



PRIS / PCIS Part X – Complaints, Records and Reporting

Imperial Oil, Downstream & Chemical

Sarnia Refinery & Chemical Plant

March 24, 2022

2021 Annual Summary Tables & Ambient Monitoring Report

**PRIS / PCIS Part X – Complaints, Records and Reporting
2021 Annual Summary Tables & Ambient Monitoring Report**



Introduction

The annual summary tables included in this report were developed in accordance with the requirements of Section X, subsection 65 (1) & (8) of both the Petroleum Refining and Petrochemical Industry Standards under the Technical Standards to Manage Air Pollution. Subsection 65(6) has also been included in this annual report per the requirements of subsection 66(3). The scope of the annual summary tables includes both the Imperial Oil’s Sarnia Refinery and Chemical Plant.

Section 65 (2) Paragraph 1 - Implementation Summary Table

Part	Title	Section	Sub Part	Date Required	Date Complete
PART II – PERFORMANCE	Flare	5	1	01/01/2020	01/01/2020
PART III – STORAGE VESSELS	Storage vessels – identification	9	1 & 2	28/07/2017	28/07/2017
PART III – STORAGE VESSELS	Storage vessels – identification	9	3 & 4	28/07/2017	28/07/2017
PART III – STORAGE VESSELS	Storage vessels – identification	9	5(1-2)	01/01/2018	28/07/2017
PART III – STORAGE VESSELS	Storage vessels – identification	9	5(3)	01/01/2025	
PART III – STORAGE VESSELS	Storage vessels – identification	9	7	01/01/2023	
PART III – STORAGE VESSELS	Storage vessels -application	10	1	01/01/2018	28/07/2017
PART III – STORAGE VESSELS	Storage vessels -application	10	4(b)	01/01/2025	
PART III – STORAGE VESSELS	Floating roof -requirement to float	11	1	28/07/2017	28/07/2017
PART III – STORAGE VESSELS	Floating roof -requirement to float	11	3	28/07/2017	28/07/2017
PART III – STORAGE VESSELS	Deck covers – requirement to be closed	15	1	28/07/2017	28/07/2017
PART III – STORAGE VESSELS	Floating roof -visual inspection	16	1	01/01/2023	
PART III – STORAGE VESSELS	Storage vessels -OGI inspection	17	1	01/01/2018	01/01/2018
PART III – STORAGE VESSELS	Storage vessels in benzene service – general record	21	1	28/07/2017	28/07/2017
PART III – STORAGE VESSELS	Storage vessel inspection record	22	1	28/07/2017	28/07/2017
PART IV – AIR EMISSIONS FROM INDUSTRIAL SEWAGE	Primary oil-water separators – requirement selection	24	1.1	01/03/2018	01/03/2018
PART IV – AIR EMISSIONS FROM INDUSTRIAL SEWAGE	Primary oil-water separators – monitoring and control requirements	25	(1)	01/07/2018	25/10/2017
PART IV – AIR EMISSIONS FROM INDUSTRIAL SEWAGE	Primary oil-water separators – monitoring and control requirements	25	(2)	01/07/2018	06/06/2018
PART IV – AIR EMISSIONS FROM INDUSTRIAL SEWAGE	Drains and maintenance access points – measurement and control requirements	33		01/07/2019	01/07/2019
PART IV – AIR EMISSIONS FROM INDUSTRIAL SEWAGE	Drain and maintenance access point record	34		01/07/2019	01/07/2019
PART V – PRODUCT LOADING	Benzene-containing product loading operations – application	35	1	31/03/2018	31/03/2018
PART V – PRODUCT LOADING	Cargo tank loading operations – general operating requirements	36		28/07/2017	28/07/2017
PART V – PRODUCT LOADING	Vapour-tight cargo tanks	37		01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Component identification	38	1-5	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Component leak survey – general	39	1	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Component leak survey – general	39	2-4	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Component leak survey – general	39	6	01/03/2018	01/03/2018
PART VI – LEAK DETECTION AND REPAIR	Component leak survey – assessment and measurement of leaks	40	5	01/01/2023	

