MECP TECHNICAL SUPPORT

ASI AAQM RELIABILITY

ABSTRACT

Supporting documents regarding the request for information to the MECP Technical Support on the reliability of the ambient air monitoring (AAQM) network in Sault Ste. Marie and the lack of benzene data (VOCs) in GHD Executive Summary reports.

Selva Rasaiah

Submitted to: Ms. Shannon Innis
Air, Pesticides and GIS Supervisor
Ministry of the Environment,
Conservation and Parks (MECP)

Submitted by: Selva Rasaiah

Date submitted: April 19, 2021

From: Dorscht, Ron (MECP)
Sent: May-22-19 1:47 PM
To: Allen, Paula (MECP) <Paula.Allen@ontario.ca>
Cc: Cameron, Brian (MECP) <Brian.Cameron@ontario.ca>; McDonald, Kathy (MECP) <Kathy.McDonald@ontario.ca>; Greco, Lori (MECP) <Lori.Greco@ontario.ca>
Subject: RE: SSM Air Quality Monitoring

Paula,

Just following up on this email I sent early in the year.

Ron

From: Dorscht, Ron (MECP)
Sent: January 21, 2019 3:49 PM
To: Allen, Paula (MECP) <Paula.Allen@ontario.ca>
Cc: Cameron, Brian (MECP) <Brian.Cameron@ontario.ca>; McDonald, Kathy (MECP) <Kathy.McDonald@ontario.ca>; Greco, Lori (MECP) <Lori.Greco@ontario.ca>
Subject: SSM Air Quality Monitoring

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Paula,

I would appreciate if TS could undertake a thorough review of all air quality monitoring in SSM, including Algoma Steel's company monitoring and reported results.

It would be great to get a better understanding of the following:

1. Is Algoma Steel's monitoring and reporting reliable and accurate?
2. Is the current monitoring program sufficient to determine the company's impact on local air quality? i.e. is more monitoring required…parameters, locations, etc
3. How the SSM monitoring compares with other Steel Plant locations, i.e. Hamilton
4. Any other recommendations TS staff may have for improving the monitoring of Air Quality in SSM.

The above assessment would greatly assist the District Office, as we regulate the company, and routinely liaise with the public, municipal partners, and local First Nations, (in addition to EAPD) in regards to Algoma's impact on the local airshed.

Thanks in advance,

Ron Dorscht

Ron Dorscht, B.E.S.
Supervisor
Sault Ste. Marie Area Office
Ministry of the Environment, Conservation and Parks
(705)942-6322

Photo 1: Letter from MECP Dorscht requesting MECP Technical Support to assess SSM AAQM network

4/19/2021 Mail - Selva Rasaiah - Outlook

RE: Algoma Emissions Update

Greco, Lori (MECP) <Lori.Greco@ontario.ca>
Tue 03/09/2019 8:26 AM

To: Selva Rasaiah <selvarasaiah@hotmail.com>
Cc: Dorscht, Ron (MECP) <Ron.Dorscht@ontario.ca>

Hi Selva,
Please see the attached responses to your questions…

I was just wondering if you managed to obtain the benzene and benzo(a)pyrene numbers (I have attached that page of 2017 Emission Summary that Fred Post gave me and he stated they are theoretical worst case scenario and not the actual numbers). – Algoma's site wide ESDM was completed using MECP GUIDELINE A10 which outlines the procedures required for preparing an ESDM report as required under Ontario Regulation 419/05 (attached link). I am not aware of any benzene or benzo(a)pyrene air testing/monitoring being completed at the POI for Algoma.
https://www.ontario.ca/document/guideline-10-procedure-preparing-emission-summary-and-dispersion-modelling-esdm-report

Did you guys get an answer regarding stack colours from Algoma? As previously discussed, there is no definitive answer for the differences in COB stack colour. All efforts are being concentrated on reducing overall stack opacity.

Also, have you given more though regarding Algoma's Method 303 exemption (5 complete charges rather than 5 consecutive charges) – MECP will be revisiting Algoma's alterations to Method 303. – Currently under review

The reasons for the dust fall jars not meeting MECP siting criteria? On January 21, 2019 a request to review air monitoring in SSM was made to our MECP Northern Region Tech Support office to review and determine the level of reliability and accuracy of the current monitoring program for SSM. Due to limited resources and priority ranking, a definitive date for completion has not been set.

Regards,
Lori

Lori Greco
Senior Environmental Officer
Ministry of the Environment, Conservation and Parks
70 Foster Drive, Suite 110
Sault Ste. Marie, ON, P6A 6V4
T: (705)942-6318
F: (705) 942-6327

From: Selva Rasaiah <selvarasaiah@hotmail.com>
Sent: August 12, 2019 8:40 PM
To: Dorscht, Ron (MECP) <Ron.Dorscht@ontario.ca>; Greco, Lori (MECP) <Lori.Greco@ontario.ca>
Subject: Algoma Emissions Update

Hello Ron and Lori,

Photo 2: Letter (Sept 03) from MECP Greco regarding Technical Support evaluating the AAQM network

RE: Wind rose patterns

Fred.Post@algoma.com <Fred.Post@algoma.com>
Wed 19/08/2020 1:13 PM

To: selvarasaiah@hotmail.com <selvarasaiah@hotmail.com>
Cc: Chris.Galizia@algoma.com <Chris.Galizia@algoma.com>; Lori.Greco@ontario.ca <Lori.Greco@ontario.ca>; dtrowbridge7@gmail.com <dtrowbridge7@gmail.com>; pjmclarty@shaw.ca <pjmclarty@shaw.ca>

The meteorological station is located at the Goulais Avenue entrance to the facility.

