



Wabi Iron & Steel Corp  
330 Broadwood Avenue  
New Liskeard, ON P0J 1P0

Submitted to:

Environmental Assessment & Permissions Branch  
Ministry of the Environment, Conservation & Parks  
135 St. Clair Ave. West, 1<sup>st</sup> Floor  
Toronto, ON M4V 1P5

## Executive Summary

**Wabi Iron & Steel Corp.** operates a foundry that casts parts made of Ni-hard, chrome, iron, grey iron, steel, alloy steel, and stainless steel providing various wear and heat resistant properties for a wide range of industrial clients and applications. The facility is located at 330 Broadwood Avenue, New Liskeard, Ontario.

This Emission Summary and Dispersion Modelling (ESDM) report documents the expected emissions from the facility. The purpose of this ESDM report is to support the Environmental Compliance Approval application for the facility. The report has been prepared in accordance with O.Reg.419/05 and the “Procedure for Preparing an Emission Summary and Dispersion Modelling Report”, published by the MECP in March 2017. All potential sources and contaminants have been identified and assessed for significance; those deemed insignificant have been rationalized and tabulated.

Processes include foundry activities, sand blasting, melting and pouring of metals, core making, heat treating and quenching, painting etc. Airborne emissions from the facility include volatile organic compounds, metal fumes, particulate matter and by-products of natural gas combustion.

The facility is covered by NAICS code 331511 (Iron Foundries), which appears in Schedules 5 of O.Reg.419/05. The US EPA AERMOD dispersion model was used to predict the maximum point of impingement (POI) contaminant concentrations. Compliance was assessed by comparing the maximum POI concentrations to: the standards of Schedule 3 of O.Reg.419/05; the guidelines of Summary of Standards and Guidelines, April 2012; values in the Jurisdictional Screening Level (JSL) List, February 2008 (MECP publication PIBS#:6547e, Version 1), and previously MECP-approved Maximum Ground Level Concentrations (MGLC) for those contaminants that do not have MECP limits.

The results are summarized in [Table A: Emissions Summary Table](#), provided on the following pages. Table A indicates that, for contaminants with MECP limits, the facility emissions result in maximum POI concentrations that are in compliance with MECP Schedule 3 standards/guidelines, the 24-hour JSL values, or the previously MECP-approved MGLC.

