

Summary of Ontario reportable substances (O-REG 455/09) - 2020

Facility Operator

IMPERIAL OIL
Imperial Oil Sarnia Chemicals
602 South Christina Street, P.O. Box 3004
SARNIA, ON, N7T 7M5

Facility Owner

Imperial Oil Limited
505 Quarry Park Blvd. S.E. ,
P.O. Box 2480, Station "M"
Calgary, Alberta T2P 3M9

Additional Facility Information

NPRI ID: 1464 MOE ID: 6840
Number of employees: 263
UTM NAD 83: 17N 385773.59 4756731.82

NAICS 2 Code: 31-33 - Manufacturing
NAICS 4 Code: 3251 - Basic Chemical Mfg.
NAICS 6 Code: 325110 - Petrochemical Mfg.

Provincial regulations set out requirements for business owners to inform Ontarians about the use, creation and emissions of reportable substances in their communities. Under the Toxics Reduction Act (TRA), companies are required to post information quantifying these substances each year.

Substances are identified as "toxic" substances for the purposes of the Act if the substance is listed in the National Pollutant Release Inventory (NPRI). The NPRI is a federal database of emissions (to air, land and water) and waste transfers (on-site and offsite) and is available to the public on Environment Canada site (www.ec.gc.ca/inrp-npri). More information on the TRA is available at the Ontario Ministry of the Environment site (www.ene.gov.on.ca/environment/en/legislation/toxics_reduction_act/index.htm)

The Sarnia chemical plant produces a wide range of petrochemicals using refinery and external feedstocks. These products are then used to manufacture a number of widely used consumer products, such as plastics, in North America and around the world.

The notice below summarizes tracking and quantification of facility-wide quantities:

- **Used:** Amount of substance that enters the process. Includes amounts already present in raw materials or through addition of products required for processing.
- **Created:** Amount of substance produced during the processing stage.
- **Contained in product:** Amount of substance remaining after process is complete.
- **Emissions:** These are releases of substance from the facility to air, surface water or land; and, waste transfers (on-site and offsite).

Starting with the 2011 reporting year, companies are required to report the year-over-year change in these reportable substances. The tables below report the amount of change between the previous year and the reporting year by showing the range and percentage difference. When comparing zero to an amount, the percentage of change is reported as not applicable (n/a). Positive/negative changes for the reporting year indicate an increase/decrease from the previous year.

A summary of reasons behind the change for each reportable substance is provided. The changes fall into the following categories:

- **No reason - no range change**
- **New substance to report:** This substance was not reportable in previous year.
- **System variability:** There are many combined factors that result in system variability. Substances will vary depending on the feedstocks processed. Variability in operation can also affect the results. Analytical results have uncertainty, which can be increased when measuring low/trace levels.
- **Change in production levels:** Change resulted from an overall increase or decrease in production at the facility. This includes changes due to shut-down and maintenance activities.
- **Improvement of data quality:** Change resulted from continuous improvement of the quality of the data used to calculate the amount of substance.

Public Contact:
Kristina Zimmer Public and Government Affairs Advisor 519-339-4015