Fred Post | Manager - Environment Control |
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ALGOMA STEEL INC.

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Disclaimer: This email is subject to a disclaimer. To view, please click here.

From: Selva Rasaiah [mailto:selvarasaiah@hotmail.com]
Sent: Tuesday, August 18, 2020 3:27 PM
To: Post, Fred
Cc: Galizia, Chris; Lori Greco; dtrowbridge7@gmail.com; pjmclarty@shaw.ca
Subject: Re: Wind rose patterns

* This email originated from outside of Algoma. Please exercise caution *

Hi Fred,

Thanks for your reply. I thought that there was two since it said you had two comprehensive monitoring sites and I assumed that they both included a meteorological station. Where is the meteorological station located?

Thanks,

Selva

From: Fred.Post@algoma.com <Fred.Post@algoma.com>
Sent: August 17, 2020 8:13 PM
To: selvarasaiah@hotmail.com <selvarasaiah@hotmail.com>
Cc: Chris.Galizia@algoma.com <Chris.Galizia@algoma.com>; Lori.Greco@ontario.ca <Lori.Greco@ontario.ca>; dtrowbridge7@gmail.com <dtrowbridge7@gmail.com>; pjmclarty@shaw.ca <pjmclarty@shaw.ca>
Subject: RE: Wind rose patterns

Algoma Steel has one meteorological station and there are five years of wind rose from that station provided on the December CLC presentation on our website.

Regards
Fred

Fred Post | Manager - Environment Control |
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E Fred.Post@algoma.com | www.algoma.com |

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Photo 3: E-mail from Fred Post regarding the location of their only meteorological station (MET station)

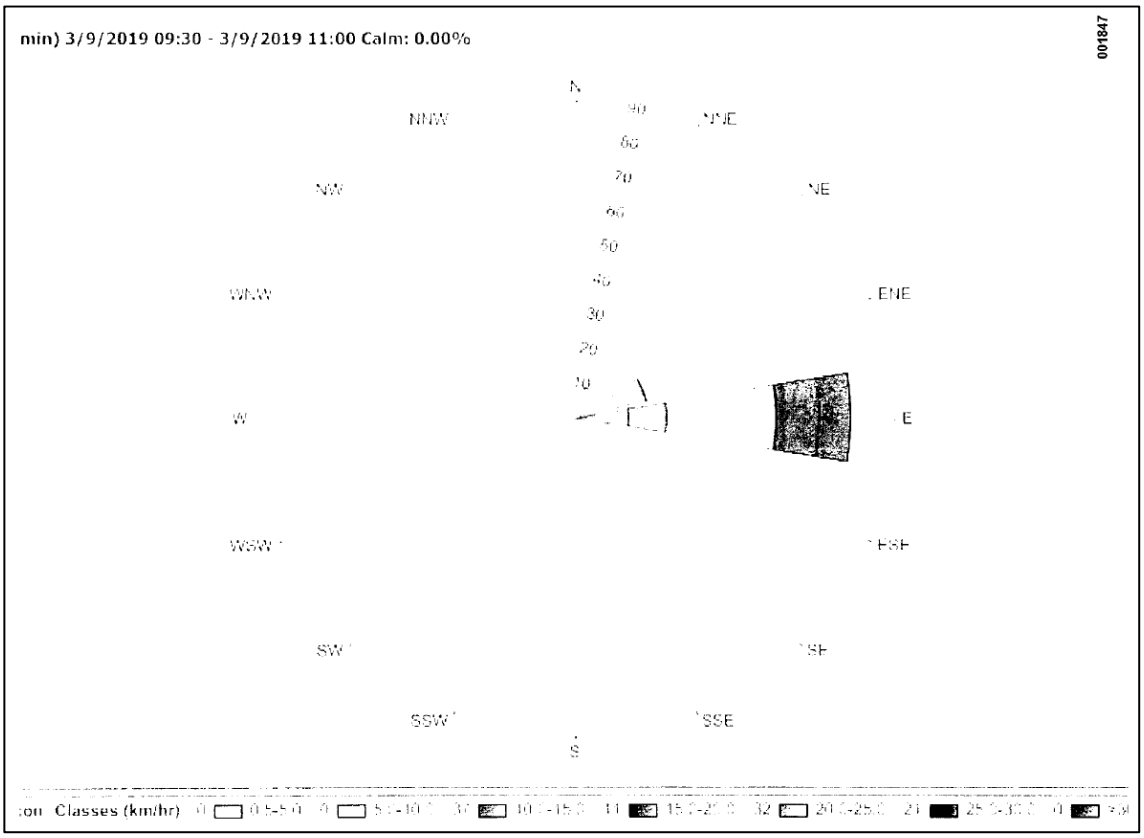

Photo 4: Original windrose diagram for March 09, 2019 (9:30 – 11:00 am) in FOI A-2019-0368 request

