

PR-17-009

EMISSION SUMMARY AND DISPERSION MODELLING REPORT (ESDM)

Fleet Canada Inc.



For:

**FLEET CANADA INC.
1011 GILMORE ROAD
FORT ERIE, ONTARIO
L2A 5M4**

February 2018



**OAKHILL
ENVIRONMENTAL INC.**



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Prepared by:

Oakhill Environmental Inc.

On behalf of:

Fleet Canada Inc

Author(s): Rob Wade, BA.Sc
Senior Technologist

Fil Barillaro, M. A. Sc., P. Eng., QP., Consulting Engineer
Principal Engineer, President

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Dist'n: Fleet Canada Inc. (1)
MOECC Approvals Branch (2)
MOECC Niagara District Office (1)
Oakhill Environmental Inc. (1)

Rob Wade, BA.Sc
Senior Technologist

Fil Barillaro, M. A. Sc., P. Eng., QP.
Principal Engineer, President

This document has been prepared for the exclusive reliance and use of the Fleet Canada Inc. and any third party they may so designate via letter of transmittal from Oakhill Environmental Inc.

EXECUTIVE SUMMARY

The purpose of this Environmental Compliance Approval (ECA) application is to obtain approval for a proposed product substitution in Fleet's degreasing process. This change will result in Trichloroethylene (TCE) being phased out, and replaced with a more environmentally friendly alternative. This ESDM and accompanying application package (Application) has been prepared in support of an amendment ECA Number 9824-AAWFMT (existing ECA), issued June 16th, 2016. Fleet Canada Inc. (Fleet) has been in operation for over 75 years, and has maintained environmental approvals since their first Certificates of Approval in the 70's and 80's.

Fleet is located in an industrially zoned area at 1011 Gilmore Road in Fort Erie, Ontario (Facility). Fleet operates an aircraft component manufacturing facility specialising in fabricated aluminum and composite aircraft components. Processes at the Facility which contribute to air emissions include machining, routing, deburring, cleaning, chemical stripping, anodizing, bonding, adhesive painting, curing, and natural gas combustion. Emissions from the Facility include volatile organic compounds (VOCs), particulate matter, nitrogen oxides (NOx), sulfuric acid and small quantities of chromic and nitric acid mist.

The North American Industry Classification System (NAICS) code that applies to the Facility is 336410- 'Aerospace Product and Parts Manufacturing', which is listed in the schedule 5 of O. Reg. 419/05. Therefore, the Facility is subject to s.20 of O. Reg. 419/05 and the modelled impact of contaminant emissions can be assessed as 24-hour maximum point of impingement (POI) concentration. The appropriate model used to assess the 24-hour maximum POI impact is AERMOD.

This submission includes an up to date inventory of the Facility's emission sources including all recent and proposed process modifications. Recent modifications include the elimination of two paint booth stacks (Sources 3, 21), the installation of two new high filtration efficiency paint booth stacks (Sources 21A, 21B), and the conversion of a paint booth to a mixing room (Source 20). Additionally, the Facility has proposed the following changes: Substitution of TCE in the degreasing line (Source 30), upgrade of three paint booth stacks to be consistent with stacks 21A/B, adjustments to Chromic Acid Anodizing operating schedules, and the elimination of one Kevlar-related process. These changes have resulted in an overall reduction of contaminant emissions at the Facility.

Potential negligible sources and contaminants meeting the criteria as described in the Ministry's publication, "Procedure for Preparing an Emission Summary and Dispersion Modelling Report", July 2016, version 4.0, were screened out and not included in the Emissions Summary Table.

Maximum POI concentrations were calculated based on the operating conditions where all significant sources would be operating simultaneously at their individual maximum rates of production. The maximum emission rates for each contaminant emitted from the significant sources were calculated in accordance with s. 11 of O. Reg. 419/05 and the data quality assessment follows the process outlined in the requirements of the ESDM Procedure Document and approved dispersion model. The results are presented in the following Emission Summary Table in accordance s.26 of O. Reg. 419/05.

The POI concentrations listed in the Emission Summary Table were compared against criteria listed in the ministry publication "Air Contaminants Benchmarks List: standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", January 2017 (List of Ministry POI Limits). Contaminants released by the Facility that are not found on the List of MOECC POI Limits were considered to be Contaminants with No Ministry POI Limits. **All of the contaminants listed in the Emission Summary Table, which have limits in the List of MOECC POI Limits, have predicted POI concentrations below the MOECC criteria, without exception.**

**Emission Summary Table
Fleet Canada Inc., Fort Erie, Ontario**

Fleet Canada Inc.