Report of Tracking and Quantification of Facility-Wide Quantities

Substances (Reported in tonnes)	Releases To Air			Releases to Water			Releases to Land			Onsite / Offsite Disposal			Transfer for Treatment and Recycling			Reason for Change
	2020 (Tonnes)	DELTA vs. 2019 (Tonnes)	% CHANGE	2020 (Tonnes)	DELTA vs. 2019 (Tonnes)	% CHANGE	2020 (Tonnes)	DELTA vs. 2019 (Tonnes)	% CHANGE	2020 (Tonnes)	DELTA vs. 2019 (Tonnes)	% CHANGE	2020 (Tonnes)	DELTA vs. 2019 (Tonnes)	% CHANGE	
Metals																
Nickel	0	0	0%	0	0	n/a	0	0	n/a	1	0	0%	0	0	0%	system variability
Vanadium	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0%	system variability
PAH																
Anthracene	0	-	0%	0	-	n/a	0	-	n/a	0	-	0%	4	-	0%	system variability
Naphthalene	0	0	0%	0	0	n/a	0	0	n/a	11	0	0%	80	0	0%	system variability
1, 2, 4-Trimethylbenzene *	4	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
1, 3-Butadiene *	1	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Benzene *	9	0	0%	0	0	n/a	0	0	n/a	9	0	0%	0	0	n/a	system variability
Biphenyl	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Butane *	5	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Butene *	4	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Cycloheptane *	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Cyclooctane *	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Ethylbenzene	1	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Ethylene *	41	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Heptane *	1	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hexane *	5	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hexene *	3	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Isoprene	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
n-Hexane *	5	0	0%	0	0	n/a	0	0	n/a	11	0	0%	0	0	n/a	system variability
Nonane *	2	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Octane *	1	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Pentane *	7	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Pentene *	2	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Propane *	32	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Trimethylbenzene *	0	0	0%	0	0	n/a	0	0	n/a	0	0	0%	0	0	n/a	no reasons - quantities approximately the same
Toluene *	6	0	0%	0	0	n/a	0	0	n/a	27	0	0%	0	0	n/a	no reasons - quantities approximately the same
Xylene *	3	0	0%	0	0	n/a	0	0	n/a	1	0	0%	6	0	0%	system variability
Other																
Ammonia	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Carbon Monoxide	370	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Cresol	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Ethylene Glycol	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Formaldehyde *	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrogen cyanide	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Methanol *	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Isopropyl alcohol	0	-	n/a	0	-	n/a	0	-	n/a	0	-	n/a	0	-	n/a	no reasons - quantities approximately the same
Molybdenum Trioxide	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Nitrate Ion	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Nox	437	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Particulates	19	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Phenol (and its salts)	0	0	0%	0	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	system variability
PM10	12	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
PM2.5	9	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Sulphur Dioxide	36	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Sulphuric acid	2	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Tetrahydrofuran *	2	0	0%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Total Reduced Sulphur	1	0	0%	0	0	n/a	0	0	n/a	0	0	0%	0	0	n/a	system variability
Volatile Organic Compounds	144	0	0%	0	0	n/a	0	0	n/a	37	0	0%	6	0	0%	system variability

** No single CAS number applies to this substance

* also included in Volatile Organic Compounds

Toxic Reduction Plan Stewardship - 2020 Reporting Year

Substances	Plan Objectives and Targets	Summary of steps taken during the previous calendar year (2019) to implement the toxics reduction options identified in the plan and the reduction amount resulting from these steps	Comparison of steps taken during the previous calendar year (2019) to steps included in the plan	Indication of whether timeline(s) set out in plan will be met	Additional actions taken during the previous calendar year (2019) to achieve the plan's objectives and the reduction amount resulting from the additional actions	Amendments made to the plan during the previous calendar year (2019)
Cadmium	Cadmium (and its compounds) enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Lead	Lead enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Mercury	Mercury enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Selenium	Selenium enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Copper	Copper enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Nickel	Nickel enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Vanadium	Vanadium enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Zinc	Zinc enters the facility at concentrations in the chemical plant feedstock that are below the measurement detection limit and is not created at the facility. No reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
7H-Dibenzo(c,g)carbazole	7H-Dibenzo(c,g)carbazole is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Acenaphthene	Acenaphthene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Acenaphthylene	Acenaphthylene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(a)anthracene	Benzo(a)anthracene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(a)phenanthrene, aka chrysene	Benzo(a)phenanthrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(a)pyrene	Benzo(a)pyrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(b,j)fluoranthene	Benzo(b,j)fluoranthene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(e)pyrene	Benzo(e)pyrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzo(k)fluoranthene	Benzo(k)fluoranthene is created at the facility in the conversion units through cracking processes. Sarnia chemical plant is targeting to reduce the amount of Benzo(k)fluoranthene byproduct leaving the site for treatment / recycling by approximately 33 kg.	Facility upgrades in the chemical plant are progressing but completion of the upgrades have been delayed beyond the original reduction plan timeline. Reductions will be achieved when the facility upgrades are complete.	No change	Reduction plan timeline will not be met	No additional actions	No amendments
Dibenzo(a,h)anthracene	Dibenzo(a,h)anthracene is created at the facility in the conversion units through cracking processes. Sarnia chemical plant is targeting to reduce the amount of Dibenzo(a,h)anthracene byproduct leaving the site for treatment / recycling by approximately 15 kg.	Facility upgrades in the chemical plant are progressing but completion of the upgrades have been delayed beyond the original reduction plan timeline. Reductions will be achieved when the facility upgrades are complete.	No change	Reduction plan timeline will not be met	No additional actions	No amendments
Dibenzo(a,i)pyrene	Benzo(a,i)pyrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments

Metals

Dibenzo(a,j)acridine	Benzo(a,i)pyrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Fluoranthene	Fluoranthene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Fluorene	Fluorene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Indeno(1,2,3-c,d)pyrene	Indeno(1,2,3-c,d)pyrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Naphthalene	Naphthalene is a component of the chemical plant feedstocks. There is both creation and destruction of naphthalene occurring in the chemical plant conversion processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Perylene	Perylene is created at the facility in the conversion units through cracking processes. Sarnia chemical plant is targeting to reduce the amount of Perylene byproduct leaving the site for treatment / recycling by approximately 20 kg.	Facility upgrades in the chemical plant are progressing but completion of the upgrades have been delayed beyond the original reduction plan timeline. Reductions will be achieved when the facility upgrades are complete.	No change	Reduction plan timeline will not be met	No additional actions	No amendments
Phenanthrene	Phenanthrene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Pyrene	Pyrene is created at the facility in small concentrations in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments

Toxic Reduction Plan Stewardship - 2020 Reporting Year

Substances	Plan Objectives and Targets	Summary of steps taken during the previous calendar year (2019) to implement the toxics reduction options identified in the plan and the reduction amount resulting from these steps	Comparison of steps taken during the previous calendar year (2019) to steps included in the plan	Indication of whether timeline(s) set out in plan will be met	Additional actions taken during the previous calendar year (2019) to achieve the plan's objectives and the reduction amount resulting from the additional actions	Amendments made to the plan during the previous calendar year (2019)
1, 2, 4-Trimethylbenzene	1,2,4-Trimethylbenzene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. Sarnia Chemical plant is targeting to reduce the use of 1,2,4 Trimethylbenzene in unit feedstock by approximately 1.4 tonne.	Reduced the use of a 1,2,4 Trimethylbenzene containing feedstock to one chemical plant unit per the documented reduction plan.	No change	Reduction plan timeline met.	No additional actions	No amendments
1, 3-Butadiene	1,3-Butadiene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified. However, various projects at Sarnia Chemical Plant are expected to reduce the fugitive emissions of 1, 3-Butadiene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Benzene	Benzene is integral to the chemical plant operation and is contained in desired chemical feedstock and/or products, therefore no options to reduce the use or creation of benzene were identified. However, various projects at Sarnia Chemical Plant are expected to reduce the fugitive emissions of benzene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Biphenyl	Biphenyl enters the chemical plant in unit feedstock and is destroyed at the facility in the conversion unit through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Butane	Butane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Butene	Butene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Cycloheptane	Cycloheptane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Cyclohexane	Cyclohexane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Cyclohexene	Cyclohexene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Cyclooctane	Cyclooctane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Decane	Decane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Dicyclopentadiene	Dicyclopentadiene enters the chemical plant in desired feedstock. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Ethylbenzene	Ethylbenzene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Ethylene	Ethylene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. Sarnia Chemical plant is targeting to reduce the amount of ethylene released to the air in one of its operating units by approximately 2.8 tonnes.	<u>Option #1:</u> Facilities upgrades completed, procedure changes and operator training completed per documented reduction plan. Planned reduction was achieved. <u>Option #2:</u> Procedure changes and operator training completed per documented reduction plan and planned reduction was achieved.	No change	Reduction plan timeline met.	No additional actions	No amendments
Heptane	Heptane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Hexane	Hexane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments

Hydrocarbons

Hexene	Hexene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Isoprene	Isoprene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
n-Hexane	n-Hexane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Nonane	Nonane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Octane	Octane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Pentane	Pentane enters the chemical plant in various feedstocks and is created & destroyed at the facility in the conversion units through cracking processes. Sarnia Chemical plant is targeting to reduce the amount of pentane used at one of its operating units by approximately 135 tonnes. Sarnia Chemical plant is targeting to reduce the amount of pentane released to the air in one of its operating units by approximately 0.7 tonnes.	<u>Option #1</u> : Facility upgrades in the chemical plant are progressing but completion of the upgrades have been delayed beyond the original reduction plan timeline. Reductions will be achieved when the facility upgrades are complete. <u>Option #2</u> : Procedure changes and operator training completed per documented reduction plan and planned reduction was achieved.	No change	Reduction plan timeline will not be met.	No additional actions	No amendments
Pentene	Pentene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Propane	Propane enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Propylene	Propylene enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Trimethylbenzene	Not applicable - first plan due December 31, 2013	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Toxic Reduction Plan Stewardship - 2020 Reporting Year