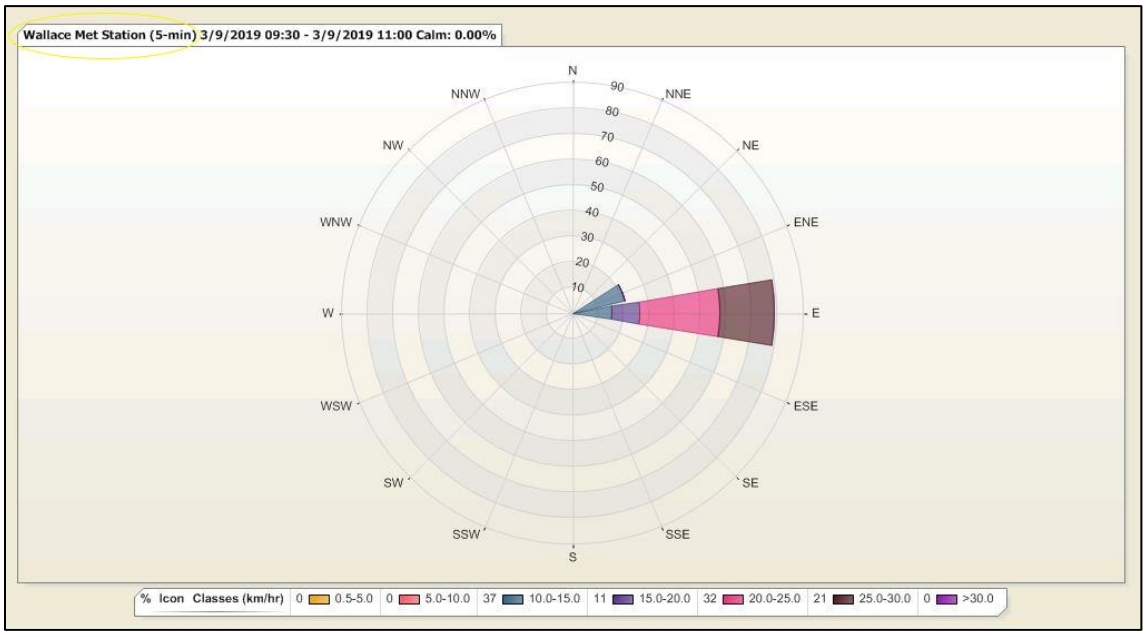

Photo 5: Reissued colour windrose diagram for March 09, 2019 (9:30 – 11:00 am) FOI request

Note: Windrose diagram notes “Wallace Met Station” and ASI’s Met station is located on Goulais Ave

