Summary of Ontario reportable substances (O-REG 455/09) - 2019

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

	Substances (Reported in kilograms)	Chemical Abstract Service CAS Registry Number	Report of Tracking and Quantification of Facility-Wide Quantities									Reason for Change
			USED			CREATED			CONTAINED IN PRODUCT			
			2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	
Metals	Cadmium	**	0	0	n/a	>1 to 10	>1 to 10	n/a	0	0	n/a	no reasons - quantities approximately the same
Metals	Lead	**	0	0	n/a	>10 to 100	>10 to 100	n/a	>0 to 1	0	0	system variability
Metals	Mercury	**	0	0	n/a	>0 to 1	>0 to 1	n/a	0	0	n/a	no reasons - quantities approximately the same
Metals	Selenium	**	0	0	n/a	>0 to 1	>0 to 1	n/a	>10 to 100	0	0	no reasons - quantities approximately the same
Metals	Copper	**	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Polyaromatic Hydrocarbons (PAH)	7H-Dibenzo(c,g)carbazole	194-59-2	0	0	n/a	>0 to 1	>0 to 1	n/a	0	0	n/a	no reasons - quantities approximately the same
Polyaromatic Hydrocarbons (PAH)	Acenaphthene	83-32-9	>10,000 to 100,000	>10,000 to 100,000	-41%	>1000 to 10,000	>10,000 to 100,000	-61%	>10,000 to 100,000	>10,000 to 100,000	-56%	system variability
Polyaromatic Hydrocarbons (PAH)	Acenaphthylene	208-96-8	>10,000 to 100,000	>10,000 to 100,000	-66%	>10,000 to 100,000	>10,000 to 100,000	93%	>10,000 to 100,000	>10,000 to 100,000	-32%	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(a)anthracene	56-55-3	0	0	n/a	>1000 to 10,000	>1000 to 10,000	-48%	>1000 to 10,000	>1000 to 10,000	-66%	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(a)phenanthrene, aka chrysene	218-01-9	0	0	n/a	>1000 to 10,000	>1000 to 10,000	-53%	>1000 to 10,000	>1000 to 10,000	-66%	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(a)pyrene	50-32-8	0	0	n/a	>1000 to 10,000	>1000 to 10,000	6262%	>1000 to 10,000	>1000 to 10,000	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(b/j)fluoranthene	205-99-2 / 205-82-3	0	0	n/a	>100 to 1000	>100 to 1000	1795%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(e)pyrene	192-97-2	0	0	n/a	>100 to 1000	>1000 to 10,000	-93%	0	>1000 to 10,000	-100%	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(g,h,i)perylene	191-24-2	0	0	n/a	>100 to 1000	>10 to 100	2559%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Benzo(k)fluoranthene	207-08-9	0	0	n/a	>100 to 1000	>100 to 1000	1859%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Dibenzo(a,h)anthracene	53-70-3	0	0	n/a	>1 to 10	>1 to 10	1052%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Dibenzo(a,j)acridine	224-42-0	0	0	n/a	>0 to 1	>0 to 1	1052%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Dibenzo(a,i)pyrene	189-55-9	0	0	n/a	>0 to 1	>0 to 1	n/a	0	0	n/a	no reasons - quantities approximately the same
Polyaromatic Hydrocarbons (PAH)	Fluoranthene	206-44-0	0	>100 to 1000	-100%	>1000 to 10,000	>1000 to 10,000	-47%	>1000 to 10,000	>10,000 to 100,000	-66%	system variability
Polyaromatic Hydrocarbons (PAH)	Fluorene	86-73-7	>10,000 to 100,000	>1000 to 10,000	-30%	>10,000 to 100,000	>10,000 to 100,000	-48%	>10,000 to 100,000	>10,000 to 100,000	-44%	system variability
Polyaromatic Hydrocarbons (PAH)	Indeno(1,2,3-c,d)pyrene	193-39-5	0	0	n/a	>100 to 1000	>100 to 1000	2300%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Perylene	198-55-0	0	0	n/a	>10 to 100	>10 to 100	1991%	0	0	n/a	system variability
Polyaromatic Hydrocarbons (PAH)	Phenanthrene	85-01-8	>10,000 to 100,000	>10,000 to 100,000	-74%	>10,000 to 100,000	>10,000 to 100,000	-36%	>10,000 to 100,000	>10,000 to 100,000	-61%	system variability
Polyaromatic Hydrocarbons (PAH)	Pyrene	129-00-0	0	>1000 to 10,000	-100%	>10,000 to 100,000	>10,000 to 100,000	-42%	>10,000 to 100,000	>10,000 to 100,000	-61%	system variability

