

Toxic Substance Accounting Report 2018

Public Report

May 2019

prepared for
Douglas Barwick Inc.

prepared by
Malroz Engineering Inc.

Toxic Substance Accounting Report
Notice to Reader

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Respectfully Submitted,

Malroz Engineering Inc.

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1 Background

Marshall-Barwick Inc. owns and operates the Douglas Barwick Inc. Brockville Plant located at 150 California Avenue in Brockville, Ontario where steel pipes and tubes are created from purchased steel. Due to the evolving marketplace, the manufacturing has become more specialized. The site is in a commercial/manufacturing area of the city, and consists of a manufacturing building (approximately 3000 m²) with an outdoor inventory yard, as seen in Figures 1 and 2 of Tab A. General facility information is summarized in Tab B.

This annual toxics substance accounting report has been prepared to meet the regulatory obligations specified in Section 10 of the Toxic Reduction Act (TRA), 2009 and has been prepared in accordance with the requirements of O. Reg. 455/09 s. 27(1), as amended by O. Reg. 214/11.

2 Plant Operations

Toxins are not created, transformed, or destroyed in any of the processes onsite. The metals remain an integral part of the steel matrix structure.

Manufactured stainless steel sheet is brought into the facility where it is cut and pressed into pipe or tube shapes (Figure 3). Small bits of metal finer grounds are recycled as scrap. The shapes are welded, and the pieces are trimmed. Welds are sometimes ground, and sometimes blasted with shot. Some pieces are annealed. Finally, the pipes and tubes are dipped in a passivating acid bath.

After this step, the finished products are moved to the outdoor inventory area before shipment off site.

3 Reporting Criteria

The Brockville Plant is required to create a Toxic Substance Reduction Plan, and submit it to the Ministry of Environment and Climate Change (MOECC) under the TRA. The manufacturing facility employs more than zero fulltime equivalent people, and used or created toxic substances in 2018 as prescribed by O. Reg. 455/09, as amended by O. Reg. 214/11.

3.1 Class of Facility

Using the North American Industry Classification System (NAICS), the Brockville Plant is classified as primary metal manufacturing (33), making steel products from purchased steel (3312), creating iron and steel pipes and tubes (331210).

3.2 Number of Persons

The Brockville Plant employed 55 full-time equivalent employees, greater than zero employees as specified in O. Reg. 455/09 s. 5.

3.3 Toxic Substances Used or Created

In 2018, the Brockville Plant had chromium, manganese, and nickel as specified in O. Reg. 455/09 s. 6, as part of the steels brought into the plant for forming into tubes and pipes. These substances are listed in the National Pollutant Release Inventory (NPRI), and reporting is triggered when their mass fraction in a substance is greater than 1%. Composition of the 2018 mix of steels is found in Appendix A. Details of this inventory is described in Section 4 and Tab C.

The Brockville plant does not use acetone, dioxins, furans or hexachlorobenzene. The facility is not required to report any NPRI Part 4 substances (Criteria Air Contaminants).

4 Substance Reporting

To comply with O. Reg. 445/06 s. 26(1), the Brockville Plant must make determinations for each toxic substance reportable under the TRA, including the amount of the substance entering a process (either as the substance itself or as a constituent of another substance), the amount of the substance that is created, and quantifications relating to its release, disposal, and transfer. The release, disposal, or transfer can be determined through mass balance, published emission factors, site-specific emission factors, or engineering estimates. The 2018 mass balances for chromium, manganese, and nickel are summarized in Table 1.

Table 1. 2018 Mass Balance Summary in Tonnes. A positive balance indicates more material is entering the plant than leaving it. Most of the chemicals of concern are contained in the product.

Releases	Chromium (CAS NA-04)	Manganese (CAS NA-09)	Nickel (CAS NA-11)
Use (t)	100-1000	10-100	100-1000
Created (t)	--	--	--
Contained in Product (t)	100-1000	10-100	100-1000
Air Releases (t)	0.01 – 0.001	0.1 – 0.01	0.01 – 0.001
On-site			
Water Releases (t)	--	--	--
On-site Land Releases (t)	--	--	--
Transferred for Solid Disposal (t)	--	--	--
Transferred for Liquid Disposal (t)	< 1	< 1	< 1
Transferred for Recycling (t)	10-100	1-10	10-100
Balance (t)	1 - 10	< 1	1 - 10

4.1 Chromium

Chromium is a Part 1A substance on the NPRI, and is triggered when the mass fraction of chromium in a substance is greater than 1%. The mix of steels at the Brockville plant has an average content of 18% chromium as an integral part of the metal matrix. The NPRI has a reporting threshold of 10 tonnes, which was exceeded by the mass of steel used at the plant in 2018. The TRA requires reporting of any concentrations over 0 grams.