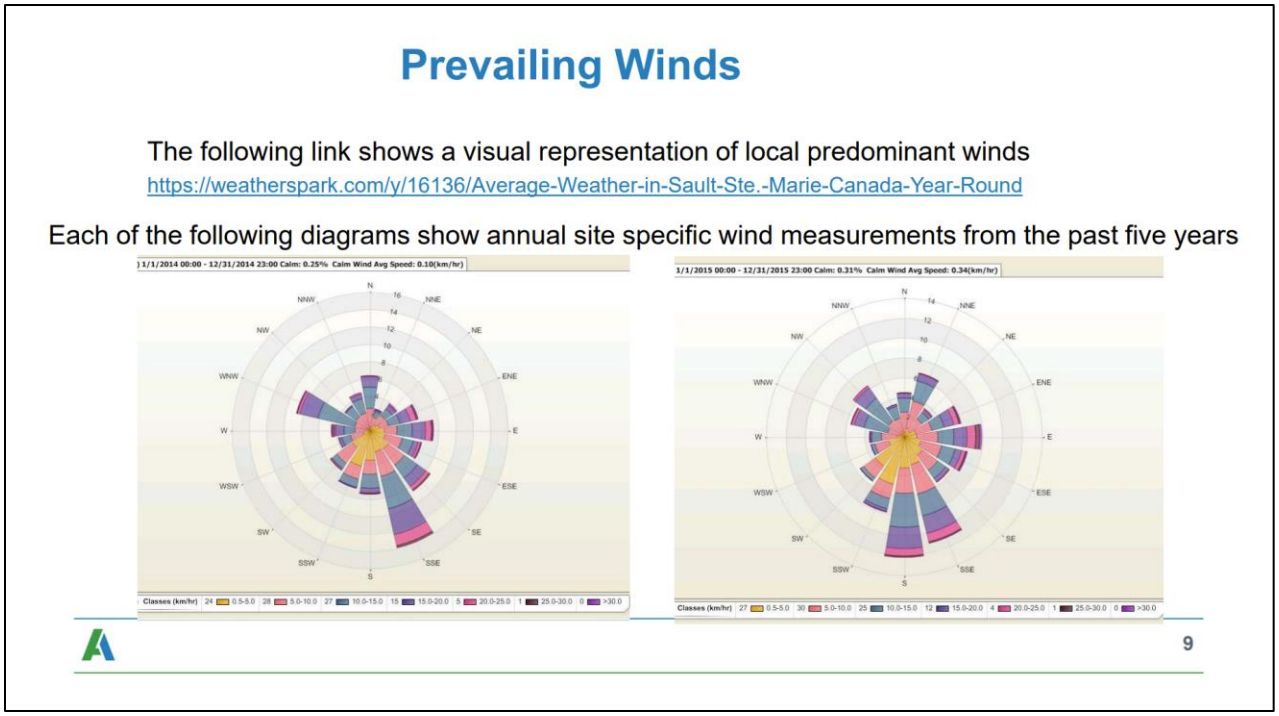

Photo 6: Windrose diagrams for ASI's Met station for 2014 and 2015.

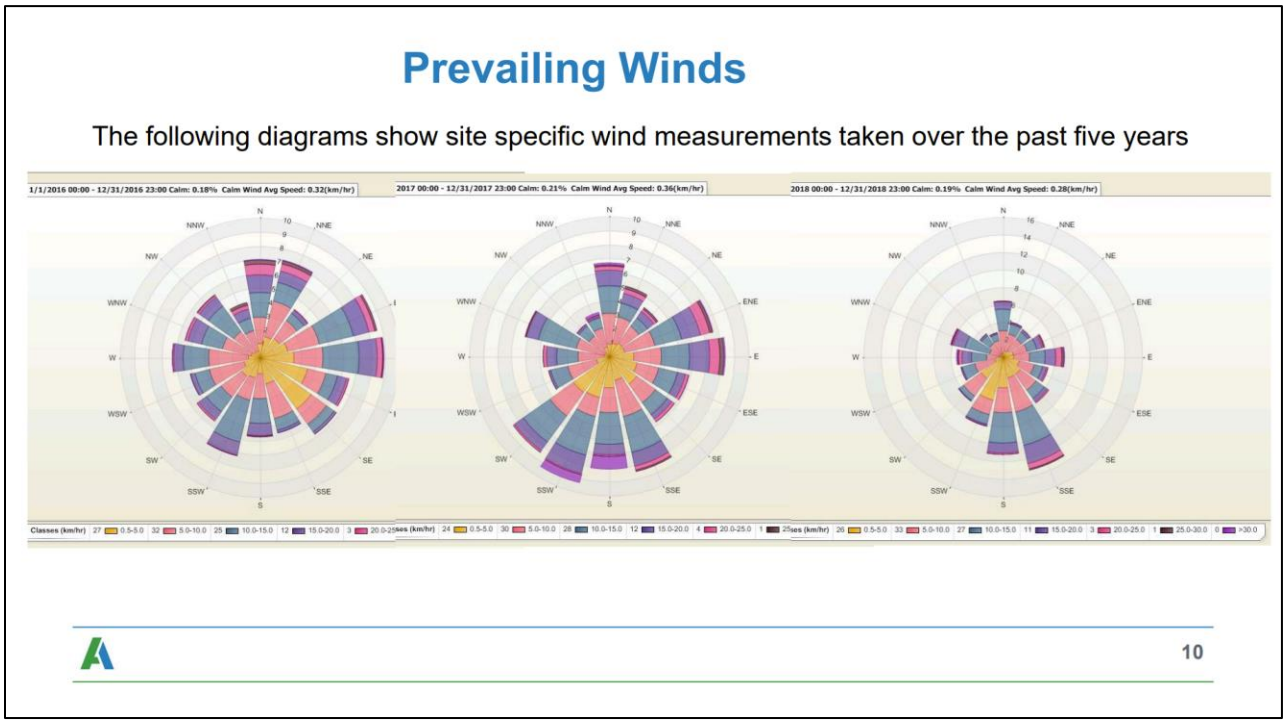

Photo 7: Windrose diagrams for ASI's Met station for 2016, 2017 and 2018.

Source: ACLC Meeting #31 Presentation, December 10, 2019, pg. 9 and 10.

2018 Fourth Quarter Executive Summary Table
October to December 2018
Algoma Ambient Air Quality Monitoring Program
Sault Ste. Marie, Ontario

2018 (Q4)