	Substances (Reported in tonnes)		Chemical Abstract Service CAS Registry Number	Report of Tracking and Quantification of Facility-Wide Quantities									Reason for Change	
				Used			Created			Contained in Product				
				2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE		
Metals	Nickel		**	0	0	n/a	>0 to 1	>1 to 10	-71%	0	0	n/a	no reasons - quantities approximately the same	
Metals	Vanadium		7440-62-2	0	0	n/a	>0 to 1	>0 to 1	n/a	0	0	n/a	no reasons - quantities approximately the same	
Metals	Zinc		**	>100 to 1000	>1 to 10	3%	>0 to 1	>0 to 1	n/a	0	0	n/a	no reasons - quantities approximately the same	
PAH	Anthracene		120-12-7	>1000 to 10,000	>1000 to 10,000	-77%	>10,000 to 100,000	>1000 to 10,000	.	>10,000 to 100,000	>10,000 to 100,000	-1.	system variability	
PAH	Naphthalene		91-20-3	>100 to 1000	>10 to 100	1%	>100 to 1000	>100 to 1000	-23%	>1000 to 10,000	>100 to 1000	-36%	system variability	
Hydrocarbons	1, 2, 4-Trimethylbenzene	*	95-63-6	>10 to 100	>1000 to 10,000	-99%	>100 to 1000	>100 to 1000	-58%	>100 to 1000	>1000 to 10,000	-89%	system variability	
Hydrocarbons	1, 3-Butadiene	*	106-99-0	>1000 to 10,000	>100 to 1000	-15%	>1000 to 10,000	>100 to 1000	-3%	>1000 to 10,000	>100 to 1000	-7%	system variability	
Hydrocarbons	Benzene	*	71-43-2	>10,000 to 100,000	>10,000 to 100,000	-15%	>1000 to 10,000	>100 to 1000	-13%	>10,000 to 100,000	>10,000 to 100,000	-35%	system variability	
Hydrocarbons	Biphenyl		92-52-4	>100 to 1000	>100 to 1000	-28%	>0 to 1	>0 to 1	n/a	0	0	n/a	system variability	
Hydrocarbons	Butane	*	**	>10,000 to 100,000	>10,000 to 100,000	-34%	>100 to 1000	>100 to 1000	210%	>10,000 to 100,000	>1000 to 10,000	-11%	system variability	x
Hydrocarbons	Butene	*	25167-67-3	>10,000 to 100,000	>10,000 to 100,000	-68%	>10,000 to 100,000	>10,000 to 100,000	662%	>10,000 to 100,000	>10,000 to 100,000	-26%	system variability	
Hydrocarbons	Cycloheptane	*	**	>1000 to 10,000	>100 to 1000	-11%	>1000 to 10,000	>100 to 1000	18%	>1000 to 10,000	>1000 to 10,000	40%	system variability	
Hydrocarbons	Cyclohexane		110-82-7	>100 to 1000	>100 to 1000	-21%	>1000 to 10,000	>100 to 1000	142%	>1000 to 10,000	>100 to 1000	35%	system variability	
Hydrocarbons	Cyclooctane	*	**	>1000 to 10,000	>1000 to 10,000	-36%	>1000 to 10,000	>100 to 1000	-41%	>1000 to 10,000	>100 to 1000	-14%	system variability	
Hydrocarbons	Decane	*	**	>10,000 to 100,000	>10,000 to 100,000	-41%	>1000 to 10,000	>1000 to 10,000	948%	>10,000 to 100,000	>1000 to 10,000	-20%	system variability	
