

Toxic Reduction Plan Summary

Substance

Substance Name and CAS #	Carbon Monoxide and CAS # 630-08-0
Substances for which other plans have been prepared	Styrene, Ethylene, PM10, PM2.5, Nitrogen oxides, n-hexane, Benzene, Ethylbenzene, Toluene
Beneficial Uses at Facility	None
Reasons for Use	This substance is not used at the facility
Reasons for use - summary statement	N/A
Reasons for Creation	As a by-product
Reasons for creation - summary statement	The substance is a by-product of key reactions within the manufacturing processes at the site.

Facility Information

Company Name	Styrolution Canada Ltd.
Facility Name	Sarnia Site
Facility Physical Address	872 Tashmoo Avenue, Sarnia, Ontario, N7T 8A3
Facility Mailing Address	Same as physical address
Spatial Coordinates of Facility	42.93850 Latitude; -82.41370 Longitude
Number of Employees	80
NPRI ID	1785
Ontario MOE (R.127)ID Number	none assigned
2 Digit NAICS Code	none
4 Digit NAICS Code	3251
6 Digit NAICS Code	325110

Parent Company Information

Parent Company Name	None
Address	
Percent Ownership (if available)	

Facility Contact

Public Contact	Michelle McKay
Position	Environmental Technologist
Address	872 Tashmoo Ave, Sarnia, Ontario, N7T 8A3
email	michelle.mckay@styrolution.com
Phone	519-339-7331
Fax	519-339-7139

Date of Plan: **December 17, 2013**

Statement of Intent

Styrolution Canada Ltd. - Sarnia Site is committed to playing a leadership role in protecting the environment. Styrolution does not intend to reduce the creation of Carbon Monoxide in its operations because it is a by-product of key reactions within the current manufacturing processes at the site. Whenever feasible, we will reduce the discharge of Carbon Monoxide in full compliance with all Federal and Provincial Regulations.

Plan Objectives

While Styrolution does not intend to reduce the creation of Carbon Monoxide, the plan was developed with the following objectives:

- we will continue to operate in full compliance with all applicable environmental regulations; and
- we will continue to reduce Carbon Monoxide emissions through current and future pollution prevention and best management practices.

Description of Substance

Carbon Monoxide is created as a by-product in the facility's manufacturing processes.

Toxic Substance Reduction Option(s) To Be Implemented

For the purposes of the Toxics Reduction Act, the facility will not be implementing any options to reduce the creation of Carbon Monoxide in its operations because it is a by-product of key reactions within the current manufacturing processes at the site. In the past, the facility has implemented multiple programs to prevent and limit discharges. There were no further feasible (technical and economic) reduction options identified.

Description of Previously Implemented Reduction Opportunities:

- Optimized energy usage in both Ethylbenzene and Styrene units

Plan Summary Statement

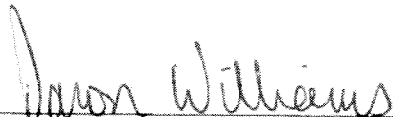
This plan summary accurately reflects the content of the toxic substance reduction plan for carbon monoxide, prepared by Styrolution Canada Ltd. - Sarnia Site, dated December 17, 2013.

*Date of Plan: **December 17, 2013***

Certification by Highest Ranking Employee

As of December 17, 2013, I, Dawn Williams, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Carbon Monoxide**



Dawn Williams

Plant Manager

Styrolution Canada Ltd. - Sarnia Site

Certification by Licensed Planner

As of December 17, 2013, I, Melanie Hockin certify that I am familiar with the processes at Styrolution Canada Ltd. - Sarnia Site that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated December 17, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Carbon Monoxide**



Melanie Hockin

Toxic Substance Reduction Planner

License Number: TSRP0140

LEHDER Environmental Services Limited

Toxic Reduction Plan Summary

Substance

Substance Name and CAS #	Ethylene CAS # 74-85-1
Substances for which other plans have been prepared	Styrene, PM10, PM2.5, Carbon monoxide, Nitrogen oxides, Benzene, Ethylbenzene, Toluene, n-hexane
Beneficial Uses at Facility	Feedstock
Reasons for Use	Feedstock
Reasons for use - summary statement	Ethylene is an essential feedstock component in the manufacture of styrene
Reasons for Creation	This substance is not created at the facility
Reasons for creation - summary statement	N/A

Facility Information

Company Name	Styrolution Canada Ltd.
Facility Name	Sarnia Site
Facility Physical Address	872 Tashmoo Avenue, Sarnia, Ontario, N7T 8A3
Facility Mailing Address	Same as physical address
Spatial Coordinates of Facility	42.93850 Latitude; -82.41370 Longitude
Number of Employees	80
NPRI ID	1785
Ontario MOE (R.127)ID Number	none assigned
2 Digit NAICS Code	none
4 Digit NAICS Code	3251
6 Digit NAICS Code	325110