Section 65 (2) Paragraph 1 - Implementation Summary Table

Part	Title	Section	Sub Part	Date Required	Date Complete
PART VI – LEAK DETECTION AND REPAIR	Component leak survey plan	41	(1)	01/03/2018	01/03/2018
PART VI – LEAK DETECTION AND REPAIR	Component leak survey plan	41	(3)	01/03/2019	02/25/2019
PART VI – LEAK DETECTION AND REPAIR	Additional leak measurements -pumps, compressors and pressure relief devices	42		01/01/2023	
PART VI – LEAK DETECTION AND REPAIR	Leaks -deviations and repair	43	(1)	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Leaks -deviations and repair	43	(2)1.	01/01/2020	01/01/2020
PART VI – LEAK DETECTION AND REPAIR	Leaks -deviations and repair	43	(2)2.	01/01/2023	
PART VI – LEAK DETECTION AND REPAIR	Delay of repair list	44	1-3	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Delay of repair list	44	4	01/07/2018	01/07/2018
PART VI – LEAK DETECTION AND REPAIR	Delay of repair list	44	9	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Leaking components -annual calculations	47		31/03/2019	31/03/2019
PART VI – LEAK DETECTION AND REPAIR	Records -component leak survey	48	(1) 1-5	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Records -component leak survey	48	(1) 6-13	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Records -component leak survey	48	(2) 1-5	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Records -component leak survey	48	(2) 6	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Records -component leak survey	48	(2) 7	01/01/2018	01/01/2018
PART VI – LEAK DETECTION AND REPAIR	Records – additional leak measurements	49	1-7	01/01/2023	
PART VI – LEAK DETECTION AND REPAIR	Records – additional leak measurements	49	8-13	01/01/2023	
PART VII – OPERATION	Technology requirements – open-ended valves	50		01/01/2018	01/01/2018
PART VII – OPERATION	Technology requirements – surge control vessels and bottoms receivers	51		01/01/2020	01/01/2020
PART VII – OPERATION	Operating parameter summary table	52		01/01/2018	01/01/2018
PART VIII – REQUIREMENT TO CONTINUE THE USE OF METHODS TO MANAGE EMISSIONS	Identifying managed sources	55		01/01/2018	01/01/2018
PART IX – AMBIENT MONITORING	Ambient monitoring -benzene	60	(1)-(5)	01/01/2018	20/12/2017
PART IX – AMBIENT MONITORING	Ambient monitoring -benzene	60	(6)	01/01/2018	01/01/2018
PART IX – AMBIENT MONITORING	Benzene measurements baseline	61		31/03/2021	31/03/2021
PART IX – AMBIENT MONITORING	Statistical analysis of benzene measurements	62		31/03/2022	17/03/2022
PART IX – AMBIENT MONITORING	Notification – ambient monitoring	63	(1)	As soon as practicable following s.62 caclulation	17/03/2022
PART IX – AMBIENT MONITORING	Notification – ambient monitoring	63	(2)	No later than 6 months following s.63(1) notification	
PART X – COMPLAINTS, RECORDS AND REPORTING	Complaints procedure	64	(1) 1-3	01/01/2018	01/01/2018

Section 65 (2) Paragraph 1 - Implementation Summary Table

Part	Title	Section	Sub Part	Date Required	Date Complete
PART X – COMPLAINTS, RECORDS AND REPORTING	Annual summary reports	65		31/03/2019	31/03/2019
PART X – COMPLAINTS, RECORDS AND REPORTING	Public reporting – ambient monitoring	66		04/03/2018	04/03/2018

Section 65 (2) Paragraph 8 - Performance Summary Table

Requirement	Summary
subsections 8 (1) notifications	No section 4 notifications made in 2021 No section 7 notifications made in 2021
subsections 11 (1) contraventions	OS-TK-4028 was taken out of service on a planned basis for maintenance and roof and seal upgrades to meet PCIS requirements. <ul style="list-style-type: none"> • Date roof landed: July 1, 2021 @ 12pm • Date subsection (3) action taken: July 1, 2021 @ 12pm <p>Note: The date the roof was landed is known however, since the level of the tank is measured via gauging, the time the roof was landed is estimated.</p>
subsections 26 (1) contraventions	No subsections 26 (1) contraventions in 2021
subsection 52 (5) orders	No subsection 52 (5) orders received in 2021
subsection 58 orders	No subsection 58 orders received in 2021

**Section 65 (2) Paragraph 6 - Annual Ambient Monitoring Report for Petroleum Refining –
Industry Standard & Petrochemical – Industry Standard**

The following information is provided per the requirements of PRIS/PCIS s65(2)6.

