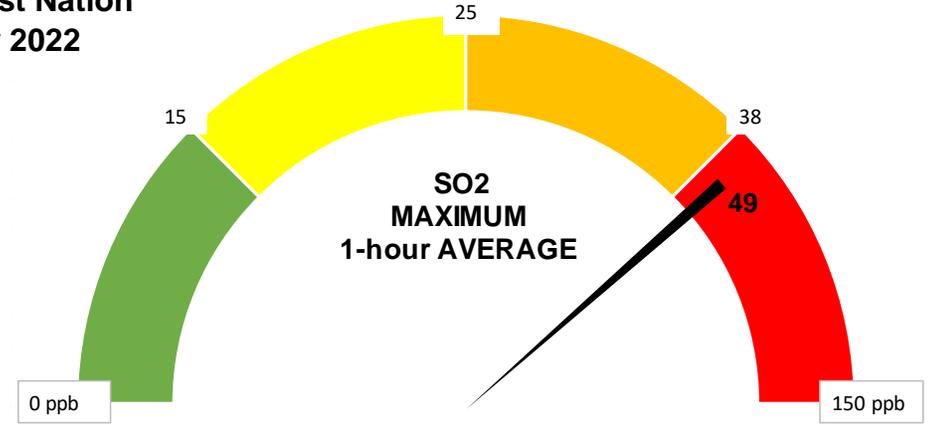
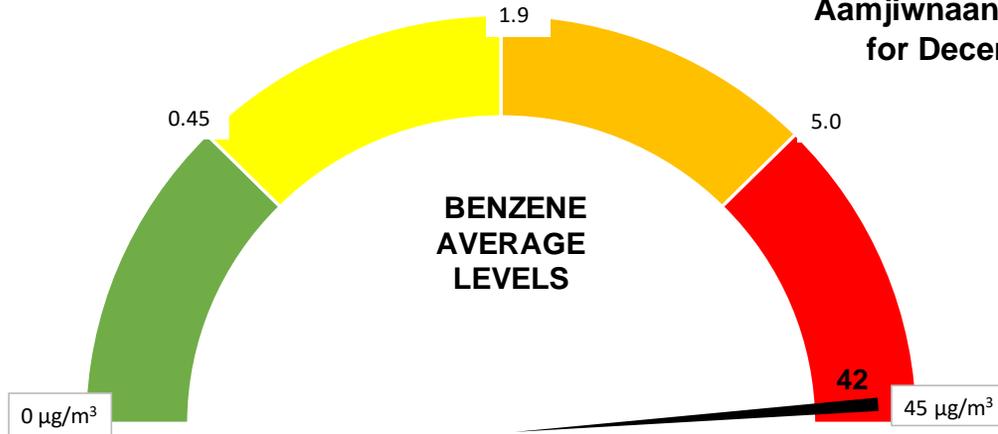
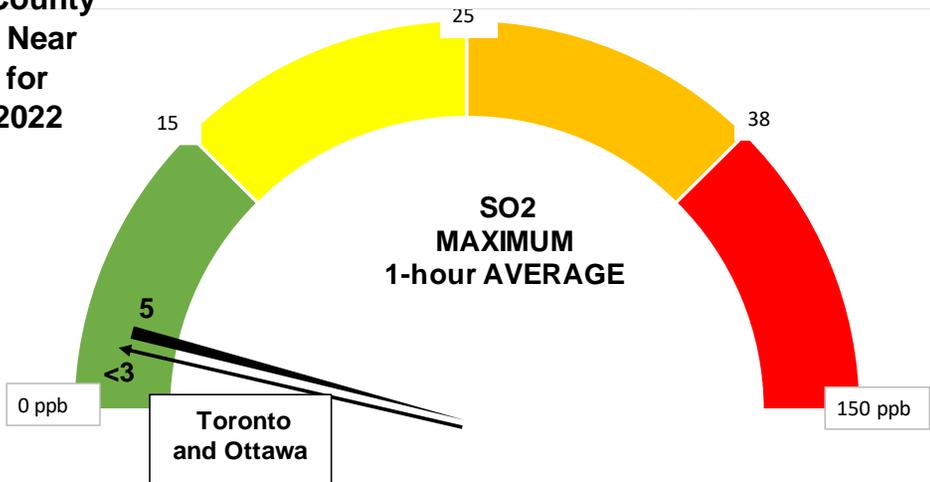
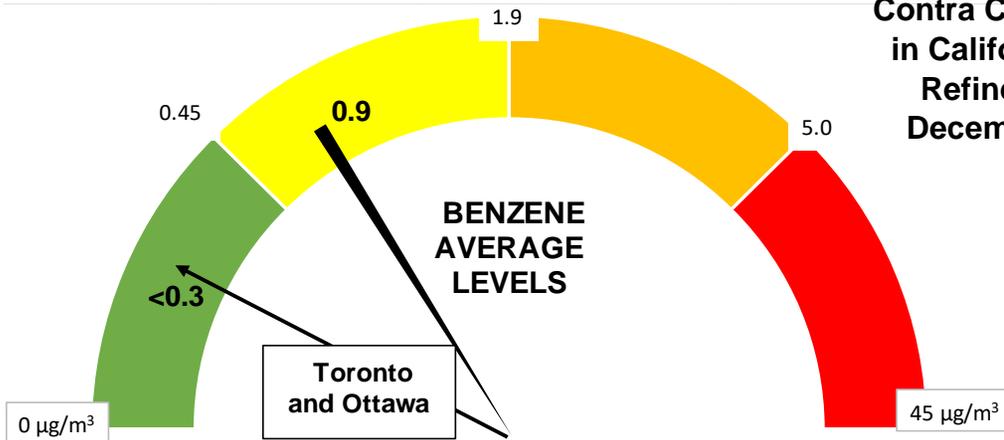


