

Toxics Reduction Plan

Volatile Organic Compounds

Prepared by:

**Montebello Packaging
1036 Aberdeen St
Hawkesbury ON
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December 2016

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1.0 General Information

Toxic Substance	Propylene glycol methyl ether acetate
CAS#	108-65-6
Number of full-time equivalent employees	77
NAICS	331317
NPRI ID	7063
UTM NAD83 coordinates (entrance)	531488 5050236

Canadian Parent Company

Legal name	Great Pacific Enterprises LP
Street address	1600 West Hastings Street Vancouver BC V6E 2H2
% owned by parent	100
CCRA business number	863579827

Contact info

Owner and operator of facility	Montebello Packaging 1036 Aberdeen St Hawkesbury ON K6A 1K5
Highest ranking employee	Betty-Jean Pilon President Montebello Packaging 1036 Aberdeen St Hawkesbury ON K6A 1K5 613 632 7096 ex1107 bpilon@montebellopkg.com
Person who coordinated preparation of plan	Jean Blondin Purchaser Montebello Packaging 1036 Aberdeen St Hawkesbury ON K6A 1K5 613 632 7096 ex1117 jblondin@montebellopkg.com
Person who prepared plan	Wendy Nadan Nadan Consulting Ltd 151 Montgomery Blvd Orangeville ON L9W 5C1 519 940 4724 wendy@nadanconsulting.com
Public contact	Jean Blondin Purchaser Montebello Packaging

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Planner

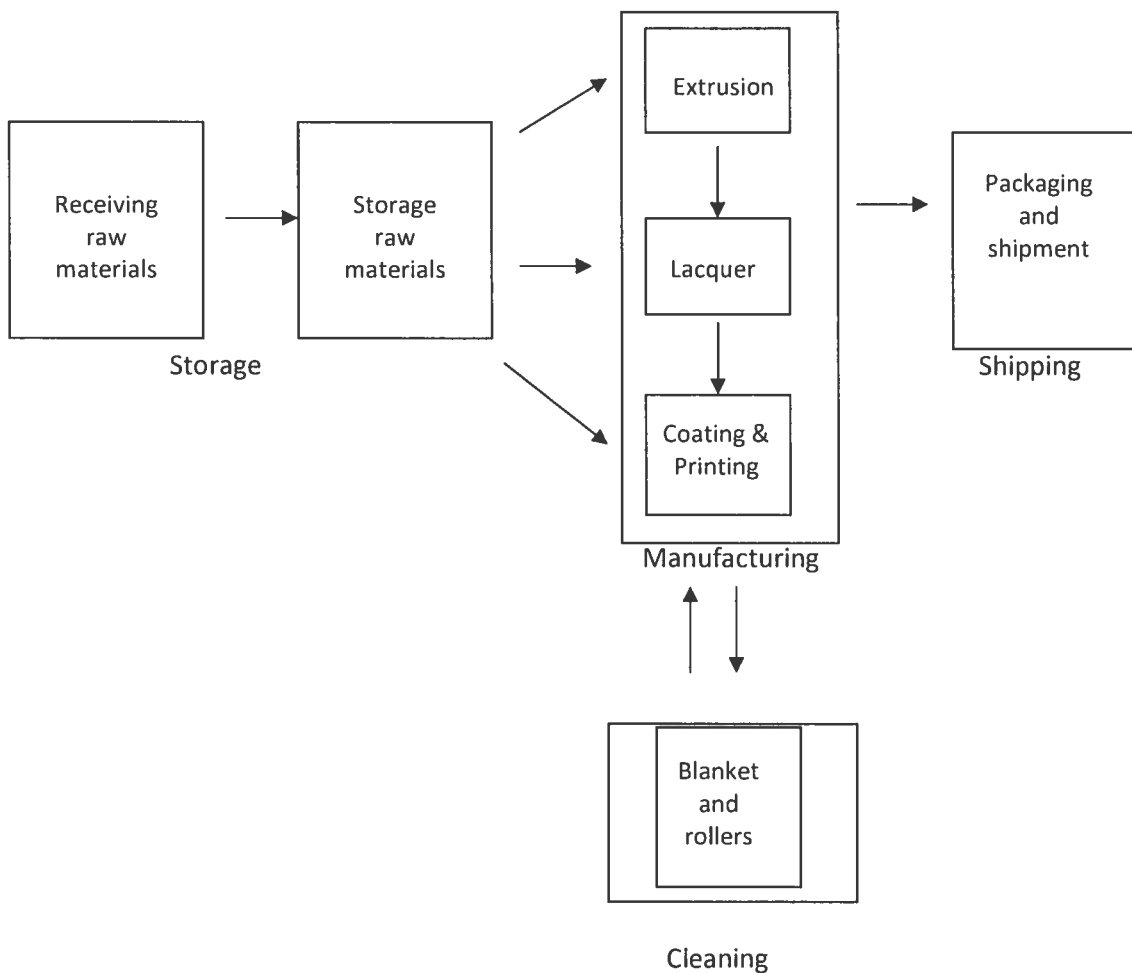
License number of planner	Wendy Nadan Nadan Consulting Ltd 151 Montgomery Blvd Orangeville ON L9W 5C1 519 940 4724 wendy@nadanconsulting.com TRSP 0092
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2.0 Statement of Intent

