

Toxics Reduction Plan Summary

Phase I
December 2012

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

Contents

Introduction.....	2
Corunna Site	3
Basic Facility Information	3
1,3-Butadiene, 106-99-0	4
Benzene, 71-43-2.....	5
Ethylbenzene, 100-41-4	6
Naphthalene, 91-20-3.....	7
Sulphuric Acid, 7664-93-9.....	8
Toluene, 108-88-3.....	9
Xylenes (All Isomers).....	10
Moore Site	11
Basic Facility Information	11
Naphthalene, 91-20-3.....	12
Hexavalent Chromium, 18540-29-9	13
Sulphuric Acid, 7664-93-9.....	14
St. Clair River Site.....	15
Basic Facility Information	15
Naphthalene, 91-20-3.....	16
Biphenyl, 92-52-4	17
Sulphuric Acid, 7664-93-9.....	18
Certifications	19

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 455/09, please visit:

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 th Ave Southwest Calgary, Alberta T2P 5L5	Mailing Address: Post Office Box 2518 Calgary, Alberta T2P 5C6
Percentage of Ownership	100%	

1,3-Butadiene, 106-99-0

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of 1,3-butadiene used or created at its Corunna Site facility. As 1,3-butadiene is a profitable substance for this facility, decreasing the throughput of 1,3-butadiene would contradict business growth. NOVA Chemicals is, however, committed to ensuring 1,3-butadiene is manufactured in the most responsible and efficient manner.

Objectives of Reduction Plan

NOVA Chemicals intends to continue to ensure that 1,3-butadiene is manufactured in a responsible and efficient manner.

Explanation for Substance Use or Creation

1,3-Butadiene enters the facility as a component of the various feedstreams. 1,3-Butadiene is created in the cracking heaters. 1,3-Butadiene is a component of various commercial product streams at the facility.

Reduction Options to Be Implemented

To reduce the use and creation of 1,3-butadiene 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 or creation of 1,3-butadiene.

Reflection of Current Plan

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction Plan for 1,3-butadiene at the Corunna Site facility.

Benzene, 71-43-2

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of benzene used or created at its Corunna Site facility. Benzene is a profitable substance for this facility and decreasing the throughput of benzene contradicts business growth. NOVA Chemicals is committed to ensuring benzene is manufactured in a responsible and efficient manner.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Benzene enters the facility as a component of the various feedstreams. Benzene is created in the cracking heaters. Benzene is a component of various commercial product streams at the facility.

Reduction Options to Be Implemented

To reduce the use and creation of benzene 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 or creation of benzene.

Reflection of Current Plan

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

Ethylbenzene, 100-41-4

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of ethylbenzene used or created at its Corunna Site facility. Ethylbenzene is a profitable substance for this facility and decreasing the throughput of ethylbenzene contradicts business growth. NOVA Chemicals is committed to ensuring ethylbenzene is manufactured in a responsible and efficient manner.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Ethylbenzene enters the facility as a component of the various feedstreams. Ethylbenzene is created through the hydrogenation of styrene within the process. Ethylbenzene is a component of various commercial product streams at the facility.

Reduction Options to Be Implemented

To reduce the use and creation of ethylbenzene 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 or creation of ethylbenzene.

Reflection of Current Plan

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

Naphthalene, 91-20-3

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of naphthalene used or created at its Corunna Site facility. Naphthalene use and creation is directly related to the economic growth of NOVA Chemicals and its reduction is not beneficial to business growth. NOVA Chemicals is committed to ensuring naphthalene is used and created in a responsible manner and efficient manner.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Naphthalene enters the facility as a component of the various feedstreams. Naphthalene is created in the cracking heaters. Naphthalene is a component of various commercial produce streams at the facility.

Reduction Options to Be Implemented

To reduce the use and creation of naphthalene 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 or creation of naphthalene.