The mass of chromium used was found by performing a mass balance on the raw steel inventory, including steel delivered to the site in 2018. No chemicals or products are created or destroyed in the Brockville Plant; the shape of the metal is changed. Thus, no chromium was created at the site. A mass balance was performed on the finished products, including the products in inventory to determine the mass of chromium contained in the finished products. Chromium air releases were estimated as in the ESDM for this site. The air emissions are an insignificant chromium sink. No other releases of chromium occurred onsite. Sweepings and filter remnants are an insignificant chromium sink. An insignificant amount of chromium is expelled with the acid bath waste to the city sewage system. A mass balance on the chromium accounts for 1-10 tonnes more chromium than was calculated exiting the plant. A comparison with previously reported values is found in Tab C.

4.2 Manganese

Manganese is a Part 1A substance on the NPRI, and is triggered when the mass fraction of manganese in a substance is greater than 1%. The mix of steels at the Brockville plant has an average content of 2% manganese as an integral part of the metal matrix. The NPRI has a reporting threshold of 10 tonnes, which was exceeded by the mass of steel transformed at the plant in 2018. The TRA requires reporting of any concentrations over 0 grams.

The analysis of manganese is similar to that of chromium described in section 4.1. Insignificant amounts of manganese are released to the air, transfer for disposal, or released to the sewers. The majority of the manganese is found in the finished products and the recycled metals. The mass balance for manganese was with <1 tonne. A comparison with previously reported values is found in Tab C.

4.3 Nickel

Nickel is a Part 1A substance on the NPRI, and is triggered when the mass fraction of nickel in a substance is greater than 1%. The mix of steels at the Brockville Plant has an average content of 11% nickel as an integral part of the

metal matrix. The NPRI has a reporting threshold of 10 tonnes, which was exceeded by the mass of steel transformed at the plant in 2018. The TRA requires reporting of any concentrations over 0 grams.

The analysis of nickel is similar to that of chromium described in section 4.1. Insignificant amounts of nickel are released to the air, transfer for disposal, or released to the sewers. The majority of the nickel is found in the finished products and the recycled metals. Similar to chromium, 1 - 10 tonne more nickel was accounted for than was calculated after production. A comparison with previously reported values is found in Tab C.

5 Evaluation of Toxins Accounting

Currently the overall steel balance in the plant is off by approximately 1.4%. This difference affects each of the TRA substances because those metals are integral parts of the steel. The discrepancy in the data mass balance with most of the uncertainty in the data is in the inventory and shipment streams:

- Steel is brought into the plant by weight; therefore, the plant has an accurate accounting of the steel mix coming into the plant.
- Products are made and put into inventory by piece. The weight of each inventory item is estimated, as the finished products are not weighed. In 2018, the remainder of the ABE inventory was shifted to the Douglas Barwick Inc. site, resulting in increased uncertainty in the amount of inventory compared to previous years.
- Recycled metal is sold as scrap by weight; thus the recycled scrap weight is accurate.
- Recycled metal is not sorted; thus, the components going into the recycling are estimated as an average of the steel brought into the plant.
- Air emissions estimations are based on EPA 42 emission factors. Air emissions are an insignificant contribution to the materials balances.
- Waste from floor sweepings, the plasma cutter water and V filters have been estimated based on observation. All of this waste is recycled.
- The average concentrations of metals discharged to the municipal system are calculated from effluent sampling. These water emissions are an insignificant contribution to the mass balance.

The Brockville Plant takes care to create a safe work environment for its employees and the community by minimizing airborne emissions onsite, keeping the metals in wastewater to a minimum, and recycling the majority of its scrap.

6 Toxic Substance Reduction Plan

No options were identified and considered for implementation in the Toxic Substance Reduction Plan Summaries dated August 17-31, 2012, and reviewed by John McGeough (TRP License 0006). The plan will be reviewed in accordance with the Act and regulations, at which time new options may be identified and considered for implementation.

The Brockville Plant continues to recycle as much of its scrap as possible.

2018 Steel Mix

Table A-1 Steel Mixture in 2018. The mixture of steels used in 2018 was calculated based on materials purchased as well as materials taken from inventory. Most steel (>99%) was 316/316L or 304/304L, with some products made of 317L or 2205. The mass fractions of metals used in the mass balance are listed. The mixed column provides an average value of components of steels used in 2018.

	Steel Grade				
	316/316L	304/304L	317L	2205	Mixed
Steel Mix (%)	10-100	10-100	1-10	0.1-1	
Copper	0.01-0.001		0.1-0.01		0.00
Molybdenum	0.1-0.01		0.1-0.01	0.1-0.01	0.01
Manganese	0.01-0.001	0.1-0.01	0.1-0.01		0.02
Nickel	0.1-1	0.1-1	0.1-1	0.1-0.01	0.1-1
Chromium	0.1-1	0.1-1	0.1-1	0.1-1	0.1-1
Iron	0.1-1	0.1-1	0.1-1		0.1-1

