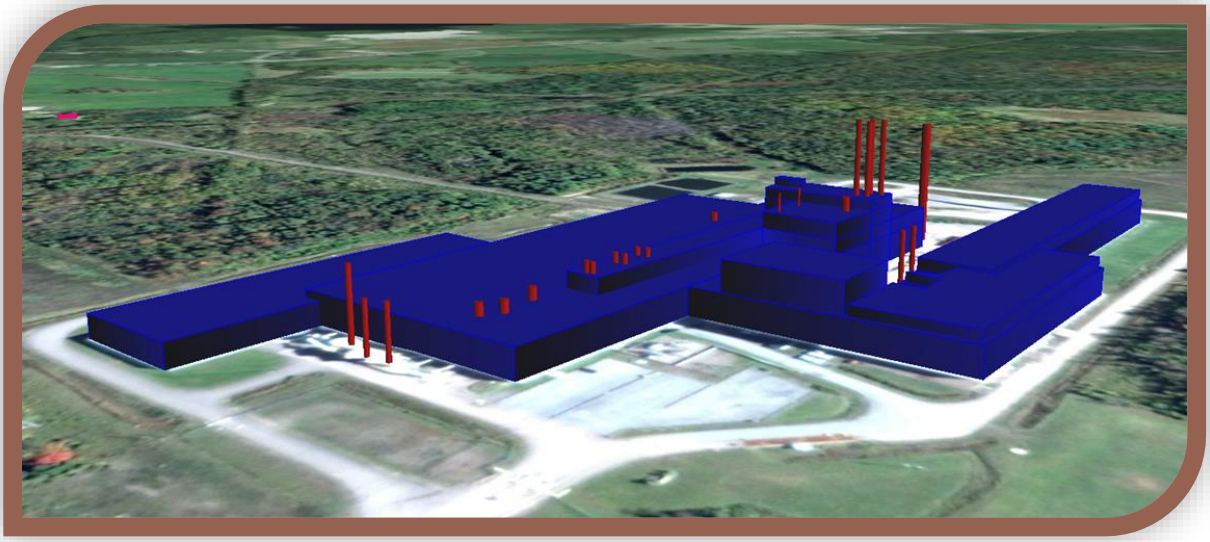
Toxic Substance Reduction Plan



Pembroke MDF
January 16, 2017
Colin Welburn, M.Eng., P.Eng., TSRP
colin@welburnconsulting.ca

TOXIC SUBSTANCE REDUCTION PLAN SUMMARY

1 Substances Included in the Plan

CAS Number	**Substance Name**
67-64-1	Acetone
NA - 16	Ammonia
630-08-0	Carbon Monoxide
50-00-0	Formaldehyde
64-18-6	Formic Acid
67-56-1	Methanol
11104-93-1	Nitrogen Oxides
NA - M09	PM10
9016-87-9	PMDI
NA - M08	Total Particulate
NA - M16	Total VOC

1.1 Facility Identity, Location, and Coordinates

Company Name	Pembroke MDF Inc.
Business Number	869937664
Mailing Address	General Delivery
Address	777 Fibreboard Drive Pembroke Ontario K8A6W4
Facility Name	Pembroke MDF Inc.
NAICS Code	321216
NPRI ID	5609
ON Reg 127/01 ID	5090
Latitude	45.7642
Longitude	-77.05410
UTM Zone	18
UTM Easting	340272
UTM Northing	5069900
Number of Full-time Employees	160

1.2 Contact Information

Technical Contact, Person who prepared the report, Person who coordinated the preparation of the Toxics Reduction Plan	
Name	Nicholas Mariani
Position	Environmental Coordinator
Telephone	613-732-3939
Email	nick.mariani@pembrokemdf.com
Address	Same as plant
Certifying Official, Highest Ranking Employee	
Name	Patricio Osses
Position	Plant Manager
Telephone	613-732-3939
Email	Patricio.osses@pembrokemdf.com
Address	Same as plant
Person who prepared the Toxics Reduction Plan and provided Planner Recommendations	
Name	Colin Welburn
Position	Principal, Welburn Consulting
Planner Licence	TSRP 0049
Telephone	613-852-6003
Email	colin@welburnconsulting.ca
Address	143 Sunnyside Avenue Ottawa, Ontario K1S 0R3

1.3 Statement of Intent

Pembroke MDF does not intend to reduce its overall use or creation of the Toxic Substances found in Appendix A of this report. This is because Pembroke MDF is undergoing an expansion which will increase its overall product output. While the annual use and creation of Toxic Substances will increase with plant production, Pembroke MDF intends over time to reduce the relative use and creation of Toxic Substances per unit of output.

1.4 Objectives of the Plan

While Pembroke MDF does not intend in the medium term to reduce the overall use and/or creation of its Toxic Substances, it will be developing six different reduction options that were identified in the planning process. These reduction options are discussed in Section 0.

Pembroke MDF is committed to operating its facility in a manner that protects the environment and ensures the well-being of its neighbours. It keeps this commitment by maintaining strict compliance with Canada's federal and provincial environmental regulations and making the environment an integral part of the facility's planning and decision-making process.