Parent Company Information

Parent Company Name	None
Address	
Percent Ownership (if available)	

Facility Contact

Public Contact	Michelle McKay
Position	Environmental Technologist
Address	872 Tashmoo Ave, Sarnia, Ontario, N7T 8A3
email	michelle.mckay@styrolution.com
Phone	519-339-7331
Fax	519-339-7139

Date of Plan: **December 17, 2013**

Statement of Intent

Styrolution Canada Ltd. - Sarnia Site is committed to playing a leadership role in protecting the environment. Styrolution does not intend to reduce the use of ethylene because it is a key feedstock in our manufacturing process. Styrolution is committed to continuous improvement in reducing ethylene emissions to the environment.

Plan Objectives

While Styrolution does not intend to reduce the use of ethylene the plan was developed with the following objectives:

- we will continue to operate in full compliance with all applicable environmental regulations; and
- we will continue to reduce ethylene emissions through current and future pollution prevention and best management practices.

Description of Substance

Ethylene is a key component in the manufacture of styrene. Ethylene enters the process as a liquid in the ethylbenzene unit of the facility.

Toxic Substance Reduction Option(s) To Be Implemented

For the purposes of the Toxics Reduction Act, the facility will not be implementing any options to reduce the use of ethylene in its operations because it is a key feedstock in the manufacturing processes at the site.

Description of Previously Implemented Reduction Opportunities:

- Continuous optimization of unit operation to minimize feedstock use.
- Monitor breakthrough of catalyst in finishing reactor to reduce ethylene loss by flaring.

Plan Summary Statement

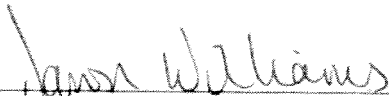
This plan summary accurately reflects the content of the toxic substance reduction plan for ethylene, prepared by Styrolution Canada Ltd. - Sarnia Site, dated December 17, 2013.

*Date of Plan: **December 17, 2013***

Certification by Highest Ranking Employee

As of December 17, 2013, I, Dawn Williams, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Ethylene**



Dawn Williams
Plant Manager
Styrolution Canada Ltd. - Sarnia Site

Certification by Licensed Planner

As of December 17, 2013, I, Melanie Hockin certify that I am familiar with the processes at Styrolution Canada Ltd. - Sarnia Site that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated December 17, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Ethylene**



Melanie Hockin
Toxic Substance Reduction Planner
License Number: TSRP0140
LEHDER Environmental Services Limited

Toxic Reduction Plan Summary

Substance

Substance Name and CAS #	n-hexane and CAS # 110-54-3
Substances for which other plans have been prepared	Styrene, Ethylene, PM10, PM2.5, Nitrogen oxides, Carbon Monoxide, Benzene, Ethylbenzene, Toluene, n-hexane
Beneficial Uses at Facility	trace component of natural gas, a significant energy source for the process
Reasons for Use	this substance is not used at the facility
Reasons for use - summary statement	N/A
Reasons for Creation	by-product
Reasons for creation - summary statement	n-hexane is created as a by-product of combustion reactions and emitted from combustion sources at the facility.

Facility Information

Company Name	Styrolution Canada Ltd.
Facility Name	Sarnia Site
Facility Physical Address	872 Tashmoo Avenue, Sarnia, Ontario, N7T 8A3
Facility Mailing Address	Same as physical address
Spatial Coordinates of Facility	42.93850 Latitude; -82.41370 Longitude
Number of Employees	80
NPRI ID	1785
Ontario MOE (R.127)ID Number	none assigned
2 Digit NAICS Code	none
4 Digit NAICS Code	3251
6 Digit NAICS Code	325110

Parent Company Information

Parent Company Name	None
Address	
Percent Ownership (if available)	

Facility Contact

Public Contact	Michelle McKay
Position	Environmental Technologist
Address	872 Tashmoo Ave, Sarnia, Ontario, N7T 8A3
email	michelle.mckay@styrolution.com
Phone	519-339-7331
Fax	519-339-7139

Date of Plan: **December 17, 2013**

Statement of Intent

Styrolution Canada Ltd. - Sarnia Site is committed to playing a leadership role in protecting the environment. Styrolution does not intend to reduce the creation of n-hexane in its operations because it is a by-product of key combustion reactions within the current manufacturing processes at the site. Whenever feasible, we will reduce the discharge of n-hexane in full compliance with all Federal and Provincial Regulations.

