Aberfoyle Metal Treaters Ltd.
Puslinch, ON

2018 Toxic Substance Reduction Plan
(for 2017)

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July 2018

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ENTERPRISES INC.

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1.0 Statement of Intent and Objectives

1.1 Blast media which creates the PM10 is critical to the creation of a suitable surface for the coating/painting of the metal parts. It is expected that the use of the substance will increase based on anticipated increased production. Reduction initiatives taken in the past included, increasing the use of steel grit over the sand media. Due to its criticality to the process, there is no intent to reduce the use of sand blast media.

1.2 Objective:

Aberfoyle Metal Treaters Lt. (AMT) uses steel grit in greater amounts (~80%) over the sand-based blast media (White Lightning), as the steel is the primary blast media choice. However, there are certain jobs and customers that require the sand media to be used. Therefore, there is no intent to reduce the use of this material. AMT will continue to seek out further opportunities for reduction options, while maintaining industry standards and meeting customer requirements.

1.3 Target

There is no target for the reduction for the use of the blast media creating the PM10, at this time.

1.4 Creation Statement of Intent, Objective and Target

PM10 is created at the facility as a result of the parts blasting using the sand blast media, which is pulverized upon impact (see above). The impact of the media on the part created the PM10 emissions, as the blast media becomes a finer particulate matter.

2.0 Description of Toxic Substances Found at the Facility

PM10 is created at the facility, as described above. The description of what, where, when, why and how the toxic substances are used at the facility, is further explained in the process flow diagram and in the body of this report.

2.1 White Lightning is brought in bulk and stored in the silo on the right. Some of the emission can be seen in front of the blasting tent.

2.2 Some of the sand blast material is brought in, in bags and stored in the blasting tent.

2.3 The blast material is applied to the parts and is emitted inside and outside the tent.

2.4 The spent blast material is piled outside for collection as a waste. The spent blast material is waste, the PM10 was emitted during the process.

3.0 Facility information

Facility (legal) name	Aberfoyle Metal Treaters Ltd.
Facility address	18 Kerr Crescent Puslinch, ON, Canada, N0B 2J0
NPRI Identification number	11146
Two-digit NAICS Code	33
Four-digit NAICS Code	3328
Six Digit NAICS Code	332810
Number of full time Employees	23
UTM spatial coordinates:	
UTM Zone	17
UTM Easting	569610
UTM Northing	4811681
Facility Owner	Aberfoyle Metal Treaters Ltd.
Highest Ranking Official	John Beingessner
Public Contact	John Beingessner
Technical Contact	Andy Macdonald
Coordinator of the TSRP	John Beingessner
Person preparing the TSRP	Lari Dakin LD – 50 Enterprises Inc. – Consultant/Planner Cell: (519) 575-8374; E-mail: ld50@execulink.com
Licensed Planner making recommendations	Lari Dakin LD – 50 Enterprises Inc. – Consultant/Planner Cell: (519) 575-8374; E-mail: ld50@execulink.com License number TSRP0270
Licensed Planner certifying the TSRP	Lari Dakin LD – 50 Enterprises Inc. – Consultant/Planner Cell: (519) 575-8374; E-mail: ld50@execulink.com License number TSRP0270
Parent Company information	Canerector Inc. 1 Sparks Avenue Toronto, ON M2H 2W1

4.0 Stages and Processes that create PM10

PM10 is not used at the facility. The process flow diagram in Appendix 1 provides a visual description of the stages and processes.

4.1 Chemical receiving and storage process

PM10 does not enter the facility.

4.2 Production (sand blasting process)

There was 163,093 kg of White Lightning sand blast media purchased in 2017. The pulverization of this blast media during sand blasting of the parts to ensure adequate surface for coating/painting of the parts, creates the PM10. Some of the material is disposed; however, the majority of it is retained on-site for future disposal. The sand blasting process and storage of the spent blast media on-site account for the PM10 created. The PM10 generated from the storage pile was considered negligible (0.002 kg) using the AP42 emission factors for storage piles. PM10 is also created through the burning of natural gas for process and comfort heating use. The amount estimated was 9.38 kg, which is negligible compared to the blasting process. This amount is accounted for but not included in any further considerations in this plan.