1.5 Why Substances are Used or Created

Substance	Why it is Used or Created
Acetone	Acetone is released from the wood when heated. Most emissions are released in the blow line and tube dryer, with a smaller amount released during the pressing process.
Ammonia	Ammonia is released from the urea-formaldehyde resin when heated. The majority of emissions are released in the blow line and tube dryer, with a smaller amount released during the pressing process.
Carbon Monoxide	Carbon Monoxide is created in the combustion of hog fuel, natural gas and sawdust in the heaters. The resulting hot exhaust gas is pre-treated through an electrostatic precipitator then is used in the tube dryer. The majority of CO emissions are released through the Common Dryer Stack, with a minute fraction being released through the press hoods.
Formaldehyde	Formaldehyde is released from the urea-formaldehyde resin when heated. The dominant source of emissions are the press hoods, followed by Baghouse C and the Common Dryer Stack.
Formic Acid	Formic Acid can be created during the thermos-setting of an adhesive UF resin. It may also have been a hardening agent during sampling that was conducted earlier.
Methanol	Methanol is released from both wood and the urea-formaldehyde resin when they are heated. The dominant source of emissions are the press hoods, followed by Baghouse B (sawing) and the Refiners.
PMDI	PMDI is used as an alternative to Urea Formaldehyde resin. When PMDI is cured, it is no longer chemically active and is considered "destroyed".
Nitrogen Oxides	Nitrogen Oxides are created in the combustion of hog fuel, natural gas and sawdust in the heaters. The majority of emissions are released in the blow line and tube dryer, with a miniscule amount released during the pressing process.
PM_{10} / Total Particulate	Particulate matter is generated with the handling of wood chips and hog fuel, during the combustion of hog fuel, natural gas and sawdust in the heaters, and with the sawing and sanding of boards.

1.6 Description of Options to be Implemented

Category	Option	Expected Result	Expected Completion Date
Material or Feedstock Substitution	Control humidity level from vendors	Reduced energy consumption in preparing chips and sawdust for refiner	March 2019
Product Design or Reformulation	Pelletizing of sander dust	Reduced fugitive PM emissions from handling loose sander dust	December 2017
Equipment or Process Modification	Install and operate dust burner	Improved combustion efficiency, reduced fugitive emissions from handling loose sander dust	March 2018
On Site Reuse or Recycling	Divert recycled fibre back into board production instead of combustor.	Reduced resin usage since recycled fibre is already treated. Reduced waste fibre disposal. Reduced emissions by diverting resinated wood away from combustor	June 2019
Improved Inventory Management	Change current fibre mix from “hardwood/softwood” to “hardwood/ softwood/poplar”	Improved resolution of feedstock in refining process, resulting in higher quality board and less waste board	March 2018
Training and Improved Operating Practices	Send ash to farms instead of landfill	No substantial change in the Use and Creation of substances. However, ash could be considered as a “Product” rather than “Waste”	December 2017

1.6.1 Predicted Reductions in Toxic Substances Associated with Options

There is insufficient data available at this time to determine the amount of reduction that is expected from the proposed options. However, the plan for each option includes a quantification element to determine how the implemented option has performed.

1.7 Accuracy Statement

This plan summary accurately reflects the content of the toxic substance reduction plans for Pembroke MDF, Dated January 16, 2017.

Confirmation by Highest Ranking Employee

As of January 16, 2017, I, Patricio Osses, certify that I have read the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the plans are factually accurate. I became the Highest Ranking Employee of the facility at the end of 2016. Due to other responsibilities associated with the transition, the updated plan naming me as the Highest Ranking Employee was not ready until after the regulatory deadline of December 31, 2016.

I confirm that, with the exception of the regulatory deadline, the plan meets all other requirements of the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

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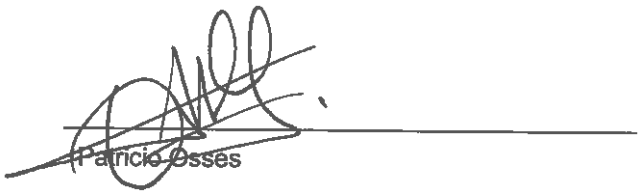

Plant Manager

Pembroke MDF

Certification by Licensed Planner

As of January 16, 2017 I, Colin Welburn, confirm that I am familiar with the processes at Pembroke MDF Inc. that use or create the toxic substances 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 toxic substance reduction plans referred to below for the toxic substances and that, with the exception of the completion date, the plans comply with the Act and Ontario Regulation 455/09 (General) made under that Act.

Substance Name	Date of Certified Plan
Acetone	January 16, 2017
Ammonia	January 16, 2017
Carbon Monoxide	January 16, 2017
Formaldehyde	January 16, 2017
Formic Acid	January 16, 2017
Methanol	January 16, 2017
Nitrogen Oxides	January 16, 2017
PM10	January 16, 2017
PMDI	January 16, 2017
Total Particulate	January 16, 2017
Total VOC	January 16, 2017

Colin Welburn, Planner License #TSRP0049
Senior Project Manager / Toxic Substance Reduction Planner
Welburn Consulting