Montebello Packaging is committed to reducing the environmental impact of its manufacturing operations. Management will continue to explore options to reduce the usage of toxic substances while providing innovative solutions to our customers.

Montebello Packaging has prepared this toxic substance reduction plan for Propylene glycol methyl ether acetate to investigate options to reduce the usage of VOCs while supplying customers with products that meet their needs.

3.0 Identification of Stages and Processes



A tour of the facility was undertaken to identify individual processes. These processes were broken down into the storage, manufacturing, cleaning and shipping stage.

Propylene glycol methyl ether acetate is used in thinner and lacquer

4.0 Manufacturing Process Description

Montebello Packaging manufactures aluminum tubes and cans for pharmaceutical, cosmetic and other products. Aluminum slugs are purchased in the size suitable for the finished product. The slug is extruded into a tube, trimmed and a thread created on the neck for a cap. Some tubes are washed using an aqueous solution, others pass to the next stage of production.

Most tubes have a lacquer lining added to the inside of the tube. This is a solvent-based coating that is dried by passing through an electric or gas-fired dryer. Some of the lacquer that is not used during production runs becomes waste and is collected for offsite disposal.

Solvent is used as a vehicle to keep the solids in the lacquer in solution so that it can be applied to the surface uniformly at the desired thickness. Once the lacquer has been evenly applied to the surface, the solvent is completely removed by evaporation to leave a cured layer.

The outside of the tube or can is then given a base coating of the desired colour. This is also a solvent-based coating that is dried by passing through an electric or gas-fired dryer.

Next the graphics will be printed onto the outside of the tube using solvent-based paints and an offset process. The paint is dried in an electric or gas-fired drier.

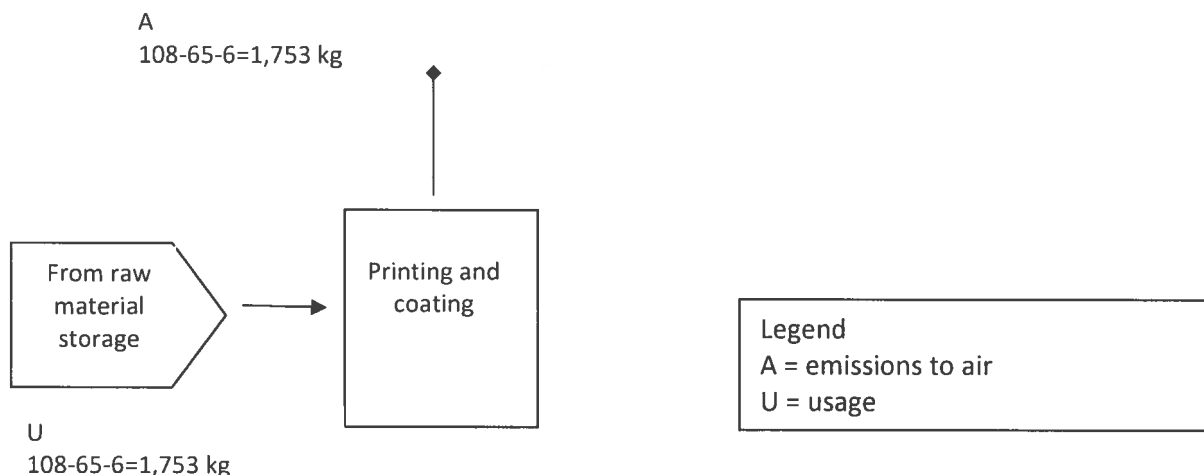
Finally a cap is screwed onto the tube and a sealant applied to the inside of the open end on the tube to allow the tube to be sealed closed once it has been filled with product at the customer's facility.