Plan Objectives

While Styrolution does not intend to reduce the creation of n-hexane, the plan was developed with the following objectives:

- we will continue to operate in full compliance with all applicable environmental regulations; and
- we will continue to reduce n-hexane emissions through current and future pollution prevention and best management practices.

Description of Substance

n-hexane is created as a by-product of combustion reactions within the current manufacturing processes at the site.

Toxic Substance Reduction Option(s) To Be Implemented

For the purposes of the Toxics Reduction Act, the facility will not be implementing any options to reduce the creation of n-hexane in its operations because it is a by-product of key combustion reactions within the current manufacturing processes at the site. In the past, the facility has implemented programs to prevent and limit discharges. There were no further feasible (technical and economic) reduction options identified.

Description of Previously Implemented Reduction Opportunities:

- Optimized energy usage in both Ethylbenzene and Styrene units

Plan Summary Statement

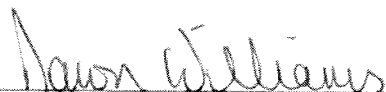
This plan summary accurately reflects the content of the toxic substance reduction plan for n-hexane, prepared by Styrolution Canada Ltd. - Sarnia Site, dated December 17, 2013.

*Date of Plan: **December 17, 2013***

Certification by Highest Ranking Employee

As of December 17, 2013, I, Dawn Williams, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **N-hexane**



Dawn Williams
Plant Manager
Styrolution Canada Ltd. - Sarnia Site

Certification by Licensed Planner

As of December 17, 2013, I, Melanie Hockin certify that I am familiar with the processes at Styrolution Canada Ltd. - Sarnia Site that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated December 17, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **N-hexane**



Melanie Hockin
Toxic Substance Reduction Planner
License Number: TSRP0140
LEHDER Environmental Services Limited

Toxic Reduction Plan Summary

Substance

Substance Name and CAS #	Nitrogen Oxides (NOx) and CAS # 11104-93-1
Substances for which other plans have been prepared	Styrene, Ethylene, PM10, PM2.5, CO, Benzene, Ethylbenzene, Toluene, n-hexane
Beneficial Uses at Facility	None
Reasons for Use	This substance is not used at the facility
Reasons for use - summary statement	N/A
Reasons for Creation	As a by-product
Reasons for creation - summary statement	The substance is a by-product of key reactions within the manufacturing processes at the site.

Facility Information

Company Name	Styrolution Canada Ltd.
Facility Name	Sarnia Site
Facility Physical Address	872 Tashmoo Avenue, Sarnia, Ontario, N7T 8A3
Facility Mailing Address	Same as physical address
Spatial Coordinates of Facility	42.93850 Latitude; -82.41370 Longitude
Number of Employees	80
NPRI ID	1785
Ontario MOE (R.127)ID Number	none assigned
2 Digit NAICS Code	none
4 Digit NAICS Code	3251
6 Digit NAICS Code	325110

Parent Company Information

Parent Company Name	None
Address	
Percent Ownership (if available)	

Facility Contact

Public Contact	Michelle McKay
Position	Environmental Technologist
Address	872 Tashmoo Ave, Sarnia, Ontario, N7T 8A3
email	michelle.mckay@styrolution.com
Phone	519-339-7331
Fax	519-339-7139

Date of Plan: **December 17, 2013**

Statement of Intent

Styrolution Canada Ltd. - Sarnia Site is committed to playing a leadership role in protecting the environment. Styrolution does not intend to reduce the creation of Nitrogen Oxides (NOx) in its operations because it is a by-product of key reactions within the current manufacturing processes at the site. Whenever feasible, we will reduce the discharge of Nitrogen Oxides (NOx) in full compliance with all Federal and Provincial Regulations.

Plan Objectives

While Styrolution does not intend to reduce the creation of Nitrogen Oxides (NOx), the plan was developed with the following objectives:

- we will continue to operate in full compliance with all applicable environmental regulations; and
- we will continue to reduce NOx emissions through current and future pollution prevention and best management practices.

Description of Substance

NOx is created as a by-product in the facility's manufacturing processes.

Toxic Substance Reduction Option(s) To Be Implemented

For the purposes of the Toxics Reduction Act, the facility will not be implementing any options to reduce the creation of NOx in its operations because it is a by-product of key reactions within the current manufacturing processes at the site. In the past, the facility has implemented multiple programs to prevent and limit discharges. There were no further feasible (technical and economic) reduction options identified.