Contaminant Name	CAS Number	Total Facility Emission Rate [g/s]	Dispersion Model Used	Max POI [$\mu\text{g}/\text{m}^3$]	Averaging Period (hours)	MOECC POI Limit [$\mu\text{g}/\text{m}^3$]	Limiting Effect	Regulation Schedule #	Percentage of MOE POI
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	1.93E-05	AERMOD	1.50E-03	24	N/A	N/A	N/A	N/A
1,1,1,2,2,3,3,4-Heptafluorocyclopentane	15290-77-4	1.35E-05		1.05E-03	24	N/A	N/A	N/A	N/A
1,3-dioxolane	646-06-0	1.04E-01		7.13E+00	24	10	Health	Guideline	71.30%
2-methoxy-1-propanol	1589-47-5	4.89E-03		3.34E-01	24	13	Health	JSL	2.57%
4,4'-methylenebis(phenyl diisocyanate)	101-68-8	5.38E-03		5.23E-01	24	0.7	Health	3	74.71%
Aromatic Amine	90-72-2	1.68E-02		1.64E+00	24	16.8	Health	JSL	9.73%
Aromatic Hydrocarbon	64742-95-6	6.80E-02		6.62E+00	24	10	Health	JSL	66.17%
Chromium (Hexavalent)	1333-82-0	4.32E-05		1.12E-04	Annual	0.00014	Health	3	80.00%
Diethylene glycol butyl ether	112-34-5	1.37E-02		1.14E-03	DAV	0.07	Health	AVAA	1.63%
Epoxy Resin	25036-25-3	1.35E-06		1.55E+00	AAV	0.0014	Health	AVAA	81.43%
Fiberglass	N/A	7.67E-02		7.00E-05	24	65	Health	Guideline	2.39%
Glass Oxide	65997-17-13	1.23E-06		1.98E+01	24	N/A	N/A	N/A	N/A
MEK	78-93-3	1.16E+00		6.00E-05	24	N/A	N/A	N/A	N/A
Methylenediphenyl diisocyanate	26447-40-5	9.41E-04		4.88E+01	24	1000	Health	3	4.88%
Nitric acid	7697-37-2	4.26E-02		9.16E-02	24	0.6	Health	JSL	15.27%
Nonphenoxypoly (ethyleneoxy) ethanol	9016-45-9	5.09E-02		1.47E+01	24	35	Corrosion	3	42.05%
Oxides of Nitrogen (Process Related Sources)	10102-44-0	5.99E-01		3.93E+00	24	18	Health	JSL	21.81%
Particulate Matter	N/A	5.99E-01		6.76E+01	24	200	Health	3	33.79%
Phenol	108-95-2	2.84E-01		2.09E+02	1	400	Health	3	52.18%
Phenolic Resin	N/A	9.78E-03		4.35E+01	24	120	Health	3	36.24%
Phosphoric acid	7664-38-2	4.75E-02		6.68E-01	24	30	Health	3	2.23%
Potassium phosphate	7778-53-2	1.86E-02		1.70E-04	24	N/A	N/A	N/A	N/A
Proprietary A	N/A	9.65E-06		4.32E+00	24	7	Health	3	61.77%
Proprietary B	N/A	9.65E-06		1.45E+00	24	N/A	N/A	N/A	N/A
Proprietary Fluorinated Solvent(s)	N/A	7.72E-05		7.50E-04	24	N/A	N/A	N/A	N/A
Proprietary Performance Additives	N/A	9.65E-06	7.50E-04	24	N/A	N/A	N/A	N/A	
Sodium silico fluoride	16893-85-9	1.37E-02	1.55E+00	24	N/A	N/A	N/A	N/A	
Sodium tetraborate	1303-96-4	8.22E-02	9.32E+00	24	33	Health	Guideline	28.25%	
Sodium Tripolyphosphate	7758-29-4	1.19E-01	1.05E+01	24	N/A	N/A	N/A	N/A	
Toluene	108-88-3	5.96E-01	2.82E+01	24	2000	Odour	Guideline	1.41%	
Xylene	1330-20-7	2.29E-01	1.59E+02	0.16667	3000	Odour	Guideline	5.31%	
		2.29E-01	2.23E+01	24	730	Health	3	3.05%	

Notes on Column labeled Regulation Schedule #

3 - Standards in Schedule 3 of O.Reg. 419/05

N/A - No criteria is available in AAQC/O.Reg.419/05

JSL - Standards in Jurisdictional Screening Level for Ontario Regulation 419

G - Criteria identified as POI Guideline in Ambient Air Quality Criteria (AAQC)/O.Reg.419/05

AVAA - Assessment Values for Annual Air Standards