

## 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](http://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](http://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 kilograms)	Chemical Abstract Service CAS Registry Number	USED			CREATED			CONTAINED IN PRODUCT			Reason for Change	
		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
	Lead	**	0	0	n/a	>10 to 100	>10 to 100	n/a	>0 to 1	0	0	system variability
	Mercury	**	0	0	n/a	>0 to 1	>0 to 1	n/a	0	0	n/a	no reasons - quantities approximately the same
	Selenium	**	0	0	n/a	>0 to 1	>0 to 1	n/a	>10 to 100	0	0	no reasons - quantities approximately the same
	Copper	**	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
Polycyclic Aromatic 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
	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
	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
	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
	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
	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
	Benzo(b)fluoranthene	205-99-2 / 205-82-3	0	0	n/a	>100 to 1000	>100 to 1000	1795%	0	0	n/a	system variability
	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
	Benzo(g,h)perylene	191-24-2	0	0	n/a	>100 to 1000	>10 to 100	2559%	0	0	n/a	system variability
	Benzo(k)fluoranthene	207-08-9	0	0	n/a	>100 to 1000	>100 to 1000	1859%	0	0	n/a	system variability
	Dibenzo(a,h)anthracene	53-70-3	0	0	n/a	>1 to 10	>1 to 10	1052%	0	0	n/a	system variability
	Dibenzo(a,j)acridine	224-42-0	0	0	n/a	>0 to 1	>0 to 1	1052%	0	0	n/a	system variability
	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
	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
	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
	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
	Perylene	198-55-0	0	0	n/a	>10 to 100	>10 to 100	1991%	0	0	n/a	system variability
	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
	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

Report of Tracking and Quantification of Facility-Wide Quantities

Substances (Reported in tonnes)	Chemical Abstract Service CAS Registry Number	Used			Created			Contained in Product			Reason for 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	n/a	>0 to 1	>1 to 10	-71%	0	0	n/a	no reasons - quantities approximately the same
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
	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
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	
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	
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	
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	
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	

Report of Tracking and Quantification of Facility-Wide Quantities

Substances (Reported in tonnes)	Chemical Abstract Service CAS Registry Number	Used			Created			Contained in Product			Reason for Change
		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	67-83-0	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

Other

Report of Tracking and Quantification of Facility-Wide Quantities

Substances (Reported in kilograms)	Releases To Air			Releases to Water			Releases to Land			Onsite / Offsite Disposal			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
	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
Polycyclic Aromatic Hydrocarbons (PAH)	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)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	-65	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 / Offsite Disposal			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	
Nickel	0	0	-1%	0	0	n/a	0	0	n/a	1	-1	-64%	0	0	-100%	system variability
Vanadium	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	0	0	-100%	system variability
Anthracene	0	-	n/a	0	-	n/a	0	-	n/a	0	-	33%	4	-	n/a	system variability
Naphthalene	0	0	-10%	0	0	n/a	0	0	n/a	11	3	39%	80	80	n/a	system variability
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
1, 3-Butadiene *	1	0	28%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Benzene *	9	0	4%	0	0	n/a	0	0	n/a	9	7	324%	0	0	n/a	system variability
Biphenyl	0	0	116%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Butane *	5	-1	-14%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
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
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
Cyclooctane *	0	0	-12%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
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
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	17%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
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
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
Isoprene	0	0	24%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
n-Hexane *	5	5	n/a	0	0	n/a	0	0	n/a	11	8	324%	0	0	n/a	system variability
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
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
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
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
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
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
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
Xylene *	3	0	2%	0	0	n/a	0	0	n/a	1	0	33%	6	6	n/a	system variability
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
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
Carbon Monoxide	370	-44	-11%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
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
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	-1%	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	3%	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	-4	-1%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	no reasons - quantities approximately the same
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
Phenol (and its salts)	0	0	-1%	0	0	-48%	0	0	n/a	0	0	n/a	0	0	n/a	system variability
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
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
Sulphur Dioxide	36	15	69%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Sulphuric acid	2	-1	-22%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Tetrahydrofuran *	2	-3	-59%	0	0	n/a	0	0	n/a	0	0	n/a	0	0	n/a	system variability
Total Reduced Sulphur	1	0	8%	0	0	n/a	0	0	n/a	0	-2	-91%	0	0	n/a	system variability
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 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
Polycyclic Aromatic Hydrocarbons (PAHs)	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)fluoranthene	Benzo(b)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

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 - 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)
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
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

Hydrocarbons

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 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	
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 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	

# 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  $\geq$  6.0

11104-93-1

Nitrogen oxides (expressed as NO<sub>2</sub>)

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

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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.