Hydrocarbons	Ethylbenzene		100-41-4	>1000 to 10,000	>100 to 1000	-5%	>1000 to 10,000	>10 to 100	2%	>1000 to 10,000	>100 to 1000	-17%	system variability	x
Hydrocarbons	Ethylene	*	74-85-1	>100,000 to 1,000,000	>1000 to 10,000	7%	>100,000 to 1,000,000	>1000 to 10,000	1%	>1000 to 10,000	>1000 to 10,000	51%	system variability	
Hydrocarbons	Heptane	*	**	>10,000 to 100,000	>1000 to 10,000	-4%	>1000 to 10,000	>1000 to 10,000	875%	>10,000 to 100,000	>1000 to 10,000	5%	system variability	
Hydrocarbons	Hexane	*	**	>100,000 to 1,000,000	>1000 to 10,000	-4%	>1000 to 10,000	>100 to 1000	-20%	>10,000 to 100,000	>10,000 to 100,000	-11%	system variability	
Hydrocarbons	Hexene	*	25264-93-1	>1000 to 10,000	>1000 to 10,000	-13%	>1000 to 10,000	>1000 to 10,000	-17%	>10,000 to 100,000	>1000 to 10,000	-12%	system variability	
Hydrocarbons	Isoprene		78-79-5	0	0	n/a	>1000 to 10,000	>100 to 1000	-24%	>1000 to 10,000	>100 to 1000	-23%	system variability	
Hydrocarbons	n-Hexane	*	110-54-3	>10,000 to 100,000	>1000 to 10,000	-11%	>1000 to 10,000	>1000 to 10,000	-58%	>10,000 to 100,000	>1000 to 10,000	-2%	system variability	
Hydrocarbons	Nonane	*	**	>1000 to 10,000	>1000 to 10,000	-40%	>10,000 to 100,000	>1000 to 10,000	9%	>10,000 to 100,000	>1000 to 10,000	-6%	system variability	
Hydrocarbons	Octane	*	**	>1000 to 10,000	>100 to 1000	-10%	>1000 to 10,000	>1000 to 10,000	-25%	>10,000 to 100,000	>1000 to 10,000	25%	system variability	
Hydrocarbons	Pentane	*	**	>10,000 to 100,000	>10,000 to 100,000	-13%	>1000 to 10,000	>10,000 to 100,000	-65%	>10,000 to 100,000	>10,000 to 100,000	-20%	system variability	
Hydrocarbons	Pentene	*	**	>1000 to 10,000	>100 to 1000	-13%	>10,000 to 100,000	>1000 to 10,000	-34%	>10,000 to 100,000	>1000 to 10,000	-29%	system variability	
Hydrocarbons	Propane	*	74-98-6	>100,000 to 1,000,000	>1000 to 10,000	6%	>1 to 10	>1 to 10	n/a	>1000 to 10,000	>100 to 1000	-41%	system variability	
Hydrocarbons	Propylene	*	115-07-1	>10,000 to 100,000	>10,000 to 100,000	-29%	>10,000 to 100,000	>10,000 to 100,000	568826%	>100 to 1000	>10 to 100	-12%	system variability	
Hydrocarbons	Toluene	*	108-88-3	>10,000 to 100,000	>100 to 1000	-2%	>1000 to 10,000	>100 to 1000	-17%	>10,000 to 100,000	>1000 to 10,000	-9%	system variability	
Hydrocarbons	Xylene	*	1330-20-7	>10,000 to 100,000	>1000 to 10,000	-27%	>1000 to 10,000	>1000 to 10,000	-55%	>10,000 to 100,000	>1000 to 10,000	-32%	system variability	