Thinner is added to the lacquer, coating and paint as required, to achieve the desired viscosity.

Emissions from lacquers and thinner were vented directly to air. The thermal oxidizer was not used in 2015 due to reduced operating capacity.

5.0 Material Accounting

Manufacturing Stage



Propylene glycol methyl ether acetate is used as part of the solvent system in lacquers. It is volatilized in the drier. It was emitted directly outside.

Quantification Method Used

The amount of VOC purchased is known from purchasing records and the MSDSs of individual products. All of the substance is used in lacquers. As the substances are a very volatile solvent, it is assumed that all of the substance used is emitted to air as a fugitive emission. There were no spills in the facility in 2015 and hence this is assessed to be a reasonable assumption.

Alternative methods of quantification of air emissions are continuous emissions monitoring and stack testing. Both of these methods incur significant cost and were not considered cost effective methods.

Material Balance

The quantity of VOCs entering the facility was obtained from manufacturer and supplier information and hence the quality is considered high. There are no VOCs created in the facility.

The quantity emitted to air is obtained using a mass balance as follows. As a mass balance approach to material accounting is used, inputs and outputs are considered approximately equal.

6.0 Estimated Direct and Indirect Costs

Raw materials

Ashblend TC339	\$6,200
Gold Epoxy Interior Tube	\$78,660

Labour

Direct Labor, based on 1/24 of every pressman \$42,525/year

Health and safety compliance

WHMIS Training, ½ HR X 12 Men = \$1700

Safety Equipment: Aprons \$960

Safety Cans \$ 120

Drum Funnels \$136

Safety Glasses 102, \$397

Visors/Face Shields \$42

Nitrile Gloves 59pr \$62

Neoprene Gloves 237pr \$654

Latex/Neoprene Gloves 140 pr \$204

Latex Gloves 5,923pr \$4,087

Environmental compliance

The total cost of environmental compliance is included although there are multiple substances that contribute to the necessity of regulatory compliance. Thus these contributions are likely to be an overestimate.

- NPRI/Reg.127/01 Collect information, Make copies of M.S.D.S., Contact Suppliers for most recent copies of M.S.D.S. & prepare documents for consultant. \$6,100.00
- Toxics Reduction Plan, collect information \$1000.00
- Respond to Surveys from Environment Canada \$880.00
- Certificate of Approval Air, Average \$3,000.00/year
- Engineering sampling and testing, Average \$2,000.00/year
- Engineering hazard analysis, Average \$1,500.00/year

Total costs Propylene glycol methyl ether acetate \$150,227

7.0 Identification of Options for Reduction in Usage of VOCs

The following options were identified to reduce the usage of propylene glycol methyl ether acetate.

