site.

# Certifications

## Phase II

December 2013

TOXIC SUBSTANCE REDUCTION PLAN

Corunna Site

Certification:

Highest Ranking Employee:

As of Dec 20, 2013, I Tom Thompson, certify that I have read the toxic substance reduction plans for Phenol (and its salts), 1,2,4-Trimethylbenzene, Cyclohexane, Dicyclopentadiene, Ethylene, Isoprene, n-Hexane, Propylene, Styrene, Hydrogen Sulfide, Total Reduced Sulfur, Ammonium (total), Nitrate Ion, Carbon Monoxide, Nitrogen Oxides, Particulate Matter (10µg or less), Particulate Matter (2.5µg or less), Total Particulate Matter, Sulphur Dioxide, Propane (all isomers), Butanes (all isomers), Butenes (all isomers), Pentanes (all isomers), Pentenes (all isomers), Hexanes (all isomers), Hexenes (all isomers), Heptanes (all isomers), Octanes (all isomers), Nonanes (all isomers), Decanes (all isomers) and Cycloheptanes (all isomers) and am familiar with their contents, and to my knowledge the plans are factually accurate and comply with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under the Act.



Tom Thompson  
Regional Manufacturing Director  
NOVA Chemicals (Canada) Ltd.

Toxic Reduction Planner:

As of DEC 20, 2013, I Amit Patel, certify that I am familiar with the process at NOVA Chemicals Corunna Site facility that use or create Phenol (and its salts), 1,2,4-Trimethylbenzene, Cyclohexane, Dicyclopentadiene, Ethylene, Isoprene, n-Hexane, Propylene, Styrene, Hydrogen Sulfide, Total Reduced Sulfur, Ammonium (total), Nitrate Ion, Carbon Monoxide, Nitrogen Oxides, Particulate Matter (10µg or less), Particulate Matter (2.5µg or less), Total Particulate Matter, Sulphur Dioxide, Propane (all isomers), Butanes (all isomers), Butenes (all isomers), Pentanes (all isomers), Pentenes (all isomers), Hexanes (all isomers), Hexenes (all isomers), Heptanes (all isomers), Octanes (all isomers), Nonanes (all isomers), Decanes (all isomers) and Cycloheptanes (all isomers) that I agree with the estimates referred to in subparagraphs iii, iv, and v or subsection 4(1) of the *Toxics Reduction Act, 2009* that are set out in the plans dated December 13<sup>th</sup> 2013 and that the plans comply with the Act and Ontario Regulation 455/09 (General) made under the Act.



Amit Patel  
Toxic Substance Reduction Planner  
NOVA Chemicals (Canada) Ltd.



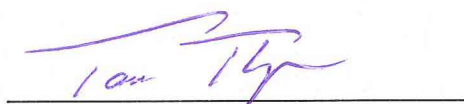
TOXIC SUBSTANCE REDUCTION PLAN

St. Clair River Site

Certification:

Highest Ranking Employee:

As of Dec 20, 13, I Tom Thompson, certify that I have read the toxic substance reduction plans for Ethylene, Particulate Matter (10µg or less), Particulate Matter (2.5µg or less), Total Particulate Matter, Nitrogen Oxides, Carbon Monoxide, Acetone, Cyclohexane, Butenes (all isomers) and Pentanes (all isomers) and am familiar with their contents, and to my knowledge the plans are factually accurate and comply with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under the Act.



Tom Thompson  
Regional Manufacturing Director  
NOVA Chemicals (Canada) Ltd.

Toxic Reduction Planner:

As of DEC 20, 2013, I Amit Patel, certify that I am familiar with the process at NOVA Chemicals St. Clair River Site facility that use or create Ethylene, Particulate Matter (10µg or less), Particulate Matter (2.5µg or less), Total Particulate Matter, Nitrogen Oxides, Carbon Monoxide, Acetone, Cyclohexane, Pentanes (all isomers) and Butenes (all isomers) that I agree with the estimates referred to in subparagraphs iii, iv, and v or subsection 4(1) of the *Toxics Reduction Act, 2009* that are set out in the plans dated December 13<sup>th</sup> 2013 and that the plans comply with the Act and Ontario Regulation 455/09 (General) made under the Act.



Amit Patel  
Toxic Substance Reduction Planner  
NOVA Chemicals (Canada) Ltd.

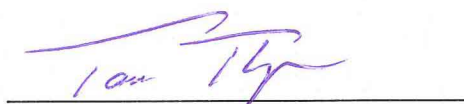
TOXIC SUBSTANCE REDUCTION PLAN

St. Clair River Site

Certification:

Highest Ranking Employee:

As of Dec 20, 13, I Tom Thompson, certify that I have read the toxic substance reduction plans for Ethylene, Particulate Matter (10µg or less), Particulate Matter (2.5µg or less), Total Particulate Matter, Nitrogen Oxides, Carbon Monoxide, Acetone, Cyclohexane, Butenes (all isomers) and Pentanes (all isomers) and am familiar with their contents, and to my knowledge the plans are factually accurate and comply with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under the Act.



Tom Thompson  
Regional Manufacturing Director  
NOVA Chemicals (Canada) Ltd.

Toxic Reduction Planner:

As of DEC 20, 2013, I Amit Patel, certify that I am familiar with the process at NOVA Chemicals St. Clair River Site facility that use or create Ethylene, Particulate Matter (10µg or less), Particulate Matter (2.5µg or less), Total Particulate Matter, Nitrogen Oxides, Carbon Monoxide, Acetone, Cyclohexane, Pentanes (all isomers) and Butenes (all isomers) that I agree with the estimates referred to in subparagraphs iii, iv, and v or subsection 4(1) of the *Toxics Reduction Act, 2009* that are set out in the plans dated December 13<sup>th</sup> 2013 and that the plans comply with the Act and Ontario Regulation 455/09 (General) made under the Act.



Amit Patel  
Toxic Substance Reduction Planner  
NOVA Chemicals (Canada) Ltd.