Other

Substances (Reported in tonnes)	Chemical Abstract Service CAS Registry Number	Report of Tracking and Quantification of Facility-Wide Quantities									Reason for Change
		Used			Created			Contained in Product			
		2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	
Ammonia	**	0	0	n/a	>10 to 100	>10 to 100	-67%	>10 to 100	>10 to 100	-67%	system variability
Asbestos	1332-21-4	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Carbon Monoxide	630-08-0	0	0	n/a	>100 to 1000	>10 to 100	-11%	0	0	n/a	system variability
Cresol	1319-77-3	0	0	n/a	>100 to 1000	>100 to 1000	-33%	>100 to 1000	>100 to 1000	581464%	system variability
Ethylene Glycol	107-21-1	>1 to 10	>1 to 10	-13%	0	>0 to 1	-100%	0	0	n/a	system variability
Formaldehyde *	50-00-0	0	0	n/a	>0 to 1	>0 to 1	177%	0	0	n/a	system variability
H2S	7783-06-4	>10,000 to 100,000	>1000 to 10,000	-24%	>1000 to 10,000	>1000 to 10,000	-33%	>10,000 to 100,000	>1000 to 10,000	-25%	system variability
Hydrogen cyanide	74-90-8	0	0	n/a	>0 to 1	>0 to 1	-67%	>0 to 1	>0 to 1	-67%	system variability
Methanol *	67-56-1	>10 to 100	>10 to 100	-32%	0	0	n/a	0	0	n/a	system variability
Isopropyl alcohol	67-63-0	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Molybdenum Trioxide	1313-27-5	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	no reasons - quantities approximately the same
Nox	11104-93-1	0	0	n/a	>100 to 1000	>1 to 10	-1%	0	0	n/a	no reasons - quantities approximately the same
Particulates	**	0	0	n/a	>10 to 100	>0 to 1	5%	0	0	n/a	no reasons - quantities approximately the same
Phenol (and its salts)	108-95-2	0	>100 to 1000	-100%	>0 to 1	>0 to 1	-94%	0	0	n/a	system variability
PM10	**	0	0	n/a	>10 to 100	>0 to 1	4%	0	0	n/a	no reasons - quantities approximately the same
PM2.5	**	0	0	n/a	>1 to 10	>0 to 1	4%	0	0	n/a	no reasons - quantities approximately the same
Sulphur Dioxide	7446-09-5	0	0	n/a	>10 to 100	>10 to 100	69%	0	0	n/a	system variability
Sulphuric acid	7664-93-9	0	>0 to 1	-100%	>1 to 10	>0 to 1	-21%	0	0	n/a	system variability
Tetrahydrofuran *	109-99-9	>10 to 100	>10 to 100	-21%	0	0	n/a	0	0	n/a	system variability
Total Reduced Sulphur	**	>10,000 to 100,000	>100 to 1000	2%	>1000 to 10,000	>1000 to 10,000	-33%	>10,000 to 100,000	>1000 to 10,000	-25%	system variability
Volatile Organic Compounds	**	>100,000 to 1,000,000	>100,000 to 1,000,000	-17%	>100,000 to 1,000,000	>100,000 to 1,000,000	-53%	>100,000 to 1,000,000	>100,000 to 1,000,000	-18%	system variability

