

**TECHNICAL STANDARDS TO MANAGE AIR POLLUTION -
PETROLEUM REFINING INDUSTRY STANDARD**

**2019 Annual Property Line Monitoring
Report**

Suncor Energy Inc.
Sarnia Refinery
1900 River Road
Sarnia, Ontario
N7T 7J3

March 31, 2020

ANNUAL AMBIENT MONITORING REPORT FOR PETROLEUM REFINING – INDUSTRY STANDARD

The air monitoring program assesses annual benzene concentrations along the Suncor refinery's perimeter using passive diffusive monitoring technology which has been approved by the MECP. Samples are taken continuously over a two-week period and the results are posted within 60 days of sample collection on our Suncor Sarnia Refinery website.

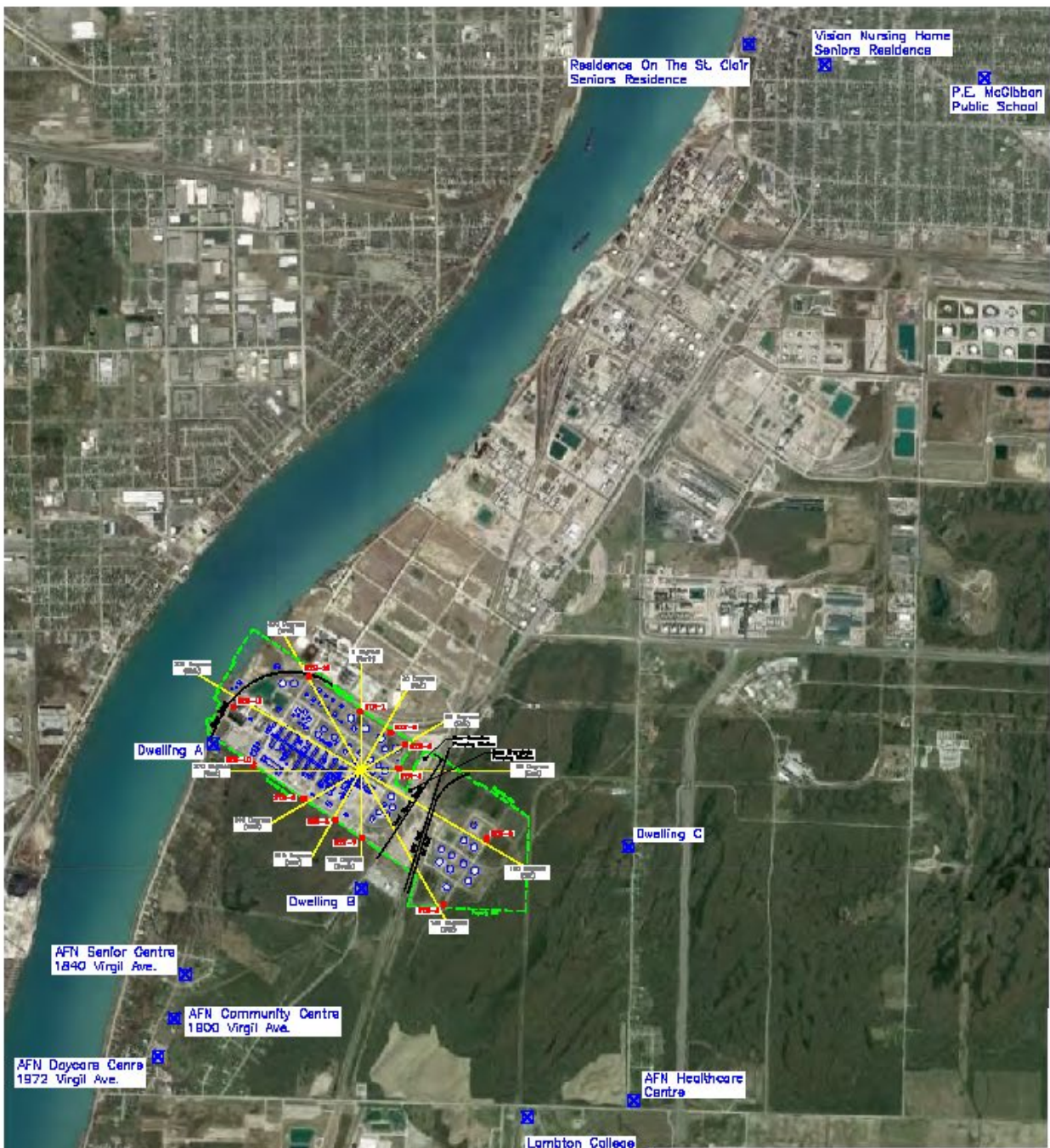
Following three full calendar years (2018-2020) of monitoring, a three-year benzene measurement baseline will be determined for each monitoring location. The baseline will then be updated annually based on the measurements from the previous three calendar years. Following the fourth year of monitoring (2021), a statistical comparison to the baseline will be performed for each monitor based on measurements from the previous calendar year. If there is any location with a statistically significant increase from the baseline, further analysis will be conducted to assess for potential actions to prevent, minimize or reduce the risk of future statistically significant increases in annual benzene concentrations.