Description of Previously Implemented Reduction Opportunities:

- Optimized energy usage in both Ethylbenzene and Styrene units

Plan Summary Statement

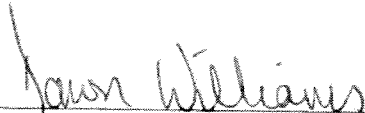
This plan summary accurately reflects the content of the toxic substance reduction plan for NOx, prepared by Styrolution Canada Ltd. - Sarnia Site, dated December 17, 2013.

*Date of Plan: **December 17, 2013***

Certification by Highest Ranking Employee

As of December 17, 2013, I, Dawn Williams, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Nitrogen Oxides (NO_x)**



Dawn Williams
Plant Manager
Styrolution Canada Ltd. - Sarnia Site

Certification by Licensed Planner

As of December 17, 2013, I, Melanie Hockin certify that I am familiar with the processes at Styrolution Canada Ltd. - Sarnia Site that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated December 17, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Nitrogen Oxides (NO_x)**



Melanie Hockin
Toxic Substance Reduction Planner
License Number: TSRP0140
LEHDER Environmental Services Limited

Toxic Reduction Plan Summary

Substance

Substance Name and CAS #	PM10 and PM2.5 CAS # NA
Substances for which other plans have been prepared	Styrene, Ethylene, Carbon monoxide, Nitrogen oxides, Benzene, Ethylbenzene, Toluene, n-hexane
Beneficial Uses at Facility	None
Reasons for Use	This substance is not used at the facility
Reasons for use - summary statement	N/A
Reasons for Creation	As a by-product
Reasons for creation - summary statement	The substance is a by-product of key reactions within the manufacturing processes at the site.

Facility Information

Company Name	Styrolution Canada Ltd.
Facility Name	Sarnia Site
Facility Physical Address	872 Tashmoo Avenue, Sarnia, Ontario, N7T 8A3
Facility Mailing Address	Same as physical address
Spatial Coordinates of Facility	42.93850 Latitude; -82.41370 Longitude
Number of Employees	80
NPRI ID	1785
Ontario MOE (R.127)ID Number	none assigned
2 Digit NAICS Code	none
4 Digit NAICS Code	3251
6 Digit NAICS Code	325110

Parent Company Information

Parent Company Name	None
Address	
Percent Ownership (if available)	

Facility Contact

Public Contact	Michelle McKay
Position	Environmental Technologist
Address	872 Tashmoo Ave, Sarnia, Ontario, N7T 8A3
email	michelle.mckay@styrolution.com
Phone	519-339-7331
Fax	519-339-7139

Date of Plan: **December 17, 2013**

Statement of Intent

Styrolution Canada Ltd. - Sarnia Site is committed to playing a leadership role in protecting the environment. Styrolution does not intend to reduce the creation of Particulate Matter (including PM10 and PM2.5) in its operations because it is a by-product of key reactions within the current manufacturing processes at the site. Whenever feasible, we will reduce the discharge of Particulate Matter (including PM10 and PM2.5) in full compliance with all Federal and Provincial Regulations.

Plan Objectives

While Styrolution does not intend to reduce the creation of Particulate Matter (including PM10 and PM2.5), the plan was developed with the following objectives:

- we will continue to operate in full compliance with all applicable environmental regulations; and
- we will continue to reduce Particulate Matter (including PM10 and PM2.5) emissions through current and future pollution prevention and best management practices.

Description of Substance

Particulate Matter (including PM10 and PM2.5) is created as a by-product in the facility's manufacturing processes.

Toxic Substance Reduction Option(s) To Be Implemented

For the purposes of the Toxics Reduction Act, the facility will not be implementing any options to reduce the creation of Particulate Matter (including PM10 and PM2.5) in its operations because it is a by-product of key reactions within the current manufacturing processes at the site. In the past, the facility has implemented multiple programs to prevent and limit discharges. There were no further feasible (technical and economic) reduction options identified.

Description of Previously Implemented Reduction Opportunities:

- Optimized energy usage in EB unit which reduced residue fuel oil burned in HS101

Plan Summary Statement

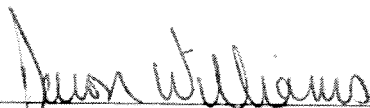
This plan summary accurately reflects the content of the toxic substance reduction plan for particulate matter (including pm10 and pm2.5), prepared by Styrolution Canada Ltd. - Sarnia Site, dated December 17, 2013.