		Report of Tracking and Quantification of Facility-Wide Quantities															
	Substances (Reported in kilograms)	Releases To Air			Releases to Water			Releases to Land			Onsite / OffsiteDisposal			Transfer for Treatment and Recycling			Reason for Change
		2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	2019 (kilograms)	DELTA vs. 2018 (kilograms)	% CHANGE	
Metals	Cadmium	4	0	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	-47	-100%	system variability
	Lead	9	0	-1%	0	0	n/a	0	0	n/a	0	0	n/a	8	8	1933%	system variability
	Mercury	2	0	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	-21705	-100%	system variability
	Selenium	2	0	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	-21705	-100%	system variability
	Copper	0	0	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	-96%	system variability
Polyaromatic Hydrocarbons (PAH)	7H-Dibenzo(c,g)carbazole	0	0	-13%	0	0	n/a	0	0	n/a	1	0	33%	4	4	n/a	system variability
	Acenaphthene	1	0	-12%	0	0	n/a	0	0	n/a	467	75	19%	3577	3577	n/a	system variability
	Acenaphthylene	3	0	-9%	0	0	n/a	0	0	n/a	2412	1716	247%	18481	18481	n/a	system variability
	Benzo(a)anthracene	0	0	-8%	0	0	n/a	0	0	n/a	117	58	100%	894	894	n/a	system variability
	Benzo(a)phenanthrene, aka chrysene	0	0	-11%	0	0	n/a	0	0	n/a	57	14	33%	435	435	n/a	system variability
	Benzo(a)pyrene	0	0	-11%	0	0	n/a	0	0	n/a	79	44	129%	605	605	n/a	system variability
	Benzo(b/j)fluoranthene	0	0	-9%	0	0	n/a	0	0	n/a	97	53	119%	745	745	n/a	system variability
	Benzo(e)pyrene	0	-65	-100%	0	0	n/a	0	0	n/a	37	20	123%	280	280	n/a	system variability
	Benzo(g,h,i)perylene	0	0	n/a	0	0	n/a	0	0	n/a	12	8	207%	89	89	n/a	system variability
	Dibenzo(a,h)anthracene	0	0	3%	0	0	n/a	0	0	n/a	1	0	33%	4	4	n/a	system variability
	Dibenzo(a,i)pyrene	0	0	-13%	0	0	n/a	0	0	n/a	1	0	33%	4	4	n/a	system variability
	Dibenzo(a,j)acridine	0	0	-13%	0	0	n/a	0	0	n/a	1	0	33%	4	4	n/a	system variability
	Fluoranthene	0	0	n/a	0	0	n/a	0	0	n/a	296	126	74%	2265	2265	n/a	system variability
	Fluorene	1	0	-11%	0	0	n/a	0	0	n/a	1011	251	33%	7750	7750	n/a	system variability
	Indeno(1,2,3-c,d)pyrene	0	0	2%	0	0	n/a	0	0	n/a	19	12	177%	149	149	n/a	system variability
	Perylene	0	0	n/a	0	0	n/a	0	0	n/a	9	5	141%	67	67	n/a	system variability
	Phenanthrene	2	0	-11%	0	0	n/a	0	0	n/a	1789	561	46%	13712	13712	n/a	system variability
	Pyrene	0	0	-11%	0	0	n/a	0	0	n/a	626	270	76%	4799	4799	n/a	system variability

		Report of Tracking and Quantification of Facility-Wide Quantities															
	Substances (Reported in tonnes)	Releases To Air			Releases to Water			Releases to Land			Onsite / OffsiteDisposal			Transfer for Treatment and Recycling			Reason for Change
		2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	2019 (Tonnes)	DELTA vs. 2018 (Tonnes)	% CHANGE	
Metals	Nickel	0	0	-1%	0	0	n/a	0	0	n/a	1	-1	-64%	0	0	-100%	system variability
Metals	Vanadium	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	0	0	-100%	system variability
PAH	Anthracene	0	-	n/a	0	-	n/a	0	-	n/a	0	-	33%	4	-	n/a	system variability
PAH	Naphthalene	0	0	-10%	0	0	n/a	0	0	n/a	11	3	39%	80	80	n/a	system variability
Hydrocarbons	1, 2, 4-Trimethylbenzene *	4	0	-8%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	1, 3-Butadiene *	1	0	28%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	Benzene *	9	0	4%	0	0	n/a	0	0	n/a	9	7	324%	0	0	n/a	system variability
Hydrocarbons	Biphenyl	0	0	116%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	Butane *	5	-1	-14%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	Butene *	4	0	5%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Cycloheptane *	0	0	-3%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Cyclooctane *	0	0	-12%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	Ethylbenzene	1	0	7%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	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
Hydrocarbons	Heptane *	1	0	17%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	Hexane *	5	0	5%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Hexene *	3	0	1%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Isoprene	0	0	24%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Hydrocarbons	n-Hexane *	5	5	n/a	0	0	n/a	0	0	n/a	11	8	324%	0	0	n/a	system variability
Hydrocarbons	Nonane *	2	0	-7%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Octane *	1	0	-7%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Pentane *	7	-1	-8%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Pentene *	2	0	4%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Propane *	32	1	3%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Trimethylbenzene *	0	0	3%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Toluene *	6	0	8%	0	0	n/a	0	0	n/a	27	21	324%	0	0	n/a	no reasons - quantities approximately the same
Hydrocarbons	Xylene *	3	0	2%	0	0	n/a	0	0	n/a	1	0	33%	6	6	n/a	system variability
Other	Ammonia	0	0	3%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	Asbestos	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
Other	Carbon Monoxide	370	-44	-11%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Other	Cresol	0	0	-7%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	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
Other	Formaldehyde *	0	0	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	Hydrogen cyanide	0	0	3%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	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
Other	Isopropyl alcohol	0	-	n/a	0	-	n/a	0	-	n/a	0	-	n/a	0	-	n/a	no reasons - quantities approximately the same
Other	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
Other	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
Other	Nox	437	-4	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	Particulates	19	1	5%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	Phenol (and its salts)	0	0	-1%	0	0	-48%	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Other	PM10	12	0	4%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	PM2.5	9	0	4%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Other	Sulphur Dioxide	36	15	69%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Other	Sulphuric acid	2	-1	-22%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Other	Tetrahydrofuran *	2	-3	-59%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Other	Total Reduced Sulphur	1	0	8%	0	0	n/a	0	0	n/a	0	-2	-91%	0	0	n/a	system variability
Other	Volatile Organic Compounds	144	-3	-2%	0	0	n/a	0	0	n/a	37	28	305%	6	6	n/a	system variability