Quantification method used for the pulverizing of the dust is AP42 emission factors, with the rationale being that the information was readily available and fairly reliable. Due to the nature of this process, no further quantification methods were necessary. There was no intrusive testing needed to quantify the substance in this manner.

Since no records were available at the end of 2017 showing the amount of blast media left at the site, it is assumed that all of the media was used and destroyed during the process. There was a disposal of the spent blast media in 2017, which reduced the material stored on-site. Therefore, it is calculated that 163,093 kilograms of the blast media was used in 2017. There was a waste shipment of the material, accounting for 9,944 kg of the material disposed. The maximum stored on site is 153,222 kg. As mentioned above, the amount of PM10 emitted from storage was negligible (0.002 kg – based on AP42 emission factors for PM emissions from storage piles) compared to the amount of PM10 from the blasting process itself. Therefore, it is not considered further within this plan.

The quantification used was AP42 emission factors, with the rationale being the same as above. It was assumed in the calculations that the material is captured during the pulverization process, within a closed building, with a control factor of 60% assumed. There was no intrusive testing needed to quantify the substance in this manner. Knowledge of the material stored on-site at the end of 2017 could result in a change (decrease) in the amount of material.

The table in section 5 below shows the amount of the PM10 created and emitted from the facility.

5.0 Tracking and Quantification of PM10 at the Facility Level

Table 1: Tracking of PM10 Emissions at the Facility Level

Form of Involvement	Amount (kg)
Enters the facility	0
Created at the facility	806.14
Released (air) from the facility	806.14
Released (land) from the facility	0
Released (water) from the facility	0
Disposed (on-site) by the facility	0
Disposed (off-site) by the facility	0
Transferred (for recycling) from the facility	0
Contained in product that leaves the facility	0
Destroyed at the facility	0
Remains in storage at the facility	0*

*records of remaining storage were not kept in 2017, so it is estimated that all of the material purchased in 2017, was used and created the PM10 emissions.

As AP42 emission factors were used, the inputs and outputs balance.

6.0 Cost Estimates for PM10 at the Facility Level

Table 2: Cost Tracking

Item	Current Annual Cost
Operating expense	
• Capital cost	NA
• Raw materials and delivery	$43,102
• Direct labour	NA
• PPE	$1,500
• Training	0
• Supplies (hoses, piping)	NA
• Maintenance	NA
• Utilities	NA
Raw material storage	
• Floor space cost	~$500
• Training (WHMIS, Work Instructions - WI)	0
• Secondary containment	NA
• Emergency planning	NA
• Inspection/monitoring	NA
• Reporting and records	NA
• Utilities	NA
Process control	
• Emission control equipment	0
• Sampling and testing	NA
• Safety equipment/PPE	See above
• Waste collection equipment	NA
• Training (WHMIS, WI)	NA
• Reporting and records	~$1,500

Waste • Disposal fees • Sampling and testing • Containers/labels • Storage areas/containment • Transportation fees	 NA NA NA NA NA
Emission controls • Capital costs • Operating costs • Approvals/permits • Recovered materials • Inspection/monitoring • Sampling and testing • Emergency planning • Reporting and records	 NA NA NA NA NA NA NA NA
Purchasing • Inventory control • Product/Vendor research	 NA NA
Production • Re-work • Disposal management • Training • Emergency planning • Waste collection • Inspections/monitoring • Production trials	 NA NA NA NA NA NA NA
Engineering • Sampling and testing • Hazard analysis • Design and development	 NA NA NA
Management • Penalties and surcharges • Legal fees • Insurance • Government reporting costs	 NA NA NA $2000

7.0 Identification and Analysis of Reduction Options for PM10

7.1 Table Description

The table below (Tables 3) describes the required options for reduction of the toxic substance (PM10) created at the facility.