Parameter	Units	Maximum Value	Minimum Value	Arithmetic Mean	Standard	No. of Samples above Standard	Guideline, URT, AAQC Value
Patrick Street Ambient Air Quality Monitoring Station (71068)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24hr	ppb	1.7	0.0	0.1	5 ppb (24-hr) [8]	0	5 ppb (24 hr)
Total Reduced Sulphur (TRS) - 10mm	ppb	12.1	0.0	0.1	10ppb (10-min) [8]	4	10 ppb (10 min)
Non-Continuous Parameters							
Particulate Matter less than 10 microns (PM_{10})	ug/m^3	31.00	4.00	15.40	N/A	N/A	50 ug/m^3 (24 hr)
Total Suspended Particulate (TSP)[7]	ug/m^3	41.00	12.00	24.00	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT					
Total Suspended Particulate (Ferric oxide)	ug/m^3	1.77	0.02	0.46	25 ug/m^3(24-hr)	0	N/A
Volatile Organic Compounds (VOCs)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)[10]	ng/m^3	2.4000	0.0060	0.4520	N/A	N/A	0.05 ng/m^3(24 hr)
Wallace Terrace Ambient Air Quality Monitoring Station (71090)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24hr	ppb	3.4	0.0	0.6	5 ppb (24 hr) [8]	0	5 ppb (24 hr)
Total Reduced Sulphur (TRS) - 10min	ppb	9.2	0.0	0.6	10 ppb (10 min) [8]	0	10 ppb (10 min)
Non-Continuous Parameters							
Particulate Matter less than 10 microns (PM_{10})	ug/m^3	45	0	7	N/A	0	50 ug/m^3(24 hr)
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT					
Total Suspended Particulate (Ferric oxide)	ug/m^3	2.36	0.01	0.71	25 ug/m^3(24 hr)	0	N/A
Volatile Organic Compounds (VOCs)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)[10]	ng/m^3	2.5000	0.0070	0.4659	N/A	N/A	0.05 ng/m^3(24 hr)

Photo 8: GHD Executive Summary (2018) Q4 showing no benzene data (VOCs) for both AAQM stations.

2019 Second Quarter Executive Summary Table
April to June 2019
Algoma Ambient Air Quality Monitoring Program
Sault Ste. Marie, Ontario

2019 (Q2)

Parameter	Units	Maximum Value	Minimum Value	Arithmetic Mean	Standard	No. of Samples above Standard	Guideline, URT AAQC Value
Patrick Street Ambient Air Quality Monitoring Station (71068)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24hr	ppb	3.1	0.0	0.6	5 ppb (24-hr) [8]	0	5 ppb (24 hr)
Total Reduced Sulphur (TRS) - 10mm	ppb	15.9	0.0	0.6	10ppb (10-min) [8]	23	10 ppb (10 min)
Non-Continuous Parameters							
Particulate Matter less than 10 microns (PM_{10})	ug/m^3	70.00	10.00	31.33	N/A	N/A	50 (24 hr)
Total Suspended Particulate (TSP)[7]	ug/m^3	151.00	24.00	51.57	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Total Suspended Particulate (Manganese)	ug/m^3	0.5610	<MDL	0.1001	0.4	1	0.4
Total Suspended Particulate (Ferric oxide)	ug/m^3	8.28	0.25	1.77	25 (24-hr)	0	N/A
Volatile Organic Compounds (VOCs)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)[10]	ng/m^3	0.7000	0.0050	0.2176	N/A	N/A	0.05 ng/m^3(24 hr)
Wallace Terrace Ambient Air Quality Monitoring Station (71090)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24hr	ppb	5.1	0.0	1.4	5 ppb (24 hr) [8]	1	5 ppb (24 hr)
Total Reduced Sulphur (TRS) - 10min	ppb	20	0.0	1.4	10 ppb (10 min) [8]	18	10 ppb (10 min)
Particulate Matter less than 10 microns (PM_{10})	ug/m^3	55	0	14	N/A	N/A	50 (24 hr)
Non-Continuous Parameters							
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT					
Total Suspended Particulate (Ferric oxide)	ug/m^3	5.65	0.38	1.56	25 ug/m^3(24 hr)	0	N/A
Volatile Organic Compounds (VOCs)	ug/m^3	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
VOCs (Benzene)	ug/m^3	3.000	0.0800	0.6100	2.3 (ug/m^3)	1	N/A
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)[10]	ng/m^3	2.3000	0.0030	0.6034	N/A	N/A	0.05 ng/m^3(24 hr)

Photo 9: GHD Executive Summary (2019) Q2 showing no benzene data for Patrick Station (71068).

2020 First Quarter Executive Summary Table
January to March 2020
Algoma Ambient Air Quality Monitoring Program
Sault Ste. Marie, Ontario

2020 (Q1)