Category	Description
Material substitution	Option 1: Replace Propylene glycol methyl ether acetate in lacquers and coatings with a less toxic substance. As VOCs as a class are toxic substances, the solvent-based system would need to be replaced with an aqueous or UV system. This would result in an estimated reduction in usage of 1,753kg and

	emissions of 1,753kg or 100%.
Product Design	Option 2: Use a plastic tube that does not require an internal lacquer. Assuming that all the toxic substances are contained in the lacquer, this would result in an estimated reduction in usage of 1,753kg and emissions of 1,753kg or 100%.
Process modification	Option 3: replace solvent based lacquer with UV lacquer. A change of the composition of the lacquer will change the type of solvent required for cleaning. Such alternative cleaning solvents may be 100% VOC but less volatile and posing a lower health risk. This is expected to result in estimated reduction in usage of 1,753kg and emissions of 1,753kg or 100%. Option 4: replace solvent-based lacquer with powder coatings. Powder coatings do not require any kind of solvent for cleaning purposes. Excess powder is vacuumed up and recycled into the process. This is expected to result in estimated reduction in usage of 1,753kg and emissions of 1,753kg or 100%.
Spill and leak prevention	Keep all containers closed when not in use. Immediately dispose of cleaning wipers in closed safety cans. This is currently standard practice and is not expected to result in any reduction in the use of VOCs.
Reuse or recycling	All of the Propylene glycol methyl ether acetate used is emitted to air during use. Hence there is no option to reuse or recycle the solvent.
Inventory management	Solvent based products have a long shelf life and thus no waste is generated if stored for extended periods. Due to flammability hazards, minimum quantities are kept on site and hence there are no reductions expected in this category.
Training	Operators have already been trained to keep containers closed and use minimum solvent for cleaning as part of a previous plan. Hence there are no reductions expected in this category.

8.0 Assessment of Technical Feasibility

Each of the options identified above were screened for technical feasibility using the following criteria:

- Availability and reliability of technology
- Impacts on quality, reliability, functionality
- Impact on production rate
- Compatibility with customer requirements
- Availability of employee training
- Compatibility with existing processes
- Space within facility
- Time required for change

Option	Technical Feasibility	Feasible
Option 1: Replace solvents with a less toxic substance	The coatings, lacquers and paints used are all solvent-based. Substituting a different solvent will still result in use of a different VOC and hence there will be no reduction in use of toxic substances.	No
Option 2: use a plastic tube	This option would effectively close down the facility as there is no equipment or expertise in house for manufacturing plastic tubes.	No
Option 3: replace solvent based lacquer with UV or aqueous lacquer	<p>Internal lacquers must comply with FDA regulations and be approved by the customer to ensure product compatibility and product safety.</p> <p>Any new internal lacquer must fully adhere to the internal aluminum wall without flaking off and must be stable with the product placed in the tube for the lifespan of the product. There can be no leaching from the lacquer or the tube wall into the product.</p> <p>The approval process is very rigorous, takes about three years and costs approximately \$250,000 per sku to complete the required testing. There are 40 skus that would require this testing.</p> <p>The lacquer used is specified by the customer. A change in the lacquer used would be a high risk / high cost decision by the customer and is unlikely to be approved due to the uncertainty of change and the liability if the new lacquer fails to perform as required.</p>	No
Option 4: Use a powder substitute for the coating and/or paint	Powder coatings are more brittle than solvent-based equivalents and tend to crack when the tube is squeezed or rolled up. This would adversely affect the quality of the finished product. Hence the powder coatings are not suitable for any kind of flexible tube.	No

9.0 Assessment of Economic Feasibility

There are no options that were determined to be technically feasible and so economic feasibility is not required.

10.0 Options that will be Implemented

There are no options that will be implemented as part of this plan.

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11.0 Planner Recommendations

The planner has visited the site and worked with Montebello staff throughout the development of the plan. Data has been revised or added as necessary to improve the accuracy of the plan. Hence, there are no additional recommendations to improve the plan.

12.0 Certification

As December 1, 2016, I, Betty Jean Pilon, certify that I have read the toxic substance reduction plan for speciated VOC Propylene glycol methyl ether acetate 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.



Betty Jean Pilon, President



Date

As of December 1, 2016, I, Wendy Nadan certify that I am familiar with the processes at Montebello Packaging that use or create the speciated VOC Propylene glycol methyl ether acetate, 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 December, 2015 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under that Act.



Wendy Nadan, Toxic Substance Reduction Planner

December 1, 2016

Date