- a map showing the location of each monitor required by subsection 60 (1), the information required by clause 60 (4) (d), and other topographical information including any nearby water bodies, roadways and adjacent land uses, **(Figure 6.1)**
- for each monitor required by subsection 60 (1),
 - the information required by subsection 60 (6), **(Table 6.1)**
 - a summary showing the annual average benzene concentration results from the time that the monitor was first required by subsection 60 (1), **(Table 6.2)**
 - the results of calculations required by section 62 to identify whether a statistically significant increase in the concentration of benzene occurred, **(Table 6.3)**
- a summary of the information required by section 63. **(Table 6.4)**

Figure 6.1 - Imperial Sarnia Property Line Monitoring Map

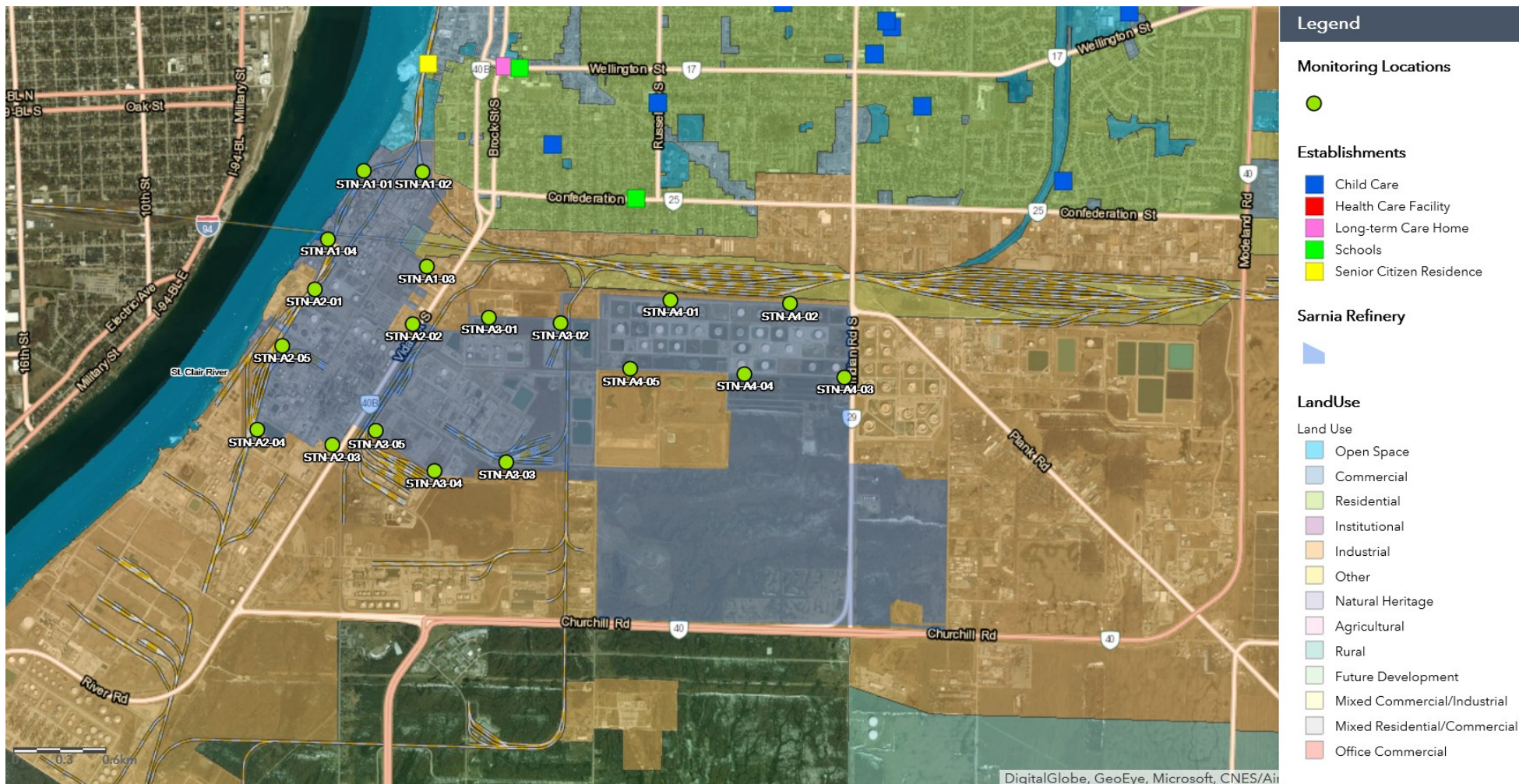


Table 6.1 – Benzene Concentration Results

Station ID	STN-A1-01	STN-A1-02	STN-A1-03	STN-A1-04	STN-A2-01	STN-A2-02	STN-A2-03	STN-A2-04	STN-A2-05	STN-A3-01	STN-A3-02	STN-A3-03	STN-A3-04	STN-A3-05	STN-A4-01	STN-A4-02	STN-A4-03	STN-A4-04	STN-A4-05
Location (UTM)	384600	384978	384982	384363	384270	384920	384357	383863	384045	385389	385830	385480	385019	384669	386562	387327	387327	387031	386293