In 2019 our annual average from all 12 perimeter monitoring locations was 1.48 ug/m³. As indicated above, the statistical analysis with our three year benzene measurement baseline will be included in the 2021 annual report. The full results from the 2019 monitoring program can be found below and the map of the property line monitoring locations can be found in the appendix.

Annual Average for each station:

	Annual Average - Benzene (ug/m ³)
STN-1	2.45
STN-2	1.97
STN-3	1.48
STN-4	1.74
STN-5	1.68
STN-6	1.34
STN-7	1.14
STN-8	1.10
STN-9	1.42
STN-10	1.13
STN-11	1.03
STN-12	1.31

	Station ID	STN-1	STN-2	STN-3	STN-4	STN-5	STN-6	STN-7	STN-8	STN-9	STN-10	STN-11	STN-12
	UTM Coordinates	382737mE 4754353mN	382315mE 4754241mN	383086mE 4754172mN	382365mE 4754038mN	383438mE 4753619mN	382233mE 4753234mN	382748mE 4753624mN	382586mE 4753723mN	382488mE 4753853mN	382181mE 4754853mN	381988mE 4754934mN	382432mE 4754578mN
Measured Benzene Concentration from 2-week monitoring period (ug/m ³)	12/27/2018 - 1/10/2019	2.16 <i>(2.27)</i>	1.57	1.19	1.67	1.15	1.17	1.05	0.99	0.96	0.30	0.38	1.20
	1/10/2019 - 1/24/2019	1.55	1.38 <i>(1.58)</i>	1.10	1.62	1.26	0.99	1.07	1.03	1.17	1.00	1.04	1.44
	1/24/2019 - 2/7/2019	2.73	2.19	1.56 <i>(1.45)</i>	1.47	1.50	1.19	1.00	1.05	1.16	1.02	1.21	1.40
	2/7/2019 - 2/21/2019	2.04	2.23	1.60	1.58 <i>(1.58)</i>	1.06	0.98	0.96	1.00	1.09	1.22	1.11	1.26
	2/21/2019 - 3/7/2019	1.65	2.49	1.72	1.88	1.20 <i>(1.24)</i>	0.97	1.04	1.00	0.97	1.03	1.08	1.22
	3/7/2019 - 3/21/2019	7.20	2.09	1.35	1.59	0.93	0.72 <i>(0.70)</i>	0.73	0.82	0.84	0.87	0.99	1.58
	3/21/2019 - 4/4/2019	2.02	1.45	1.43	2.05	2.30	1.41	1.48 <i>(1.43)</i>	1.59	1.91	1.11	0.90	1.11
	4/4/2019 - 4/18/2019	1.90	1.82	1.57	1.82	2.35	1.83	1.49	1.49 <i>(1.58)</i>	1.71	1.46	0.98	1.31
	4/18/2019 - 5/2/2019	1.24	1.09	1.16	1.28	2.14	1.25	0.99	1.22	1.66 <i>(1.68)</i>	1.14	0.91	0.86
	5/2/2019 - 5/16/2019	1.34	1.49	1.29	1.42	2.57	1.79	1.30	1.55	1.94	1.33 <i>(1.40)</i>	0.67	0.69
	5/16/2019 - 5/30/2019	1.93	1.71	1.49	1.64	1.89	1.56	1.36	1.37	1.65	1.23	1.02 <i>(0.90)</i>	1.28