Parameter	Units	Maximum	Minimum	Arithmetic Mean	Standard [1]	Number of Excursions [2]	Guideline, URT AAQC Criteria [1,3,4]
Patrick Street Ambient Air Quality Monitoring Station (71068)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24 hour	ppb	2.5	0.0	0.5	5 ppb (24-hour) [5]	0	5 ppb (24-hour)
Total Reduced Sulphur (TRS) - 10 minute	ppb	16.5	0.0	0.5	10 ppb (10-minute) [5]	8	10 ppb (10-minute)
Non-Continuous Parameters							
Particulate Matter less than 10 microns (PM_{10})	$\mu g/m^3$	55.00	6.00	20.73	N/A	N/A	50 (24-hour)
Total Suspended Particulate (TSP) [6]	$\mu g/m^3$	94.00	8.00	31.93	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Totoal Suspended Pariculate Ferric Oxide [7]	$\mu g/m^3$	3.82	0.08	1.02	25	0	25
Volatile Organic Compounds (VOCs)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT					
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)	ng/m^3	0.0700	<MDL	0.0239	N/A	N/A	0.05 (24-hour)
Wallace Terrace Ambient Air Quality Monitoring Station (71090)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24 hour	ppb	4.3	0.0	1.1	5 ppb (24-hour) [5]	0	5 ppb (24-hour)
Total Reduced Sulphur (TRS) - 10 minute	ppb	19.5	0.0	1.1	10 ppb (10-minute) [5]	34.0	10 ppb (10-minute)
Particulate Matter less than 10 microns (PM_{10})	$\mu g/m^3$	35	0	9	N/A	N/A	50 (24-hour)
Non-Continuous Parameters							
Total Suspended Particulate (TSP) [6]	$\mu g/m^3$	71.00	13.00	31.73	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Total Suspended Particulate Ferric Oxide [7]	$\mu g/m^3$	2.87	0.08	0.90	25	0	25
Volatile Organic Compounds (VOCs)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)	ng/m^3	0.2000	<MDL	0.0464	N/A	N/A	0.05 (24-hour)
Dustfall Ambient Air Quality Monitoring Stations							
Non-Continuous Parameters							
Bonney Street Dustfall Station (71042)	$g/m^2/30day$	3.65	2.14	2.87	7	0	N/A
Adelaide Street Dustfall Station (71045)	$g/m^2/30day$	0.97	0.64	0.76	7	0	N/A
Spadina Avenue Dustfall Station (71015)	$g/m^2/30day$	5.63	1.47	2.95	7	0	N/A
Wilding Avenue Dustfall Station (71043)	$g/m^2/30day$	1.80	1.46	1.58	7	0	N/A

Photo 10: GHD Executive Summary (2020) Q1 showing no benzene data for both of ASI AAQM stations.

2020 Second Quarter Executive Summary Table
April to June 2020
Algoma Ambient Air Quality Monitoring Program
Sault Ste. Marie, Ontario

2020 (Q2)

Parameter	Units	Maximum	Minimum	Arithmetic Mean	Standard [1]	Number of Excursions [2]	Guideline, URT AAQC Criteria [1,3,4]
Patrick Street Ambient Air Quality Monitoring Station (71068)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24 hour	ppb	1.1	0.0	0.1	5 ppb (24-hour) [5]	0	5 ppb (24-hour)
Total Reduced Sulphur (TRS) - 10 minute	ppb	39.1	0.0	0.1	10 ppb (10-minute) [5]	18	10 ppb (10-minute)
Non-Continuous Parameters							
Particulate Matter less than 10 microns (PM_{10})	$\mu g/m^3$	36.00	5.00	20.53	N/A	N/A	50 (24-hour)
Total Suspended Particulate (TSP) [6]	$\mu g/m^3$	93.00	12.00	44.07	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Totoal Suspended Pariculate Ferric Oxide [7]	$\mu g/m^3$	2.80	<MDL	1.09	25	0	25
Volatile Organic Compounds (VOCs)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT					
Chloroform	µg/m3	2.1000	<MDL	0.3771	1	1	1
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)	ng/m^3	0.1000	0.0090	0.0441	N/A	N/A	0.05 (24-hour)
Wallace Terrace Ambient Air Quality Monitoring Station (71090)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24 hour	ppb	1.7	0.0	0.4	5 ppb (24-hour) [5]	0	5 ppb (24-hour)
Total Reduced Sulphur (TRS) - 10 minute	ppb	13.1	0.0	0.4	10 ppb (10-minute) [5]	10	10 ppb (10-minute)
Particulate Matter less than 10 microns (PM_{10})	$\mu g/m^3$	58	0	15	N/A	1	50 (24-hour)
Non-Continuous Parameters							
Total Suspended Particulate (TSP) [6]	$\mu g/m^3$	89.00	16.00	46.64	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Total Suspended Particulate Ferric Oxide [7]	$\mu g/m^3$	3.39	<MDL	1.26	25	0	25
Volatile Organic Compounds (VOCs)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Chloroform	$\mu g/m^3$	2.0000	<MDL	0.4083	1	1	1
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)	ng/m^3	1.1000	0.0070	0.3481	N/A	N/A	0.05 (24-hour)

Photo 11: GHD Executive Summary (2020) Q2 showing no benzene data for both of ASI AAQM stations.