# EMISSION SUMMARY AND DISPERSION MODELLING REPORT

## Table A: Emissions Summary Table

Contaminant	CAS #	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration ( $\mu\text{g}/\text{m}^3$ )	Averaging Period (h)	MECP POI Limit ( $\mu\text{g}/\text{m}^3$ )	Limiting Effect	Reg. Sch. No.	% of MECP POI Limit
Ethyl Benzene	100-41-4	2.51E-02	AERMOD	1.71E+01	24	1000	Health	3	2%
			AERMOD	0.00E+00	10 min	1900	Odour	G	<0.01%
Styrene	100-42-5	4.30E-05	AERMOD	1.22E-03	24	400	Health	3	<0.01%
cis-1,3-Dichloropropene	10061-01-5	4.30E-05	AERMOD	1.22E-03	24	2.25	Health	SL-JSL	0%
trans-1,3-Dichloropropene	10061-02-6	2.20E-05	AERMOD	6.22E-04	24	2.25	Health	SL-JSL	0%
Nitrogen Oxides	10102-44-0	5.79E-01	AERMOD	1.94E+02	24	200	Health	3	97%
			AERMOD	1.73E-03	1	400	Health	3	<0.01%
4,4'-MDI	101-68-8	4.59E-06	AERMOD	1.15E-03	24	0.7	Health	3	0%
1,4-Dichlorobenzene	106-46-7	8.60E-05	AERMOD	2.43E-03	24	95	Health	3	<0.01%
Ethylene Dibromide	106-93-4	4.30E-05	AERMOD	1.22E-03	24	3	Health	G	0%
1,2-Dichloroethane (Ethylene dichloride)	107-06-2	2.20E-05	AERMOD	6.22E-04	24	2	Health	3	0%
Vinyl Acetate	108-05-4	6.90E-05	AERMOD	1.95E-03	24	1000	Health	SL-JSL	<0.01%
Methyl Isobutyl Ketone	108-10-1	5.00E-02	AERMOD	3.42E+01	24	1200	Odour	G	3%
Toluene	108-88-3	3.00E-01	AERMOD	2.05E+02	24	2000	Odour	G	10%
Chlorobenzene (Monochlorobenzene)	108-90-7	4.50E-05	AERMOD	0.00E+00	1	3500	Health	G	<0.01%
			AERMOD	0.00E+00	10 min	4500	Odour	G	<0.01%
Phenol	108-95-2	1.82E-02	AERMOD	5.28E+00	24	30	Health	3	18%
Tetralin	119-64-2	1.00E-04	AERMOD	2.83E-03	24	151.5	Health	SL-JSL	<0.01%
Mica	12001-26-2	7.04E-07	AERMOD	3.63E-04	24	15	Health	SL-JSL	<0.01%
Silicon oxide	12401-86-4	1.52E-08	AERMOD	7.82E-06	24	0.5	Health	SL-JSL	<0.01%
Dibromochloromethane	124-48-1	4.30E-05	AERMOD	1.22E-03	24	0.2	Health	SL-JSL	1%
Tetrachloroethylene (Perchloroethylene)	127-18-4	8.60E-05	AERMOD	2.43E-03	24	360	Health	3	<0.01%
Calcium Oxide	1305-78-8	9.36E-08	AERMOD	2.49E-05	24	10	Corrosion	3	<0.01%
Ferric Oxide	1309-37-1	4.76E-03	AERMOD	1.69E+00	24	25	Soiling	3	7%
Magnesite	1309-48-4	1.02E-01	AERMOD	#VALUE!	24	120	Particulate	3	-
Silicic Acid, potassium salt	1312-76-1	7.04E-07	AERMOD	3.63E-04	24	5	Health	SL-MD	<0.01%
Zirconium oxide	1314-23-4	7.58E-08	AERMOD	3.91E-05	24	10	Health	SL-PA	<0.01%
Xylenes	1330-20-7	6.00E-01	AERMOD	4.10E+02	24	730	Health	G	56%