Table 3: Toxic Substance Reduction Options

Toxic Substance Reduction Category	Option Identification and Description
1) Material or feedstock substitution	Option 1: Replacement of the sand blast media with steel grit
2) Product design or reformulation	Option 1 applies to this category, as well.
3) Equipment or process modification	Option 2: Install a dust collector in the tent to contain the emissions.
4) Spill and leak protection	Option 2 applies to this category, as well.
5) On-site reuse or recycling	As the sand media is destroyed during the process, there is no option here.
6) Improved inventory management or purchasing techniques	Option 3 Tracking the amount of White Lightning that has not been used at the end of the year would show more accurately how much of the material was used to create the PM10 emissions. This would lead to a reduction in the amount emitted, potentially below reporting thresholds.
7) Training or improved operating practices	Option 1 & 2 apply to this category

8.0 Implementation of Options for Reduction of PM10 Created at the Facility

8.1 Table Description

The tables below (Tables 4 – 7) describe estimated reductions, technical feasibility and economic feasibility of the proposed options.

Table 4: Estimated Reduction of the Defined Options

Category	Option	Estimated Reduction
1) Material or feedstock substitution	Option1: Substitute sand media with steel grit	Substituting the sand media with the steel grit, which has a dust collection system with ~98% efficiency would virtually eliminate the PM10 emissions. • Reduction in creation: 806.14 kg/year (100%)
2) Product design or reformulation	Option1: Substitute NH4 with N2	See above
3) Equipment or process modification	Option 2: Install a dust collection system	Installing a dust collection system with 98% efficiency • Reduction in creation: 790.02 kg/year (98%)
4) Spill and leak protection	Option 2: Install a dust collection system	• See above

5) On-site reuse or recycling	NA	NA
6) Improved inventory management or purchasing techniques	Option3: Better track the amount of material unused by the end of the year monitoring system	By tracking the actual amount of sand blast media used would lead to a reduction in the amount of PM10 emissions calculated, since less of the material was used. An amount of 20% is assumed. • Reduction potential:161.23 kg/year (20%)
7) Training or improved operating practices	Option1: Substitute sand media with steel grit Option 2: Install a dust collection system	See above

Table 6: Technically Feasibility of Each Option

Category	Option	Technical Feasibility
1) Material or feedstock substitution	Option1: Substitute sand media with steel grit	Not technically feasible at this time. Although the steel grit is used primarily as a blast media, sand is required on some parts for the finer surface it creates.
2) Product design or reformulation	Option1: Substitute sand media with steel grit	See above
3) Equipment or process modification	Option 2: Install a dust collection system	Technically feasible. This option could virtually eliminate the PM10 emissions (by 98%)
4) Spill and leak protection	Option 2: Install a dust collection system	Technically feasible. This option could virtually eliminate the PM10 emissions(by 98%)
5) On-site reuse or recycling	NA	NA
6) Improved inventory management or purchasing techniques	Option3: Better track the amount of material unused by the end of the year	Technically feasible at this time. If the amount stored on the site by the end of the year is significant, there would be less (calculated) PM10 emissions. This could bring the amount below the reporting threshold.

7) Training or improved operating practices	Option1: Substitute sand media with steel grit Option 2: Install a dust collection system	See above

Table 7: Economic Feasibility of Technically Feasible Options

Category	Option	Economic Feasibility
1) Material or feedstock substitution	Option1: Substitute sand media with steel grit	Not technically feasible at this time.
2) Product design or reformulation	Option1: Substitute sand media with steel grit	Not technically feasible at this time.
3) Equipment or process modification	Option 2: Install a dust collection system	Technically feasible. Not financially feasible
4) Spill and leak protection	Option 2: Install a dust collection system	Technically feasible. Not financially feasible
5) On-site reuse or recycling	NA	NA
6) Improved inventory management or purchasing techniques	Option3: Better track the amount of material unused by the end of the year	Technically and economically feasible.
7) Training or improved operating practices	Option1: Substitute sand media with steel grit Option 2: Install a dust collection system	Not technically feasible at this time Technically feasible. Not financially feasible.