** No single CAS number applies to this substance

* also included in Volatile Organic Compounds

Toxic Reduction Plan Stewardship - 2019 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)
Metals	Cadmium	Cadmium (and its compounds) enters the facility at concentrations in the chemcial 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
Metals	Lead	Lead enters the facility at concentrations in the chemcial 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
Metals	Mercury	Mercury enters the facility at concentrations in the chemcial 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
Metals	Selenium	Selenium enters the facility at concentrations in the chemcial 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
Metals	Copper	Copper enters the facility at concentrations in the chemcial 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
Metals	Nickel	Nickel enters the facility at concentrations in the chemcial 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
Metals	Vanadium	Vanadium enters the facility at concentrations in the chemcial 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
Metals	Zinc	Zinc enters the facility at concentrations in the chemcial 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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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
Polyaromatic Hydrocarbons (PAH)	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 / recyling 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
Polyaromatic Hydrocarbons (PAH)	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 / recyling 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
Polyaromatic Hydrocarbons (PAH)	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

Dibenzo(a,j)acridine	Benzo(a,l)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 / recyling 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 - 2019 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	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 Chemcial 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.	Option #1: Facilities upgrades completed, procedure changes and operator training completed per documented reduction plan. Planned reduction was achieved. Option #2: 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
	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.	Option #1: 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. Option #2: 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 - 2019 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 chemcial 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
	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

Other	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 thigh 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 combused 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 combused 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 combused 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 detroyed 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	Totatl 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

Report Submission and Electronic Certification

NPRI - Electronic Statement of Certification

Specify the language of correspondence

English

Comments (optional)

I hereby certify that I have exercised due diligence to ensure that the submitted information is true and complete. The amounts and values for the facility(ies) identified below are accurate, based on reasonable estimates using available data. The data for the facility(ies) that I represent are hereby submitted to the programs identified below using the Single Window Reporting Application.
I also acknowledge that the data will be made public.
Note: Only the person identified as the Certifying Official or the authorized delegate should submit the report(s) identified below.

Company Name

Imperial Oil

Certifying Official (or authorized delegate)

James Ritchie

Report Submitted by

James Ritchie

I, the Certifying Official or authorized delegate, agree with the statements above and acknowledge that by pressing the "Submit Report(s)" button, I am electronically certifying and submitting the facility report(s) for the identified company to its affiliated programs.