Tab A Site Plans and Flow Diagram

Tab B General Facility Information

Reporting Requirement	Facility Information
Legal Name Parent Company	Marshall-Barwick Inc.
Parent Company Address	1 Sparks Avenue Toronto, ON, M2H 2W1
Parent Company Ownership (%)	100
Parent Company Business Number	102323789
Facility Owner Legal Name	Douglas Barwick Inc.
Facility Owner Trade Name	Brockville Plant
Facility Owner Address	P. O. Box 756 150 California Avenue Brockville ON K6V 5W1
Facility Operator Legal Name	Douglas Barwick Inc.
Facility Operator Trade Name	Brockville Plant
Facility Operator Address	P. O. Box 756 150 California Avenue Brockville ON K6V 5W1
Name, Position, Address and Phone Number of Public Contact	Katie McPherson Quality Assurance/Environmental Manager P. O. Box 756 150 California Avenue Brockville ON K6V 5W1 p: 613.342.8471 ext 117 f: 613.342.4432 katiemcpherson@douglasbarwick.com
Name, Position, Address and Phone Number of Technical Contact	Katie McPherson Quality Assurance/Environmental Manager P. O. Box 756 150 California Avenue Brockville ON K6V 5W1 p: 613.342.8471 ext 117 f: 613.342.4432 katiemcpherson@douglasbarwick.com
Name, Position, Address and Phone Number of Person Coordinating the TRA Plan	Katie McPherson Quality Assurance/Environmental Manager P. O. Box 756 150 California Avenue Brockville ON K6V 5W1 p: 613.342.8471 ext 117 f: 613.342.4432 katiemcpherson@douglasbarwick.com

Name, Position, Address and Phone Number of Person Responsible for Preparing the TRA Plan	John McGeough Owner Prevention and Regulatory Solutions Ltd. P.O. Box 322 Maitland, Ontario K0E 1P0 (613) 348-3403
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Name, Position, Address and Phone Number of Highest Ranking Employee at Facility with Management Responsibilities and Responsible for making a Certification	Lorne Phillips Plant Manager P. O. Box 756 150 California Avenue Brockville ON K6V 5W1 p: 613.342.8471 lorne.phillips@abefittings.com
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Name, License Number, Address and Telephone Number of Toxic Substance Reduction Planner	John Pyke, P.Geo. TSRP0285 Environmental Geoscientist Malroz Engineering Inc. 308 Wellington St., 2nd Floor Kingston ON K7K 7A8 613.548.3446 pyke@malroz.com
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NPRI identification number for the facility	4717
O. Reg. 127/01 Identification	9316
MOECC Hazardous Waste Generator Number	ON 0227500
Spatial Coordinates of Facility in UTM within NAD83	Easting: 444660 Northing: 4940680
Number of Full Time Equivalent Employees	55
Two Digit NACIS Code	33
Four Digit NACIS Code	3312
Six Digit NACIS Canada Code	331210
Operating Schedule	Monday - Friday
Standard Hours of Operations	8 hours / day, 40 hours/week
Daily Start	7:00 AM
Facility Shutdown Periods	Statutory Holidays July 24 to August 7, 2018 December 25 to December 31, 2018

Tab C Toxic Substance Inventory Information

Chromium (CAS # NA-04)

	2018 Reporting Year	2017 Reporting Year	Rationale For Change (if >10%)
Use (t)	100-1000	100-1000	increased production in 2018
Created (t)	--	--	N/A
Contained in Product (t)	100-1000	100-1000	increased production in 2018
Air Releases (t)	<0.01	<0.01	N/A
On-site Water Releases (t)	--	--	N/A
On-site Land Releases (t)	--	--	N/A
Transferred for Solid Disposal (t)	--	--	all scraps were recycled in 2018
Transferred for Liquid Disposal (t)	<0.01	<0.01	difference in liquid volume
Transferred for Recycling (t)	10-100	10-100	difference in volume of recycled materials
Balance (t)	1-10	0	

	2018 Reporting Year	2017 Reporting Year	Rationale For Change (if >10%)
Use (t)	10-100	10-100	increased production in 2018
Created (t)	--	--	N/A
Contained in Product (t)	10-100	10-100	increased production in 2018
Air Releases (t)	<1	<1	N/A
On-site Water Releases (t)	--	--	N/A
On-site Land Releases (t)	--	--	N/A
Transferred for Solid Disposal (t)	--	--	all scraps were recycled in 2018
Transferred for Liquid Disposal (t)	<0.0001	<0.0001	difference in liquid volume
Transferred for Recycling (t)	1-10	1-10	difference in volume of recycled materials
Balance (t)	<1	1-10	

	2018 Reporting Year	2017 Reporting Year	Rationale For Change (if >10%)
Use (t)	10-100	10-100	increased production in 2018
Created (t)	--	--	N/A
Contained in Product (t)	100-1000	10-100	increased production in 2018
Air Releases (t)	<0.01	<0.01	N/A
On-site Water Releases (t)	--	--	N/A
On-site Land Releases (t)	--	--	N/A
Transferred for Solid Disposal (t)	--	--	all scraps were recycled in 2018
Transferred for Liquid Disposal (t)	<0.01	<0.01	difference in liquid volume
Transferred for Recycling (t)	10-100	difference in volume of recycled materials	
Balance (t)	1-10	10-100	