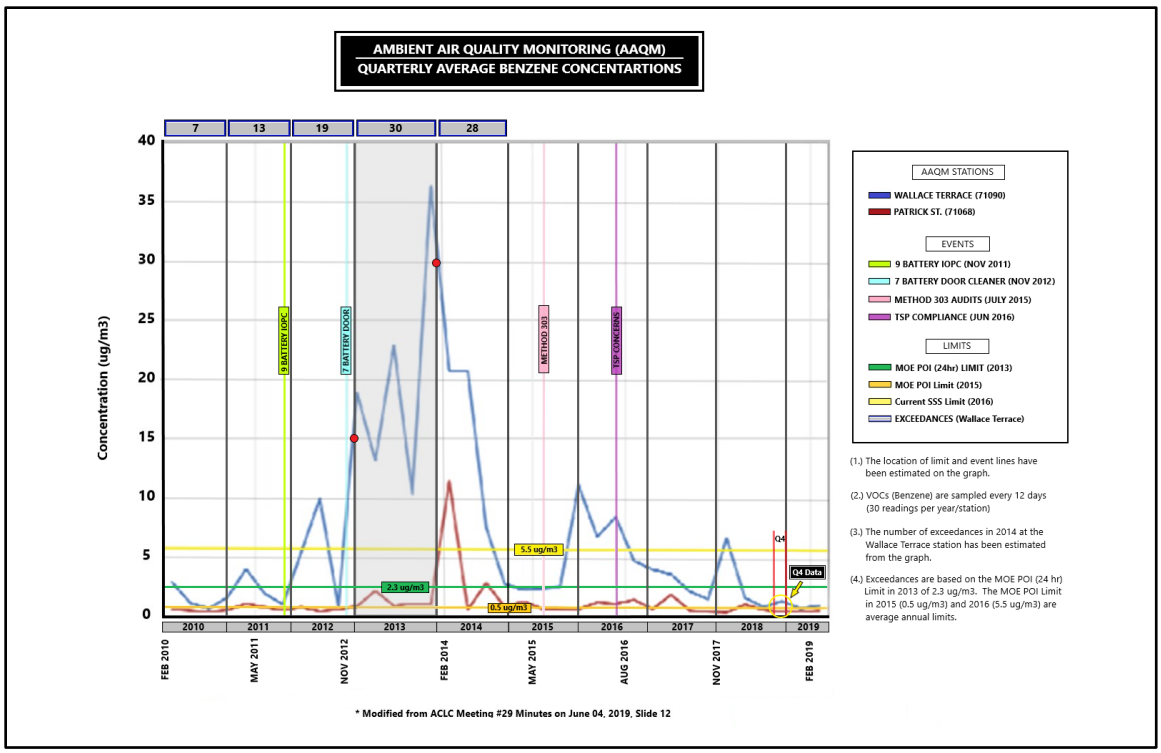

Photo 12: Q4 Data (Oct-Dec) on the graph but no benzene data was listed on the GHD Q4 Executive Summary in 2018

GHD EXECUTIVE SUMMARY
ASI AMBIENT AIR QUALITY MONITORING

PATRICK ST.		PM10			Benzene			Benzo-a-pyrene (BaP)		
QTR	YEAR	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG
Q3	2016	36	2	15.42	5.37	0.45	1.39	0.95	<MDL	0.26
Q4	2018	31	4	15.40	ND	ND	ND	2.400	0.0060	0.4520
Q2	2019	70.00	10.00	31.33	ND	ND	ND	0.700	0.0050	0.2176
Q3	2020	34	<MDL	17.28	2.9700	0.0800	0.7288	0.3000	0.0080	0.1210

WALLACE TERRACE		PM10			Benzene			Benzo-a-pyrene (BaP)		
QTR	YEAR	MAX	MIN	AVG	MAX	MIN	AVG	MAX	MIN	AVG
Q3	2016	47	0.0	14	8.67	0.59	4.69	2.99	<MDL	0.84
Q4	2018	45	0	7	ND	ND	ND	2.5000	0.0070	0.4659
Q2	2019	55	0	14	3.000	0.0800	0.6100	2.3000	0.0030	0.6034
Q3	2020	39	0	12	3.7700	0.2600	1.2213	1.2000	0.0200	0.2000

MECP LIMITS
VOCs (Benzene) - 2.3 ug/m3 (24 hr)
PAH (Benzo-a-pyrene) - 0.05 ng/m3 (24 hr)
Particulate Matter (PM 10) -50 ug/m3 (24 hr)

ASI SITE-SPECIFIC STANDARD
VOCs (Benzene) - 5.5 ug/m3 (Annual)
PAH (Benzo-a-pyrene) - 11 ng/m3 (Annual)

Photo 13: GHD Executive Summaries posted by ASI for the years of 2016-2020. *2017 currently unavailable.

2020 Second Quarter Executive Summary Table
April to June 2020
Algoma Ambient Air Quality Monitoring Program
Sault Ste. Marie, Ontario

2020 (Q2)