ON MECP TRA - Electronic Certification Statement

Annual Report Certification Statement

As of 2020-07-31, I, James Ritchie, certify that I have read the reports on the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the information contained in the reports is factually accurate and the reports comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

TRA Substance List*

CAS RN	Substance Name
95-63-6	1,2,4-Trimethylbenzene

106-99-0	1,3-Butadiene
83-32-9	Acenaphthene
208-96-8	Acenaphthylene
NA - 16	Ammonia (total)
120-12-7	Anthracene
1332-21-4	Asbestos (friable form only)
56-55-3	Benz[a]anthracene
71-43-2	Benzene
50-32-8	Benzo[a]pyrene
205-99-2	Benzo[b]fluoranthene
192-97-2	Benzo[e]pyrene
191-24-2	Benzo[ghi]perylene
205-82-3	Benzo[j]fluoranthene
207-08-9	Benzo[k]fluoranthene
92-52-4	Biphenyl
NA - 24	Butane (all isomers)
25167-67-3	Butene (all isomers)

NA - 03	Cadmium (and its compounds)
630-08-0	Carbon monoxide
218-01-9	Chrysene
1319-77-3	Cresol (all isomers, and their salts)
NA - 25	Cycloheptane (all isomers)
110-82-7	Cyclohexane
NA - 26	Cyclohexene (all isomers)
NA - 27	Cyclooctane (all isomers)
NA - 28	Decane (all isomers)
100-41-4	Ethylbenzene
74-85-1	Ethylene
107-21-1	Ethylene glycol
206-44-0	Fluoranthene
86-73-7	Fluorene
50-00-0	Formaldehyde
NA - 31	Heptane (all isomers)
NA - 32	Hexane (all isomers excluding n-hexane)

25264-93-1	Hexene (all isomers)
74-90-8	Hydrogen cyanide
7783-06-4	Hydrogen sulphide
193-39-5	Indeno[1,2,3-cd]pyrene
78-79-5	Isoprene
NA - 08	Lead (and its compounds)
NA - 10	Mercury (and its compounds)
67-56-1	Methanol
1313-27-5	Molybdenum trioxide
91-20-3	Naphthalene
110-54-3	n-Hexane
NA - 11	Nickel (and its compounds)
NA - 17	Nitrate ion in solution at pH >= 6.0
11104-93-1	Nitrogen oxides (expressed as NO2)
NA - 33	Nonane (all isomers)
NA - 34	Octane (all isomers)
NA - 35	Pentane (all isomers)

NA - 36	Pentene (all isomers)
198-55-0	Perylene
85-01-8	Phenanthrene
NA - M09	PM10 - Particulate Matter
NA - M10	PM2.5 - Particulate Matter
74-98-6	Propane
115-07-1	Propylene (propene)
129-00-0	Pyrene
NA - 12	Selenium (and its compounds)
7446-09-5	Sulphur dioxide
7664-93-9	Sulphuric acid
109-99-9	Tetrahydrofuran
108-88-3	Toluene
NA - M08	Total Particulate Matter
NA - M14	Total reduced sulphur (expressed as hydrogen sulphide)
25551-13-7	Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene)

7440-62-2	Vanadium (except in alloy) and compounds
1330-20-7	Xylene (mixed isomers)
NA - 14	Zinc (and its compounds)

Exit Record Certification Statement

TRA Exit Record Substances

CAS RN	Substance Name
194-59-2	7H-Dibenzo[c,g]carbazole
53-70-3	Dibenz[a,h]anthracene
224-42-0	Dibenz[a,j]acridine
189-55-9	Dibenzo[a,i]pyrene
108-95-2	Phenol (and its salts)

Company Name

Imperial Oil

Highest Ranking Employee

James Ritchie

Report Submitted by

James Ritchie

Website address

I, the highest ranking employee, agree with the certification statement(s) above and acknowledge that by checking the box I am electronically signing the statement(s). I also acknowledge that by pressing the 'Submit Report(s)' button I am submitting the facility record(s)/report(s) for the identified facility to the Director under the Toxics Reduction Act, 2009. I also acknowledge that the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 provide the authority to the Director under the Act to make certain information as specified

in subsection 27(5) of Ontario Regulation 455/09 available to the public.

Submitted Report

Period	Submission Date	Facility Name	Province	City	Programs
2019	2020-07-31	Sarnia Chemical Plant	Ontario	Sarnia	NPRI,ON MECP TRA,NERM

Note: If there is a change in the contact information for the facility, a change in the owner or operator of the facility, if operations at the facility are terminated, or if information submitted for any previous year was mistaken or inaccurate, please update this information through SWIM or by contacting the National Pollutant Release Inventory directly.