			AERMOD	2.35E+03*	10 min	3000	Odour	G	78%
Silicic Acid, sodium salt	1344-09-8	7.04E-07	AERMOD	3.63E-04	24	15	Health & Particulate	SL-JSL	<0.01%
Titanium Dioxide	13463-67-7	1.39E-06	AERMOD	3.66E-03	24	34	Health	G	0%
Talc	14807-96-6	5.99E-04	AERMOD	4.10E-01	24	2	Health	G	21%
Silica	14808-60-7	1.87E-02	AERMOD	4.22E+00	24	5	Health	G	84%
cis-1,2-Dichloroethylene	156-59-2	4.30E-05	AERMOD	1.22E-03	24	105	Health	G	<0.01%
trans-1,2-Dichloroethylene	156-60-5	4.30E-05	AERMOD	1.22E-03	24	105	Health	G	<0.01%
Calcium Carbonate	471-34-1	3.20E-06	AERMOD	1.65E-03	24	15	Health & Particulate	SL-JSL	0%
Methyl chloride	74-87-3	3.80E-04	AERMOD	1.07E-02	24	320	Health	3	<0.01%
Formaldehyde	50-00-0	9.04E-04	AERMOD	9.47E-02	24	65	Health	3	0%
Benzo(a)pyrene	50-32-8	9.97E-07	AERMOD	9.41E-06***	annual	0.00001	Health	3	94%
Barium Carbonate	513-77-9	7.04E-07	AERMOD	3.63E-04	24	2.5	Health	SL-JSL	0%
1,3-Dichlorobenzene	541-73-1	8.60E-05	AERMOD	2.43E-03	24	50	Health	SL-JSL	<0.01%
Carbon Tetrachloride	56-23-5	6.50E-05	AERMOD	1.84E-03	24		Health	3	Table C2
1,1,1,2-Tetrachloroethane	630-20-6	4.30E-05	AERMOD	1.22E-03	24	0.5	Health	SL-JSL	0%
Light Aromatic Petroleum Distillate	64742-94-5	5.82E-02	AERMOD	1.69E+01	24	500	Health	SL-JSL	3%
Light Aromatic Petroleum Distillate	64742-95-6	1.58E-01	AERMOD	4.59E+01	24	500	Health	SL-JSL	9%
Isopropanol	67-63-0	1.11E-01	AERMOD	1.27E+01	24	7300	Health	3	0%
Acetone	67-64-1	7.92E-02	AERMOD	4.98E+01	24	11880	Health	3	0%
Chloroform	67-66-3	4.30E-05	AERMOD	1.22E-03	24	1	Health	3	0%
Diesel Fuel No. 2	68476-34-6	7.54E-03	AERMOD	2.60E+00	24	50	Health	SL-JSL	5%
Benzene	71-43-2	1.36E-05	AERMOD	0.00E+00	annual	0.45	Health	3	<0.01%
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	6.50E-05	AERMOD	1.84E-03	24	115000	Health	3	<0.01%
Aluminum Powder	7429-90-5	1.67E-04	AERMOD	4.86E-01	24	12	Health	SL-JSL	4%
Iron	7439-89-6	8.49E-06	AERMOD	4.38E-03	24	4	Health	3	0%
Lead	7439-92-1	1.54E-04	AERMOD	3.89E-02	24	0.5	Health	3	8%
			AERMOD	1.87E-02	30-day	0.2	Health	3	9%
Magnesium	7439-95-4	8.48E-06	AERMOD	2.48E-02	24	72	Health	SL-MD	0%
Manganese	7439-96-5	3.85E-04	AERMOD	1.19E-01	24	0.4	Health	3	30%
Mercury	7439-97-6	2.62E-06	AERMOD	7.67E-04	24	2	Health	3	0%
Molybdenum	7439-98-7	1.95E-06	AERMOD	5.41E-03	24	120	Particulate	G	<0.01%
Nickel	7440-02-0	6.27E-04	AERMOD	1.95E-02***	annual	0.04	Health	3	49%