Substances	Plan Objectives and Targets	Summary of steps taken during the previous calendar year (2019) to implement the toxics reduction options identified in the plan and the reduction amount resulting from these steps	Comparison of steps taken during the previous calendar year (2019) to steps included in the plan	Indication of whether timeline(s) set out in plan will be met	Additional actions taken during the previous calendar year (2019) to achieve the plan's objectives and the reduction amount resulting from the additional actions	Amendments made to the plan during the previous calendar year (2019)	
Hydrocarbons	Toluene	Toluene is integral to the chemical plant operation and is contained in desired chemical feedstock and/or products, therefore no options to reduce the use or creation of toluene were identified. However, various projects at Sarnia Chemical Plant are expected to reduce the fugitive emissions of toluene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Xylene	Xylene is integral to the chemical plant operation and is contained in desired chemical feedstock and/or products, therefore no options to reduce the use or creation of xylene were identified. However, various projects at Sarnia Chemical Plant are expected to reduce the fugitive emissions of xylene in the coming years. These projects include but are not limited to tank upgrades and improvements to the fugitive emission monitoring program.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Ammonia	Ammonia is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	
Asbestos	Asbestos (friable form only) currently exists at the facility as a result of historical use and no new asbestos (friable form only) enters the chemical plant. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	
Carbon Monoxide	Carbon Monoxide may be created as a byproduct of fuel combustion. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	
Cresol	Cresol is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	
Ethylene Glycol	Ethylene Glycol is used at the Sarnia Chemical plant in purchased additive. The additive is optimized for the facility's operating envelope and product market demand. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	
Formaldehyde	Formaldehyde may be created as a byproduct of fuel combustion and was not detected in measurable concentrations in any of the chemical plant inputs or outputs. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	

Other	H2S	H2S enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Hydrogen cyanide	Hydrogen Cyanide is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Methanol	Methanol is used as an antifreeze for the chemical plant process equipment. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Isopropyl alcohol	Isopropyl alcohol may be found in process chemical additives. It is not contained in any chemical plant feedstocks and is not created at the facility. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Molybdenum Trioxide	Molybdenum Trioxide may be found in catalyst. It is not contained in any chemical plant feedstocks and is not created at the facility. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Nitrate Ion	Nitrate Ion may be a byproduct of biological oxidation of ammonia containing streams at wastewater treatment plant. It is not contained in any chemical plant feedstocks and is not created at the facility. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Nox	Nox (mono-nitrogen oxides) are produced from the reaction of nitrogen and oxygen gases in the air during combustion at high temperatures. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Particulates	Particulates are fines that are not fully combusted or recovered in the process. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Phenol (and its salts)	Phenol (and its salts) is contained in an additive that is used within the polyethylene plant and is transformed during processing. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	PM10	PM10 are fines that are not fully combusted or recovered in the process. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	PM2.5	PM2.5 are fines that are not fully combusted or recovered in the process. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Sulphur Dioxide	Sulphur Dioxide is created in the combustion of fuel containing sulphur. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
	Sulphuric acid	Sulphuric acid is used as an additive to the facility's clean water impounding basin and is transformed into a neutral salt. Sulphuric acid is also created as a byproduct from combustion of fuel containing traces of sulphur. Sarnia chemical plant is targeting to reduce the use of sulphuric acid by 1.0 tonnes.	Reduced the use of this toxin at the chemical plant, reduction was achieved per documented plan.	No change	Reduction plan timeline met.	No additional actions	No amendments
	Tetrahydrofuran	Tetrahydrofuran is used as a feedstock in the preparation of chemical plant catalyst and is destroyed through unit processing. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments
Total Reduced Sulphur	Total Reduced Sulphur enters the chemical plant in various feedstocks and is created at the facility in the conversion units through cracking processes. No feasible reduction options were identified.	No steps	No change	Not applicable - no timeline in plan	No additional actions	No amendments	
Volatile Organic Compounds	Not applicable - no plans required for VOC's as a group (O. Reg 455/09 S.11)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	