Table 8: Economic Feasibility of Option 2 (Installation of a dust collector)

Emission controls • Capital costs • Operating costs • Approvals/permits • Recovered materials • Inspection/monitoring • Sampling and testing • Emergency planning • Reporting and records Total Capital Total Operating	 ~$25,000 ~$2,500/year ~$4,000 NA ~$1,000/year NA ~$1,000 NA ~$30,000~$3,500/year

Note: Disposal costs are assumed to be the same for the dust collected from the current piles and the dust from an installed dust collector.

Option 3 is the most feasible option at this time.

Table 9: Implementation Steps for Options

Option Actions
Perform an inventory count of the sand blast material on-site on December 31, 2018
Calculate the amount of PM10 emissions based on the sand blast material used

Table 10: Overall Timeframe for Reduction

Option Actions	**Timeframe**
Perform an inventory count of the sand blast material on-site on December 31, 2018	Dec 31/18
Calculate the amount of PM10 emissions based on the sand blast material used	By June 1, 2019

9.0 Planner Recommendations and Rationale

9.1 Appendix 2

The Planner recommendations and rationale are attached as Appendix 2 to this toxic substance reduction plan.

10.0 Plan Certification for PM10

10.1 Appendix 3

The Planner Certification is attached as Appendix 3 to this toxic substance reduction plan.

11.0 References

11.1

US Environmental Protection Agency Air Emissions Factors and Quantification – AP-42 Compilation of Air Emissions Factors (Fifth Edition).

STAGE **PROCESS**

RECEIVING

↓

Blast Media Receiving

↓

Paint & Chemical Receiving

Supplies Receiving

↓

Customer Supplied Parts Receiving

PRODUCTION

Part preparation (setup on fixtures)