**Air Quality for the
Aamjiwnaang First Nation
for December 2022**



**Air Quality for the
Contra Cost County
in California Near
Refineries for
December 2022**



Note: Benzene levels in ambient air for Ottawa and Toronto are generally less than 0.3 µg/m³.
Sulphur dioxide (SO2) levels in ambient air for Ottawa and Toronto are generally less than 3 ppb.

Aamjiwnaang First Nation Air Quality – Monitored Values and Trends For 2022

Table 1: Benzene Monitored Values for 2022 (in micrograms per cubic metre or µg/m³) for the INEOS-Styrolutions Fenceline

Month in 2022	Max 2-week Avg (all monitors)	Rolling Annual Avg (Monitor #3)
January	47.1	30.6
February	122.0	35.0
March	26.5	35.4
April	19.7	35.4
May	29.6	34.7
June	41.0	35.1
July	73.0	37.7
August	77.3	39.8
September	39.8	41.0
October	74.3	41.4
November	27.5	42.0
December		

Notes for Table 1:

- i) Typical benzene fenceline monitored values for the Chevron petroleum refinery in Richmond California (Contra Costa County) are, on average, between 0.5 and 1 microgram per cubic metre. This refinery has a refining capacity of 240,000 barrels per day.
- ii) Although INEOS-Styrolutions in Sarnia is a styrene and ethylbenzene production facility and Chevron-Richmond is a petroleum refinery, benzene air emissions from the Cos-Mar styrene and ethylbenzene facility in Carville Louisiana report a similar or lower amount of benzene air emissions relative to Louisiana refineries such as Shell – Norco and Phillips 66 – Westlake.
- iii) In 2019, typical benzene levels in Ottawa and Toronto were, on average, less than 0.3 micrograms per cubic metre.
- iv) **The rolling average benzene fenceline values for INEOS-Styrolutions Monitor #3 are 59% higher between November 2021 and November 2022.**

Table 2: Sulphur Dioxide Monitored Values for 2022 (in parts per billion or ppb) for the Monitors on and Nearby to the Aamjiwnaang First Nation

Month in 2022	Aamjiwnaang Area Monitors				Near PBF Energy Refinery – Martinez, California	
	Monitor	Max 1-hr Avg	Max 24-hr Avg	# of Exceedances of WHO Guideline	Max 1-hr Avg	Max 24-hr Avg
January	Ada	127	21.6	1	10	2.5
February		189	68.7	1	14	3.7
March		96	15.0	0	22	3.6
April		50	12.5	0	9	2.6
May		136	70.0	2	5	1.8
June		84	15.1	1	12	4.0
July		101	30.1	3	4	1.5
August		106	35.2	1	5	2.1
September		58	16.6	2	11	3.1
October		83	18.6	1	16.5	3.6
November	Wilson	41	16.1	1	16.5	3.9
December	Wilson	42	23.3	1	5.1	2.3

Notes for Table 2:

- i) In 2019, typical SO₂ levels in Ottawa and Toronto were, on average, less than 0.3 ppb; with maximum 24-hour average SO₂ measurements less than 3 ppb.
- ii) The World Health Organization (WHO) Guideline published in the fall of 2021 refers to 15 ppb SO₂; 24-hour average.
- iii) Benzene air emissions from the Cos-Mar styrene and ethylbenzene facility in Carville Louisiana report a similar or lower amount of benzene air emissions relative to other Louisiana petroleum refineries such as Shell – Norco and Phillips 66 – Westlake. Therefore, comparing the benzene emissions from INEOS-Styrolutions in Sarnia, which produces styrene and ethylbenzene, to the Chevron-Richmond petroleum refinery in the Bay Area is reasonable.
- iv) The Martinez-Jones monitoring station in Martinez, California measures the highest SO₂ levels of eight monitors (operated by the Bay Area Air Quality Management District) within Contra Costa County, California. There currently four petroleum refineries within or immediately adjacent to this county. The Martinex-Jones Monitoring station is about 2.4 kilometres west of the PBF Energy Refinery (157,000 barrels/day refining capacity).
- v) **On average, the above noted SO₂ monitored values (for the Ada (Lockridge) Rogers monitor nearby to the Aamjiwnaang Band Office) are 14% higher than for 2020.**

Monitored values are from:

- **Benzene**: The maximum and average of the 2-week monitored values for the fence-line monitors nearby to the Aamjiwnaang First Nation (i.e., Monitor #3 along the INEOS-Styrolutions fence-line generally provides the highest monitored values for benzene).
- **Sulphur dioxide**: The maximum and average of 1-hour monitored values for the Ada (Lockridge) Rogers monitor nearby to the Aamjiwnaang Band Office; as reported by the Clean Air Sarnia web-site.
- **Fenceline benzene for Chevron – Richmond, California**: see, Atmosphere, July 11 2019. Nancy P Sanchez (Chevron), et. al. “Results of Three Years of Ambient Air Monitoring Near a Petroleum Refinery in Richmond, California” and see [Link1](#) for real-time fenceline benzene monitoring results for this same facility.
- **Sulphur dioxide measurements for the Bay Area Air Quality Management District, Martinez-Jones monitor in Martinez, California (located at 2.4 kilometres from the PBF Energy Refinery – in Martinez, California)**: see [Link2](#).
- **Benzene and sulphur dioxide ambient air monitored values for Ottawa and Toronto**: are from the 2019 Ontario Air Quality Report published by the Ontario Ministry of the Environment, Conservation and Parks (see [Link3](#)).

Path Forward:

Air pollution control requirements in the United States are significantly more effective and stringent than requirements in Canada.

In summary, environmental regulators in Canada have, for decades, failed to protect Aamjiwnaang First Nation air quality.

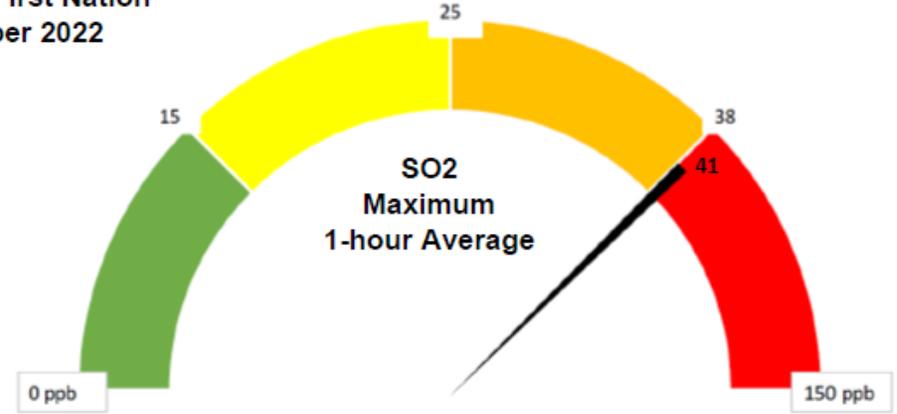
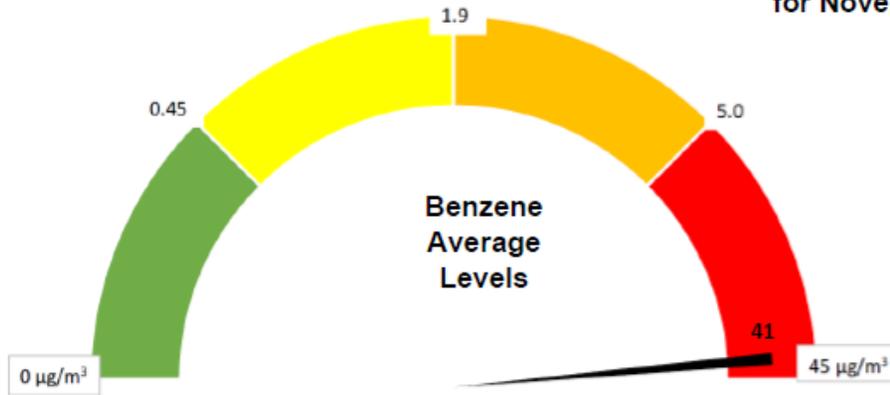
The Aamjiwnaang First Nation have been effective stewards of the environment for millennia. One possible path forward is for the Aamjiwnaang Environment Department to be treated as an equal for all environmental protection activities and for the Canadian government to provide the necessary capacity funding.