Sample Dates / Results (ug/m3)	4757631	4757631	4757631	4757631	4757631	4756638	4757631	4757631	4756520	4757631	4757631	4757631	4757631	4757631	4757631	4757631	4757631	4757631	4757631
12/31/2020 - 1/13/2021	1.6	1.2	2.3	2.6	1.5	3.8	6.6	3.6	5.0	8.6	2.3	4.3	4.4	4.2	1.3	1.2	1.5	1.8	2.5
1/13/2021 - 1/28/2021	1.4	1.2	2.8	1.8	2.3	5.0	4.2	1.5	3.5	7.4	3.1	2.6	2.2	2.6	1.2	1.2	0.9	1.0	1.6
1/28/2021 - 2/10/2021	1.6	1.6	3.3	9.5	2.5	4.8	4.4	2.8	4.8	9.5	3.2	3.7	2.6	2.6	1.6	1.2	1.2	1.2	2.0
2/10/2021 - 2/25/2021	1.3	1.4	2.2	2.8	2.2	2.9	4.6	3.8	4.7	6.6	2.4	2.6	2.2	3.6	1.3	1.0	1.1	1.3	2.7
2/25/2021 - 3/10/2021	1.7	1.6	3.0	4.7	3.4	4.7	5.9	2.0	5.3	11.0	1.9	3.8	2.4	3.4	1.2	0.9	0.9	0.8	1.9
3/10/2021 - 3/24/2021	2.8	3.1	4.6	4.8	3.9	7.5	2.9	5.3	5.5	16.0	1.6	1.7	5.2	2.4	1.1	1.2	1.0	1.0	2.7
3/24/2021 - 4/7/2021	1.9	2.6	4.6	2.9	3.2	4.6	4.6	2.1	6.1	15.0	1.2	4.2	5.0	4.0	0.9	0.9	0.9	0.9	1.4
4/7/2021 - 4/21/2021	1.2	1.6	2.9	2.9	3.2	5.5	5.6	2.6	6.7	12.0	1.2	2.3	3.1	2.9	1.0	0.9	1.0	1.0	1.8
4/21/2021 - 5/5/2021	2.0	1.6	2.4	2.4	3.7	4.6	4.0	3.6	7.5	13.0	2.1	2.4	3.9	2.6	1.6	1.2	1.1	2.1	2.8
5/5/2021 - 5/19/2021	1.1	1.8	2.8	3.6	2.7	6.0	3.4	2.2	4.7	15.0	2.4	2.5	4.5	2.8	4.3	4.5	2.3	3.0	2.0
5/19/2021 - 6/2/2021	1.5	2.2	3.5	6.0	6.7	4.4	2.7	4.8	7.3	13.0	1.8	2.1	6.3	3.5	2.3	1.7	0.9	6.4	2.0
6/2/2021 - 6/16/2021	1.6	2.2	3.1	2.9	6.8	4.3	5.4	2.8	8.2	14.0	1.7	2.3	3.7	2.5	3.1	2.5	1.1	4.9	3.8