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Silicon	7440-21-3	2.46E-05	AERMOD	7.14E-02	24	27	Health	SL-PA	0%
Chromium	7440-47-3(a)	7.21E-05	AERMOD	3.95E-02	24	0.5	Health	3	8%
Chromium VI	7440-47-3(b)	2.90E-07	AERMOD	4.73E-05***	annual	0.00014	Health	3	34%
Cobalt	7440-48-4	2.46E-08	AERMOD	6.88E-05	24	0.1	Health	G	0%
Copper	7440-50-8	1.30E-04	AERMOD	6.43E-02	24	50	Health	3	0%
Zirconium	7440-67-7	1.52E-08	AERMOD	7.82E-06	24	25	Health	SL-JSL	<0.01%
Bromomethane (Methyl bromide)	74-83-9	6.60E-05	AERMOD	1.87E-03	24	1350	Health	G	<0.01%
Iodomethane (Methyl iodide)	74-88-4	6.50E-05	AERMOD	1.84E-03	24	60	Health	SL-JSL	<0.01%
Dibromomethane (Methylene bromide)	74-95-3	4.30E-05	AERMOD	1.22E-03	24	66	Health	SL-JSL	<0.01%
Chloroethane	75-00-3	4.30E-05	AERMOD	1.22E-03	24	5600	Health	3	<0.01%
Vinyl Chloride	75-01-4	6.50E-05	AERMOD	1.84E-03	24	1	Health	3	0%
Acetaldehyde	75-07-0	3.80E-04	AERMOD	1.07E-02	24	500	Health	3	<0.01%
			AERMOD	0.00E+00	0.5	500	Health	3	<0.01%
Methylene Chloride (Dichloromethane)	75-09-2	8.70E-05	AERMOD	2.46E-03	24	220	Health	3	<0.01%
Carbon Disulfide (Carbon disulphide)	75-15-0	1.10E-04	AERMOD	3.11E-03	24	330	Odour	G	<0.01%
Bromoform	75-25-2	6.50E-05	AERMOD	1.84E-03	24	55	Health	G	<0.01%
Bromodichloromethane	75-27-4	4.30E-05	AERMOD	1.22E-03	24	350	Health	SL-JSL	<0.01%
1,1-Dichloroethane	75-34-3	4.30E-05	AERMOD	1.22E-03	24	165	Health	3	<0.01%
1,1-Dichloroethylene (Vinylidene chloride, 1,1-	75-35-4	4.30E-05	AERMOD	1.22E-03	24	10	Health	3	0%
Trichlorofluoromethane (FREON 11)	75-69-4	4.40E-05	AERMOD	1.24E-03	24	6000	Health	G	<0.01%
Dichlorodifluoromethane (FREON 12)	75-71-8	8.80E-05	AERMOD	2.49E-03	24	500000	Health	G	<0.01%
Silica	7631-86-9	9.72E-05	AERMOD	6.66E-02	24	5	Health	SL-MD	1%
Natural Graphite	7782-42-5	1.22E-06	AERMOD	6.27E-04	24	10	Health	SL-JSL	<0.01%
1,2-Dichloropropane (Propylene dichloride)	78-87-5	3.00E-06	AERMOD	8.48E-05	24	2400	Odour	G	<0.01%
Methyl ethyl ketone	78-93-3	2.43E-02	AERMOD	1.65E+01	24	1000	Health	3	2%
1,1,2-Trichloroethane	79-00-5	6.50E-05	AERMOD	1.84E-03	24	0.3	Health	SL-JSL	1%
Trichloroethylene (TCE)	79-01-6	4.30E-05	AERMOD	1.22E-03	24	12	Health	3	0%
1,1,2,2-Tetrachloroethane	79-34-5	6.50E-05	AERMOD	1.84E-03	24	0.1	Health	SL-JSL	2%
1-Methylnaphthalene	90-12-0	3.10E-04	AERMOD	8.76E-03	24	35.5	-	JSL	0%
Naphthalene	91-20-3	3.51E-02	AERMOD	0.00E+00	10 min	50	Odour	G	<0.01%
			AERMOD	1.02E+00	24	22.5	Health	G	5%
Quinoline	91-22-5	5.60E-05	AERMOD	1.58E-03	24	0.005	Health	SL-JSL	32%
2-Chloronaphthalene	91-58-7	3.90E-05	AERMOD	1.10E-03	24	1	Health	SL-JSL	0%
1,2-Dichlorobenzene	95-50-1	8.60E-05	AERMOD	2.43E-03	1	305000	Health	Guideline	<0.01%
1,2,3-Trichloropropane	96-18-4	6.50E-05	AERMOD	1.84E-03	24	0.3	Health	SL-JSL	1%
Dioxins and Furans	n/a-2	4.70E-11	AERMOD	1.33E-06	24	0.1 pg TEQ/m3	Health	3	<0.01%
Particulate Matter	n/a	2.87E-01	AERMOD	5.75E+01**	24	120	Visibility	3	48%
Mineral Spirits(1)	n/a-1	1.80E-01	AERMOD	1.03E+02	24	2600	Odour	3	4%

Note: this assessment was completed using AERMOD v. 19191

\* After removal of highest 8 hours per meteorological year.

\*\* After removal of highest 24 hours per meteorological year.

\*\*\*5-year annual average result was increased by a factor of 140% to account for potential variability between the overall 5-year annual average versus the maximum annual result per individual year.

(1) Mineral Spirits includes CAS #s , 8052-41-3 and 64742-89-8.

Reg. Sch. or Regulation Schedule: Benchmark1: 3 Standard - Schedule 3 of Reg. 419

Benchmark1:G Guideline - Summary of Standards and Guidelines to support O.Reg.419: Air Pollution - Local Air Quality, April 2012

SL-\*\* Screening Level-JSL, MD, PA, ACB List April 2018 (JSL)

For further information, contact:

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