Notes on Thresholds:

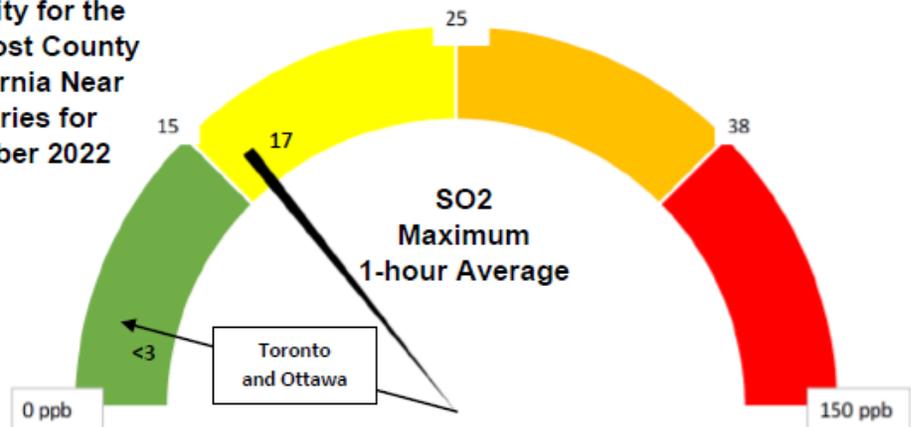
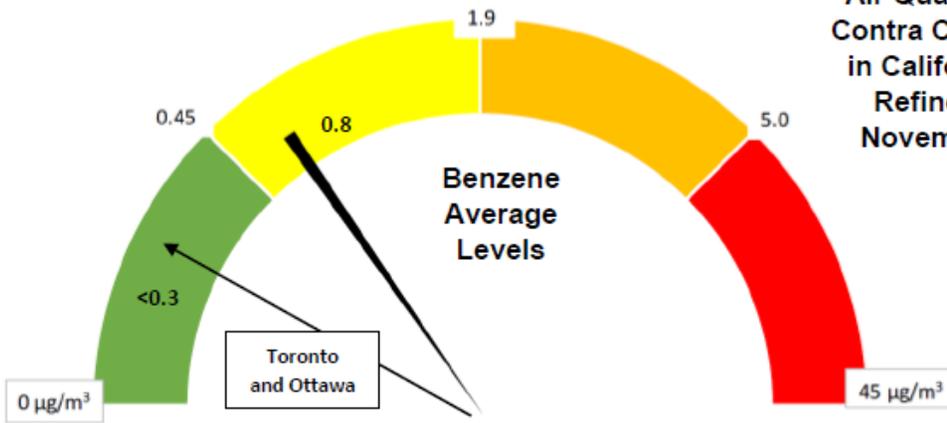
Thresholds:	Benzene	Sulphur Dioxide
	Average below 0.45 µg/m ³	All 1-hr maximums below 15 ppb; and 24-hr average always below 3 ppb
	Average 0.5 - 1.9 µg/m ³	1-hr maximum: 15 – 25 ppb; or Maximum 24-hr average: 3 – 9 ppb
	Average 2.0 - 5.0 µg/m ³	1-hr maximum: 25 – 38 ppb; or Maximum 24-hr average: 10 – 15 ppb
	Average over 5.0 µg/m ³	1-hr maximum over 38 ppb; Maximum 24-hr average: over 15 ppb; or Two, 24-hr max over 10 ppb in a month