6/16/2021 - 6/30/2021	3.0	3.2	3.7	8.2	4.7	5.7	3.7	1.5	7.2	16.0	2.8	1.9	3.1	3.1	4.0	2.2	1.6	1.3	2.4
6/30/2021 - 7/14/2021	1.0	1.1	1.6	2.4	2.4	3.5	8.3	2.9	3.2	5.9	2.0	2.3	3.3	3.9	2.6	1.7	1.7	5.4	1.8
7/14/2021 - 7/28/2021	1.7	1.4	2.1	2.5	3.3	4.4	7.5	2.2	3.4	6.4	1.6	2.1	4.8	3.1	3.1	3.5	1.8	4.2	2.7
7/28/2021 - 8/11/2021	2.3	2.6	3.9	3.9	4.8	5.2	8.2	2.4	5.4	12.0	1.8	1.9	3.6	3.0	5.0	3.0	1.7	2.4	1.6
8/11/2021 - 8/25/2021	1.6	1.7	2.8	2.8	3.5	4.7	9.4	2.7	3.2	5.6	2.2	1.8	3.6	4.3	5.6	2.9	1.5	2.5	3.3
8/25/2021 - 9/8/2021	1.8	2.0	2.9	3.3	4.1	5.2	7.0	3.0	4.9	8.6	1.6	1.8	3.4	4.1	4.0	2.2	1.4	2.2	2.1
9/8/2021 - 9/22/2021	1.6	1.3	2.1	3.3	4.6	4.1	5.5	2.4	7.4	5.8	1.0	1.3	2.3	2.6	3.1	1.3	1.4	1.3	2.3
9/22/2021 - 10/13/2021	1.6	1.5	2.3	3.3	3.3	5.2	2.1	2.3	4.6	7.3	1.1	0.8	2.4	2.1	2.2	1.5	0.7	0.9	1.7
10/13/2021 - 10/27/2021	1.6	1.7	2.7	3.4	3.2	5.4	9.4	3.1	3.4	7.6	1.6	3.5	2.6	6.4	1.8	1.6	1.8	1.6	2.0
10/27/2021 - 11/10/2021	1.6	2.1	2.8	3.4	3.4	3.3	3.8	2.1	4.9	7.0	1.6	1.6	2.4	3.0	1.3	1.6	1.2	1.2	1.7
11/10/2021 - 12/1/2021	2.0	2.1	3.4	5.6	3.7	5.2	4.1	1.1	5.4	7.4	1.4	1.9	2.7	4.2	1.5	1.3	1.3	1.1	1.6
12/1/2021 - 12/15/2021	1.9	1.7	3.3	4.0	2.9	5.0	5.1	1.7	5.9	9.4	2.3	2.9	2.4	3.3	1.9	1.8	2.1	1.4	2.3
12/15/2021 - 12/29/2021	1.4	1.4	1.6	2.9	2.5	2.7	5.3	2.9	5.9	5.4	1.4	1.5	1.9	2.9	1.2	1.1	1.7	1.0	1.4