Parameter	Units	Maximum	Minimum	Arithmetic Mean	Standard [1]	Number of Excursions [2]	Guideline, URT AAQC Criteria [1,3,4]
Patrick Street Ambient Air Quality Monitoring Station (71068)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24 hour	ppb	1.1	0.0	0.1	5 ppb (24-hour) [5]	0	5 ppb (24-hour)
Total Reduced Sulphur (TRS) - 10 minute	ppb	39.1	0.0	0.1	10 ppb (10-minute) [5]	18	10 ppb (10-minute)
Non-Continuous Parameters							
Particulate Matter less than 10 microns (PM_{10})	$\mu g/m^3$	36.00	5.00	20.53	N/A	N/A	50 (24-hour)
Total Suspended Particulate (TSP) [6]	$\mu g/m^3$	93.00	12.00	44.07	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Totoal Suspended Pariculate Ferric Oxide [7]	$\mu g/m^3$	2.80	<MDL	1.09	25	0	25
Volatile Organic Compounds (VOCs)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT					
Chloroform	µg/m3	2.1000	<MDL	0.3771	1	1	1
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)	ng/m^3	0.1000	0.0090	0.0441	N/A	N/A	0.05 (24-hour)
Wallace Terrace Ambient Air Quality Monitoring Station (71090)							
Continuous Parameters							
Total Reduced Sulphur (TRS) - 24 hour	ppb	1.7	0.0	0.4	5 ppb (24-hour) [5]	0	5 ppb (24-hour)
Total Reduced Sulphur (TRS) - 10 minute	ppb	13.1	0.0	0.4	10 ppb (10-minute) [5]	10	10 ppb (10-minute)
Particulate Matter less than 10 microns (PM_{10})	$\mu g/m^3$	58	0	15	N/A	1	50 (24-hour)
Non-Continuous Parameters							
Total Suspended Particulate (TSP) [6]	$\mu g/m^3$	89.00	16.00	46.64	N/A	N/A	N/A
Total Suspended Particulate Metals (TSP Metals except Ferric Oxide)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Total Suspended Particulate Ferric Oxide [7]	$\mu g/m^3$	3.39	<MDL	1.26	25	0	25
Volatile Organic Compounds (VOCs)	$\mu g/m^3$	VARIOUS PARAMETERS, NO EXCURSIONS TO REPORT UNLESS LISTED BELOW					
Chloroform	$\mu g/m^3$	2.0000	<MDL	0.4083	1	1	1
Poly-cyclic Aromatic Hydrocarbons (Benzo(a)pyrene)	ng/m^3	1.1000	0.0070	0.3481	N/A	N/A	0.05 (24-hour)

Photo 14: 2020 Q2 GHD report showing Chloroform as VOCs and no benzene.

GHD 2020 QUARTERLY RESULTS

BENZENE (VOCs)			
PATRICK ST. (71068)			
	MAX	**MIN**	**AVG.**
Q1	ND	ND	ND
Q2	ND	ND	ND
Q3	2.9700	0.0800	0.7288
Q4	ND	ND	ND
WALLACE TERRACE (71090)			
	MAX	**MIN**	**AVG.**
Q1	ND	ND	ND
Q2	ND	ND	ND
Q3	3.7700	0.2600	1.2213
Q4	ND	ND	ND

BENZO-A-PYRENE (BaP) (PAH)			
PATRICK ST. (71068)			
	MAX	**MIN**	**AVG.**
Q1	0.0700	<MDL	0.0239
Q2	0.0100	0.0090	0.0441
Q3	0.3000	0.0080	0.1210
Q4	9.3000	0.0009	1.4218
WALLACE TERRACE (71090)			
	MAX	**MIN**	**AVG.**
Q1	0.2000	<MDL	0.0464
Q2	1.1000	0.0070	0.3481
Q3	1.2000	0.0200	0.2000
Q4	5.5000	0.0010	0.7228

<MDL : Less than measureable detection limit
ND: No data available

Photo 15: Summary of 2020 Quarterly GHD summaries for ASI's ambient air monitoring.

Note: Q2 noted the presence of chloroform ($CHCl_3$) for VOCs but data was omitted in the table since it is not a chemical species that contains benzene.

Photo 16: Raw coking gas being released from 8 Battery standpipe.

Photo 17: Flaring and release of raw coking gas from 8 Battery standpipes and pushing operations releasing raw coke gas (far right)

ALGOMA STEEL INC.

Environmental incidents resulting from operations

March 24	Cokemaking	Stack opacity emissions on #7 Battery
March 24	Cokemaking	Stack opacity emissions on #8 Battery
March 24	Cokemaking	Stack opacity emissions on #9 Battery
March 23	Cokemaking	Stack opacity emissions on #7 Battery
March 23	Cokemaking	Stack opacity emissions on #8 Battery
March 23	Cokemaking	Stack opacity emissions on #9 Battery
March 22	Cokemaking	Stack opacity emissions on #7 Battery
March 22	Cokemaking	Stack opacity emissions on #8 Battery
March 22	Cokemaking	Stack opacity emissions on #9 Battery
March 21	Cokemaking	Stack opacity emissions on #7 Battery
March 21	Cokemaking	Stack opacity emissions on #8 Battery

Photo 18: No environmental incidences were reported on ASI's Process Upset table on March 23,2021

POTENTIAL CONTAMINANTS RELEASED FROM RAW COKE OVEN GAS

EMISSION TYPE	IMPACTS
Carbon Dioxide (CO_2)	GHG
Carbon Monoxide (CO)	Health/GHG
Methane (CH_4)	GHG
Nitrogen Oxide (as NO_2)	Health/GHG
Hydrogen (H_2)	Health/Safety
Particulate Matter (PM 10)	Health
Particulate Matter (PM 2.5)	Health
Sulphur Dioxide (SO_2)	Health/GHG
Volatile Organic Compounds (VOCs) (Benzene)	Health
Polyaromatic Hydrocarbons (PAHs) (Benzo-a-pyrene, BaP)	Health
*VOCs include many compounds including benzene	

Photo 19: Potential contaminants that could be released and their impacts from raw coking gas

Pushing emissions on 8 Battery (left) and emissions from the 8/9 pollution control system stack (right).

Note: No environmental incidences were reported on ASI's Process Upset table for March 20, 2012