Reflection of Current Plan

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

Sulphuric Acid, 7664-93-9

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of sulphuric acid used or created at its Corunna Site facility as it is currently not economically and technically feasible. NOVA Chemicals is committed to ensuring that sulphuric acid is only used and created under necessary and restricted circumstances.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Sulphuric acid is used for the neutralization of caustic, catalyst regeneration, waste treatment and controlling the pH of the cooling water. Sulphuric acid is also created through the combustion of two fuel oils.

Reduction Options to Be Implemented

Many options were considered to reduce the use and creation of sulphuric acid at the Corunna Site. However, no additional 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 sulphuric acid.

Reflection of Current Plan

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

Toluene, 108-88-3

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of toluene used or created at its Corunna Site facility. As toluene is a profitable substance for this facility, decreasing the throughput of toluene would contradict business growth. NOVA Chemicals is, however, committed to ensuring toluene is manufactured in the most responsible and efficient manner.

Objectives of Reduction Plan

NOVA Chemicals intends to continue to ensure that toluene is manufactured in a responsible and efficient manner at the Corunna Site facility.

Explanation for Substance Use or Creation

Toluene enters the facility as a component of the various feedstreams. Toluene is created in the cracking heaters. Toluene is a component of various commercial product streams at the facility.

Reduction Options to Be Implemented

To reduce the use and creation of toluene 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 or creation of toluene.

Reflection of Current Plan

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

Xylenes (All Isomers)

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of xylenes used at its Corunna Site facility. As xylenes are a profitable substance for this facility, decreasing the throughput of xylenes would contradict business growth. NOVA Chemicals is, however, committed to ensuring xylenes are manufactured in the most responsible and efficient manner.

Objectives of Reduction Plan

NOVA Chemicals intends to continue to ensure that xylenes are manufactured in a responsible and efficient manner at the Corunna Site facility.

Explanation for Substance Use or Creation

Xylenes enter the facility as a component of the various feedstreams. Xylenes are created in the cracking heaters. Xylenes are a component of various commercial produce streams at the facility.

Reduction Options to Be Implemented

To reduce the use and containment in product of xylenes 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 of xylenes 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 toluene at the Corunna Site facility.

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 th Ave Southwest Calgary, Alberta T2P 5L5	Mailing Address: Post Office Box 2518 Calgary, Alberta T2P 5C6
Percentage of Ownership	100%	

Naphthalene, 91-20-3

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of naphthalene used at its Moore Site facility as this is currently not economically feasible. NOVA Chemicals is committed to ensuring that naphthalene is only used under necessary and restricted circumstances.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Naphthalene is a component of fuel oil combusted within the Moore site boilers. The energy resulting from the combustion of fuel oil is used to create high pressure steam required throughout the facility. Naphthalene is not created at this facility.

Reduction Options to Be Implemented

Many options were considered to reduce the use of naphthalene at 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 of naphthalene.

Reflection of Current Plan

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

Hexavalent Chromium, 18540-29-9

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of hexavalent chromium used at its Moore Site Facility as this is currently not economically feasible. NOVA Chemicals is committed to ensuring that hexavalent chromium is only used under necessary and restricted circumstances.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Within this facility's process hexavalent chromium is a component of two catalysts used on site. The polyethylene product does not contain hexavalent chromium. Hexavalent Chromium is not created at this facility.

Reduction Options to Be Implemented

Many options were considered to reduce the use of hexavalent chromium 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 of hexavalent chromium.

Reflection of Current Plan

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction Plan for hexavalent chromium at the Moore Site facility.

Sulphuric Acid, 7664-93-9

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of sulphuric acid used or created at its Moore Site facility as this is currently not economically feasible. NOVA Chemicals is committed to ensuring that sulphuric acid is only used under necessary and restricted circumstances.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Sulphuric Acid is used in Utilities to maintain the quality of process water. Sulphuric acid is created as a byproduct of fuel oil combustion in utilities boilers.

Reduction Options to Be Implemented

Many Options were considered to reduce the use of sulphuric acid 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 of sulphuric acid.

Reflection of Current Plan

This Toxics Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction Plan for sulphuric acid at the Moore Site facility.