**Previous Monthly Air Quality Chart for the Aamjiwnaang First Nation
for October and November 2022**

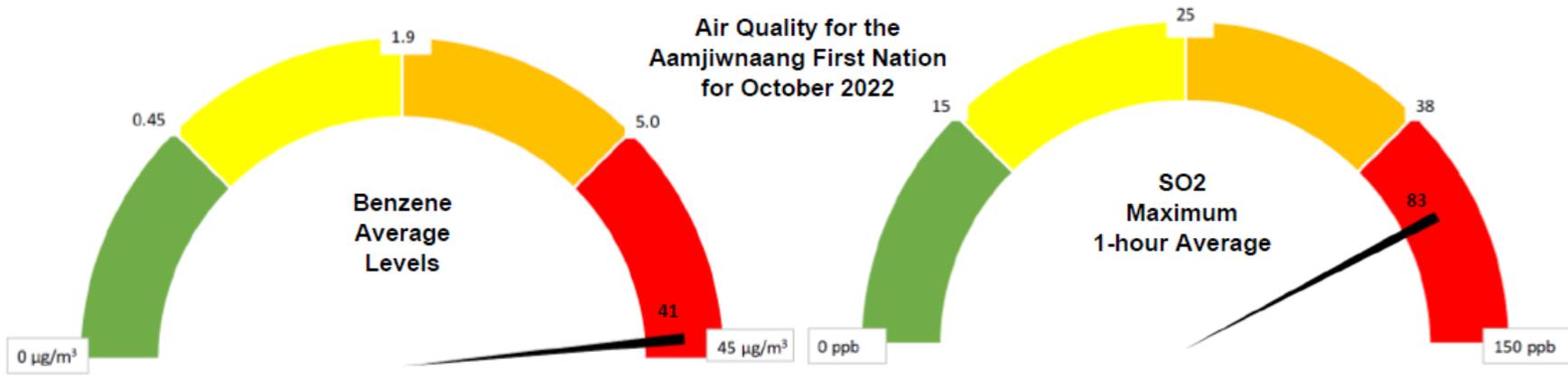
Air Quality for the Aamjiwnaang First Nation for November 2022



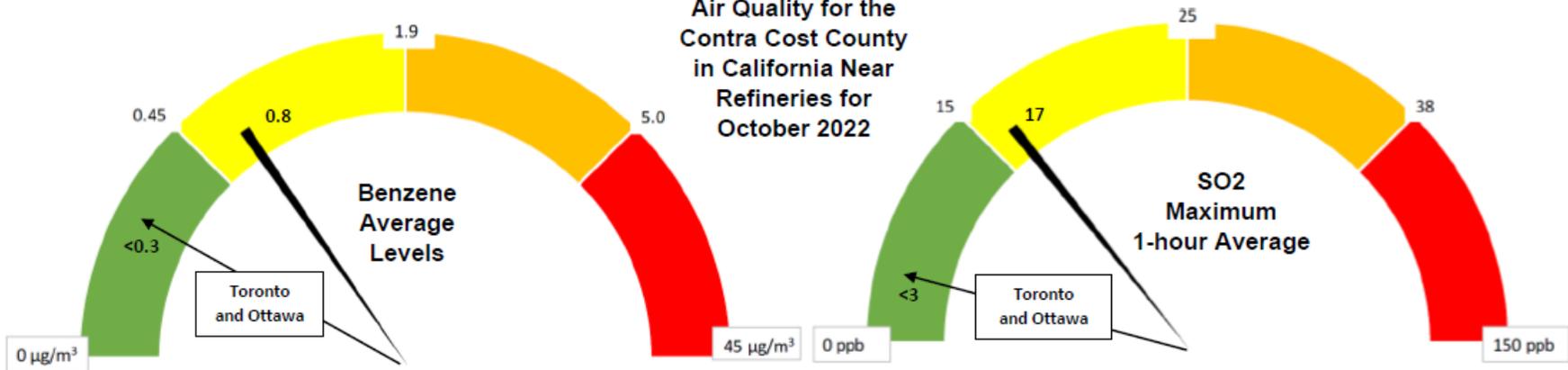
Air Quality for the Contra Cost County in California Near Refineries for November 2022



**Air Quality for the
Aamjiwnaang First Nation
for October 2022**



**Air Quality for the
Contra Cost County
in California Near
Refineries for
October 2022**



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