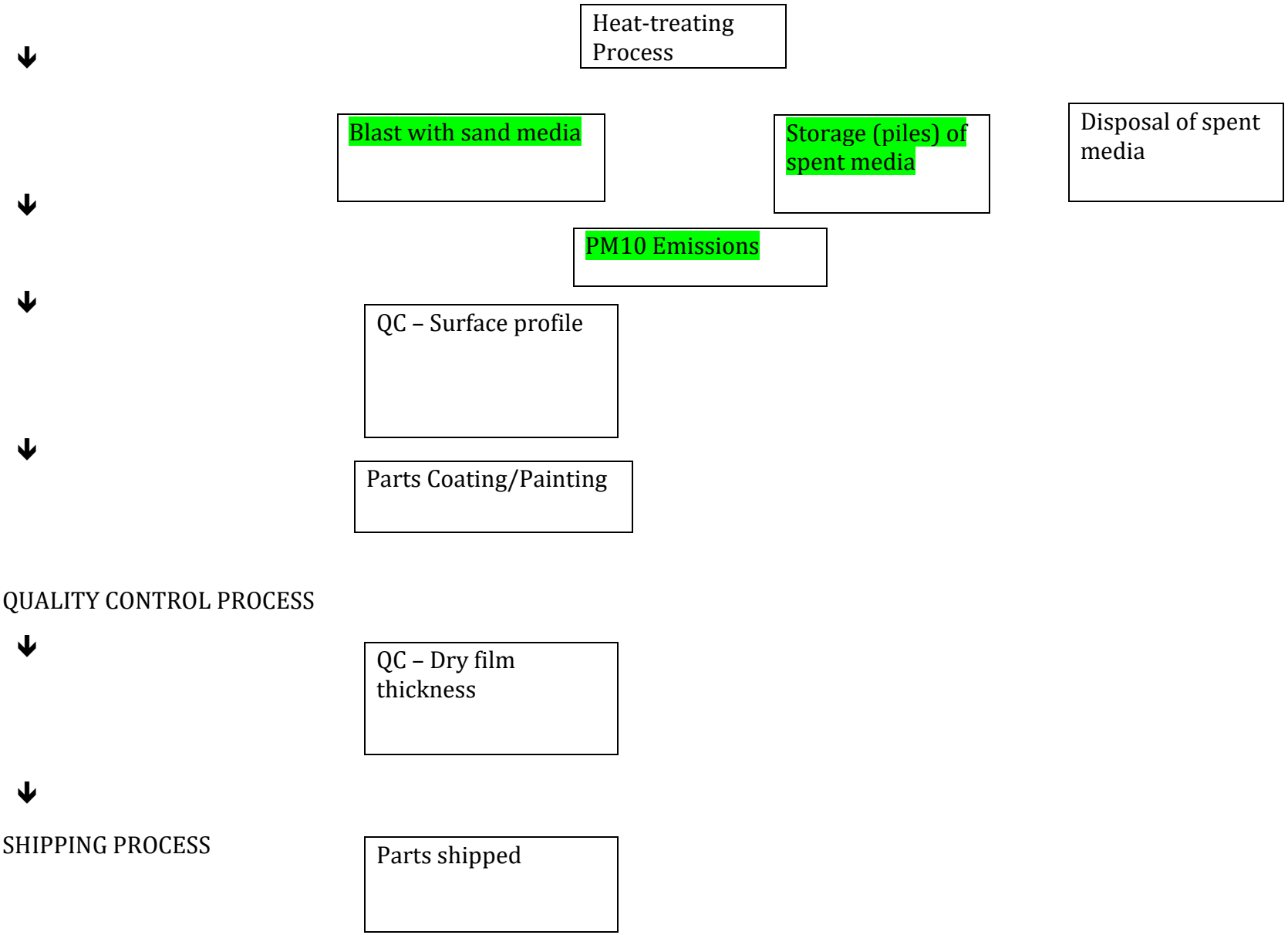
↓

Part introduction to furnaces (if heat treating is to be completed

↓

Green colour indicates the toxic substance is created in the process

APPENDIX 1: Process Flow Diagram



APPENDIX 2: Planner Recommendations and Rationale

Area of Recommendation	Recommendation	Rationale
Expertise relied on in preparing the report	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Identification and description of stages and processes	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Description of how, when, where & why the substance is used	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Process flow diagrams	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Data and methods used in toxic substance accounting	See description of how, when, where & why the substance is used within the TSRP and Appendices.	See description of how, when, where & why the substance is used within the TSRP and Appendices.
Analysis of input/output balances	AMT should measure the amount of material still stored on-site at the end of the calendar year.	This would allow for a more accurate measure of the amount of toxic substance used in the year. This would make the input/output balance more accurate, as well.
Reduction estimates for the identified options	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Technical and economical feasibility analysis	No further recommendations	The processes used at the facility are create the toxic There was two technical and one economical feasible options.
Direct and indirect costs associated with the use, disposal and amount contained in product	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Implementation steps in the plan and the likelihood of success	No further recommendations	The Planner making recommendations was also responsible for developing the plan
Additional technically and economically feasible options, not considered	The company could eliminate the process/customer base, thus eliminating the need for the process creating the toxic substance is an option. However, the deliberate elimination of a customer, depending on the portion of the business, would not be an option to be considered.	Potential plant shutdown makes this option unrealistic at this time.

Certification Statement (Licensed Planner)

As of July 9, 2018, I, Lari Dakin certify that I am familiar with the processes at Aberfoyle Metal Treaters Ltd. that uses the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the Toxics Reduction Act, 2009 that are set out in the plan dated [July 2018] and that the plans comply with that act and Ontario Regulation 455/09 (General) made under that act, and the plans meets all other requirements of the act and regulation.

PM10

Name:	Lari Dakin
Signature:	
License Number:	TSRP0270

Certification Statement (Highest Ranking Employee)

As of *July 9, 2018*, I, John Beingessner certify that I have read the toxic substance reduction plans for the toxic substances referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

PM10

Signature:	
Title:	President and General Manager