*Date of Plan: **December 17, 2013***

Certification by Highest Ranking Employee

As of December 17, 2013, I, Dawn Williams, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Particulate Matter (including PM10 and PM2.5)**

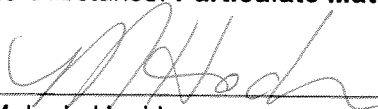


Dawn Williams
Plant Manager
Styrolution Canada Ltd. - Sarnia Site

Certification by Licensed Planner

As of December 17, 2013, I, Melanie Hockin certify that I am familiar with the processes at Styrolution Canada Ltd. - Sarnia Site that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated December 17, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Particulate Matter (including PM10 and PM2.5)**



Melanie Hockin
Toxic Substance Reduction Planner
License Number: TSRP0140
LEHDER Environmental Services Limited

Toxic Reduction Plan Summary

Substance

Substance Name and CAS #	Styrene CAS # 100-42-5
Substances for which other plans have been prepared	Ethylene, PM10, PM2.5, Carbon monoxide, Nitrogen oxides, Benzene, Ethylbenzene, Toluene, n-hexane
Beneficial Uses at Facility	Key Product
Reasons for Use	None
Reasons for use - summary statement	Styrene is not used.
Reasons for Creation	Styrene is created as an end product
Reasons for creation - summary statement	Styrene is produced as an end product

Facility Information

Company Name	Styrolution Canada Ltd.
Facility Name	Sarnia Site
Facility Physical Address	872 Tashmoo Avenue, Sarnia, Ontario, N7T 8A3
Facility Mailing Address	Same as physical address
Spatial Coordinates of Facility	42.93850 Latitude; -82.41370 Longitude
Number of Employees	80
NPRI ID	1785
Ontario MOE (R.127)ID Number	none assigned
2 Digit NAICS Code	none
4 Digit NAICS Code	3251
6 Digit NAICS Code	325110

Parent Company Information

Parent Company Name	None
Address	
Percent Ownership (if available)	

Facility Contact

Public Contact	Michelle McKay
Position	Environmental Technologist
Address	872 Tashmoo Ave, Sarnia, Ontario, N7T 8A3
Email	michelle.mckay@styrolution.com
Phone	519-339-7331
Fax	519-339-7139

Date of Plan: **December 17, 2013**

Statement of Intent

Styrolution Canada Ltd. - Sarnia Site is committed to playing a leadership role in protecting the environment. Styrolution does not intend to reduce the creation of styrene because it is produced as an end product in our manufacturing process. Styrolution is committed to continuous improvement in reducing styrene emissions to the environment.

Plan Objectives

While Styrolution does not intend to reduce the creation of styrene, the plan was developed with the following objectives:

- we will continue to operate in full compliance with all applicable environmental regulations; and
- we will continue to reduce styrene emissions through current and future pollution prevention and best management practices.

Description of Substance

Styrene is an end product.

Toxic Substance Reduction Option(s) To Be Implemented

For the purposes of the Toxics Reduction Act, Styrolution will not be implementing any options to reduce the creation of styrene in its operations because it is produced as an end product. Over the past years, Styrolution has implemented changes to reduce the amount of styrene emitted to air. Styrolution is committed to further reducing styrene emissions to support the objectives of Ontario Regulation 419 Local Air Quality.

Description of Previously Implemented Reduction Opportunities:

- Internal floating roofs on some tanks
- Move the product off-site as quickly as possible after produced
- Currently refrigerate tanks containing styrene to prevent polymerization which helps to reduce vapour pressure and therefore less is emitted
- Currently use vapour balancing between the tanks containing styrene to minimize emissions.
- Thin film evaporator - which recovers styrene from fuel oil, so that the styrene can be sold as a product (currently being used) – continue to optimize this equipment
- Where possible, reduced the number of HC storage tanks in an effort to reduce losses
- Where possible, the site has reduced the number of tank service changes to reduce losses (e.g. Tank 305D styrene to EB)

Plan Summary Statement

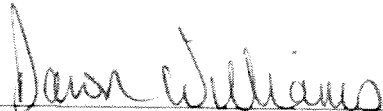
This plan summary accurately reflects the content of the toxic substance reduction plan for styrene, prepared by Styrolution Canada Ltd. - Sarnia Site, dated December 17, 2013.

*Date of Plan: **December 17, 2013***

Certification by Highest Ranking Employee

As of December 13, 2012, I, Dawn Williams, certify that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Styrene**



Dawn Williams
Plant Manager
Styrolution Canada Ltd. - Sarnia Site

Certification by Licensed Planner

As of December 13, 2012, I, Melanie Hockin certify that I am familiar with the processes at Styrolution Canada Ltd. - Sarnia Site that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the *Toxics Reduction Act, 2009* that are set out in the plan dated December 17, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: **Styrene**



Melanie Hockin
Toxic Substance Reduction Planner
License Number: TSRP0140
LEHDER Environmental Services Limited