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 th Ave Southwest Calgary, Alberta T2P 5L5	Mailing Address: Post Office Box 2518 Calgary, Alberta T2P 5C6
Percentage of Ownership	100%	

Naphthalene, 91-20-3

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of naphthalene used at its St. Clair River Site (SCRS) facility as this is currently not economically feasible. NOVA Chemicals is committed to ensuring that naphthalene is only used under necessary and restricted circumstances.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Within this facility's process naphthalene is a component of a fuel oil combusted within the Moore site boilers. The energy resulting from the combustion of this fuel oil is used to create a high pressure steam which is required throughout the facility. Naphthalene is not created at this facility.

Reduction Options to Be Implemented

Many options were considered to reduce the use of naphthalene at the SCRS. However, no options were both technically and economically feasible. Therefore, NOVA Chemicals does not intend to implement reduction options for the use of naphthalene.

Reflection of Current Plan

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

Biphenyl, 92-52-4

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of biphenyl used or released to air by its St. Clair River Site (SCRS) facility as this is currently not technically feasible. NOVA Chemicals is, however; committed to further research to reduce the use and release of biphenyl by this facility.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Within this facility process, biphenyl is a component of a circulated heat transfer fluid on site. This heat transfer fluid is circulated throughout the plant and is only added or lost in small amounts. Biphenyl can also be introduced on site through the addition of new heat transfer fluid to the system. Biphenyl is not created at the facility.

Reduction Options to Be Implemented

Many options were considered to reduce the use of biphenyl at the SCRS. However, no options were both technically and economically feasible. Therefore, NOVA Chemicals does not intend to implement reduction options for the use of biphenyl.

Reflection of Current Plan

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

Sulphuric Acid, 7664-93-9

Statement of Intent

NOVA Chemicals does not intend to reduce the amount of sulphuric acid used or created at its St. Clair River Site (SCRS) facility as this is currently not economically feasible. NOVA Chemicals is committed to ensuring that sulphuric acid is only used under necessary and restricted circumstances.

Objectives of Reduction Plan

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

Explanation for Substance Use or Creation

Sulphuric Acid is used in Utilities to maintain the quality of process water. Sulphuric acid is created as a byproduct of fuel oil combustion in utilities boilers.

Reduction Options to Be Implemented

Many options were considered to reduce the use and creation of sulphuric acid at the SCRS. However, no options were both technically and economically feasible. Therefore, NOVA Chemicals does not intend to implement reduction options for the use or creation of sulphuric acid.

Reflection of Current Plan

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

Certifications

Phase I

December 2012

TOXIC SUBSTANCE REDUCTION PLAN

Corunna Site

Certification

Highest Ranking Employee:

As of December 10, 2012, I Tom Thompson, certify that I have read the toxic substance reduction plans for 1,3-butadiene, benzene, ethylbenzene, naphthalene, sulphuric acid, toluene, and xylene (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.

Toxics Reduction Planner:

As of December 10, 2012, I Amit Patel, certify that I am familiar with the process at NOVA Chemicals Corunna Site facility that use or create 1,3-butadiene, benzene, ethylbenzene, naphthalene, sulphuric acid, toluene, and xylene (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 10, 2012 and that the plans comply with that 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

Moore Site

Certification

Highest Ranking Employee:

As of December 10, 2012, I Tom Thompson, certify that I have read the toxic substance reduction plans for naphthalene, sulphuric acid, and hexavalent chromium 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.

Toxics Reduction Planner:

As of December 10, 2012, I Amit Patel, certify that I am familiar with the process at NOVA Chemicals Moore Site facility that use or create naphthalene, sulphuric acid, and hexavalent chromium, 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 10, 2012 and that the plans comply with that 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 December 10, 2012, I Tom Thompson, certify that I have read the toxic substance reduction plans for naphthalene, sulphuric acid, and biphenyl 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.

Toxics Reduction Planner:

As of December 10, 2012, I Amit Patel, certify that I am familiar with the process at NOVA Chemicals St. Clair River Site facility that use or create naphthalene, sulphuric acid, and biphenyl, 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 10, 2012 and that the plans comply with that Act and Ontario Regulation 455/09 (General) made under the Act.



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