Table 6.2 - Annual Average Benzene Concentration Results

Year / Results (ug/m3)	STN-A1-01	STN-A1-02	STN-A1-03	STN-A1-04	STN-A2-01	STN-A2-02	STN-A2-03	STN-A2-04	STN-A2-05	STN-A3-01	STN-A3-02	STN-A3-03	STN-A3-04	STN-A3-05	STN-A4-01	STN-A4-02	STN-A4-03	STN-A4-04	STN-A4-05
2018	1.9	2.0	3.4	4.8	3.8	5.6	5.7	4.0	6.4	10.1	2.5	3.2	6.0	5.7	2.2	1.5	2.0	1.3	3.2
2019	1.8	1.9	3.3	4.2	4.1	5.2	5.9	3.6	8.3	11.1	2.4	2.9	4.5	4.4	1.7	1.6	2.1	1.2	3.9
2020	1.7	1.9	2.9	3.6	3.8	4.7	5.6	3.2	6.7	10.6	2.3	2.7	4.1	4.3	1.4	1.3	1.2	1.1	2.4
2021	1.7	1.8	2.9	3.8	3.5	4.7	5.3	2.7	5.4	9.8	1.9	2.4	3.4	3.3	2.3	1.8	1.4	2.1	2.2

Table 6.3 - Statistical Analysis of Benzene Measurements

Year	Tech Standard Section	Variable	STN-A1-01	STN-A1-02	STN-A1-03	STN-A1-04	STN-A2-01	STN-A2-02	STN-A2-03	STN-A2-04	STN-A2-05	STN-A3-01	STN-A3-02	STN-A3-03	STN-A3-04	STN-A3-05	STN-A4-01	STN-A4-02	STN-A4-03	STN-A4-04	STN-A4-05	
2018 - 2020	61(2)4.	m	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	
		X	0.513428261	0.5775258	1.0713137	1.274921	1.2507207	1.5802135	1.6449457	1.1678556	1.7946222	2.2298721	0.7390638	0.9736255	1.4867489	1.4965515	0.4880571	0.3448802	0.4004843	0.1632182	1.0061367	
		S ²	0.136929391	0.1326196	0.1391392	0.2727667	0.1881625	0.1250732	0.1809304	0.2715541	0.3025258	0.2106098	0.2013331	0.133609	0.1886104	0.1305881	0.1422307	0.0822357	0.2059456	0.0670826	0.2751845	
2021	62(3)4.	n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
		X	0.50634483	0.5662559	1.0324239	1.2628905	1.208814	1.525604	1.6067439	0.9310113	1.6436939	2.2217482	0.5918177	0.801402	1.160898	1.1707819	0.6960436	0.4653507	0.2574958	0.5263697	0.7388816	
		S ²	0.0630782	0.0829094	0.0746558	0.151222	0.1138626	0.0512462	0.1502354	0.1283705	0.0772543	0.1304741	0.0958708	0.1533339	0.1032505	0.0596752	0.2992304	0.195911	0.0924171	0.3732398	0.066659	
	62(3)5.	Y	0.50634483	0.5662559	1.0324239	1.2628905	1.208814	1.525604	1.6067439	0.9310113	1.6436939	2.2217482	0.5918177	0.801402	1.160898	1.1707819	0.6960436	0.4653507	0.2574958	0.5263697	0.7388816	
		X	0.513428261	0.5775258	1.0713137	1.274921	1.2507207	1.5802135	1.6449457	1.1678556	1.7946222	2.2298721	0.7390638	0.9736255	1.4867489	1.4965515	0.4880571	0.3448802	0.4004843	0.1632182	1.0061367	
		S ₁	0.136929391	0.1326196	0.1391392	0.2727667	0.1881625	0.1250732	0.1809304	0.2715541	0.3025258	0.2106098	0.2013331	0.133609	0.1886104	0.1305881	0.1422307	0.0822357	0.2059456	0.0670826	0.2751845	
		S ₂	0.0630782	0.0829094	0.0746558	0.151222	0.1138626	0.0512462	0.1502354	0.1283705	0.0772543	0.1304741	0.0958708	0.1533339	0.1032505	0.0596752	0.2992304	0.195911	0.0924171	0.3732398	0.066659	
		m	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	
		n	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
		T	-0.355734966	-0.505221	-1.797682	-0.279213	-1.3478	-3.136904	-1.052585	-5.934851	-4.037721	-0.23048	-4.961554	-5.042724	-11.0049	-17.21004	3.3574055	2.9923302	-4.824205	4.8401797	-7.928287	
	62(3)6.	V	88.43763646	65.405823	77.097925	74.546806	67.820968	95.427432	47.976982	86.64112	99.699398	66.073761	86.122425	36.274398	75.533719	88.980844	27.511272	26.725491	90.178028	24.4924	98.590952	
	62(3)7.	T	3.373	3.373	3.373	3.373	3.373	3.373	3.46	3.373	3.373	3.373	3.373	3.551	3.373	3.373	3.69	3.707	3.373	3.745	3.373	
	62(3)8.	Significant Increase	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No

Table 6.4 – Summary of Section 63(1) Notifications

Year	Date of s62 Calculation	Date of MECP Notification	Ambient Monitor
2021	March 17, 2022	March 17, 2022	STN-A4-04