	5/30/2019 - 6/13/2019	1.64	1.46	1.15	1.49	2.17	1.67	1.14	0.97	1.33	1.02	0.96	1.01 <i>(0.96)</i>
	6/13/2019 - 6/27/2019	1.45 <i>(1.47)</i>	1.56	1.18	1.42	2.17	1.96	1.00	0.81	1.17	0.97	0.61	0.80
	6/27/2019 - 7/11/2019	2.19	2.13 <i>(2.14)</i>	1.63	1.64	2.61	2.55	1.62	1.35	1.75	1.58	1.04	1.47
	7/11/2019 - 7/25/2019	2.22	2.52	1.80 <i>(1.75)</i>	2.67	2.16	2.20	1.39	1.14	1.50	0.98	0.64	1.05
	7/25/2019 - 8/8/2019	NA	NA	2.18	2.59 <i>(2.48)</i>	2.06	1.53	1.84	1.37	1.86	1.63	0.86	1.51
	8/8/2019 - 8/22/2019	2.16	2.48	1.62	2.09	1.48 <i>(1.43)</i>	1.15	1.16	1.12	1.38	1.22	1.25	1.76
	8/22/2019 - 9/5/2019	1.83	1.89	1.42	1.84	1.32	1.06 <i>(1.03)</i>	1.08	1.05	1.38	1.30	1.29	1.26
	9/5/2019 - 9/19/2019	2.59	1.81	1.49	1.58	1.58	1.20	1.35 <i>(1.45)</i>	1.17	3.11	1.34	1.99	1.61
	9/19/2019 - 10/3/2019	4.60	3.39	1.84	2.37	1.67	1.01	1.01	1.07 <i>(1.18)</i>	1.85	1.11	0.92	3.11
	10/3/2019 - 10/17/2019	1.66	1.70	1.25	1.33	1.06	0.56	0.89	0.75	0.90 <i>(0.90)</i>	0.73	0.94	1.01
	10/17/2019 - 10/31/2019	2.22	1.85	1.34	1.68	1.39	1.38	1.21	1.10	1.23	0.97 <i>(0.98)</i>	0.91	1.19
	10/31/2019 - 11/14/2019	2.55	2.26	1.58	1.77	1.05	0.80	0.79	0.73	0.72	0.72	0.61 <i>(0.63)</i>	1.01
11/14/2019 - 11/28/2019	2.99	2.66	2.06	1.87	1.29	1.10	1.01	0.94	0.97	1.10	1.26	1.73 <i>(1.78)</i>	
11/28/2019 - 12/12/2019	1.94 <i>(1.93)</i>	1.68	1.14	1.38	0.97	0.85	0.86	0.83	0.91	0.85	1.08	1.03	
12/12/2019 - 12/27/2019	3.67	2.79 <i>(2.77)</i>	1.85	2.26	1.62	1.17	1.42	1.41	NA	NA	NA	NA	
Notes: -For the sampling period of 7/25/2019-8/8/2019 STN-1 and STN-2 sampler results are listed as NA. This was due to a power outage at the lab which shutdown an instrument used to obtain the data. -For the sampling period of 12/12/2019-12/27/2019 STN-9, STN-10, STN-11 and STN-12 sampler results are listed as NA. This was due to a instrument shutdown at the lab during a sample run.													



LEGEND

- Ambient Air Monitor
- ⊗ Sensitive Receptor



Notes:
 Last revised on Dec. 6, 2016 – added AFN Healthcare Centre, Daycare, Senior Centre & Community Centre