

Emission Summary Table

RWDI Project 1201124

Scenario [1]	Contaminant	CAS Number	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration (µg/m³)	Averaging Period (hours)	MOE POI Limit [2] (µg/m³)	Limiting Effect	Regulation Schedule #	Percentage of MOE POI Limit (%)
Normal (without Genset Testing)	Cadmium	7440-43-9	4.00E-07	AERMOD	2.46E-04	24	0.025	Health	3	1%
	Carbon Monoxide	603-8-0	8.10E-03	AERMOD	9.36E+00	0.5	6000	Health	3	0%
	Hydrochloric Acid	7647-1-0	5.50E-04	AERMOD	3.39E-01	24	20	Health	3	2%
	Lead	7439-92-1	1.70E-06	AERMOD	1.05E-03	24	0.5	Health	3	0%
	Mercury	7439-97-6	2.50E-06	AERMOD	1.54E-03	24	2	Health	3	63%
	Oxides of Nitrogen	10102-44-0	3.50E-12	AERMOD	2.51E+02	1	400	Health	3	1%
	Particulate Matter	NA	8.10E-04	AERMOD	1.13E+00	24	120	Visibility	3	0%
	PCDD/F (TEQ) (pg/m3)	NA	5.60E-04	AERMOD	2.16E-03	24	5.00E+00	Health	3	0%
	Sulphur Dioxide	7446-9-5	3.20E-04	AERMOD	7.80E+00	1	690	Health	3	1%
	Total Hydrocarbons	NA	3.20E-04	AERMOD	4.47E-01	1	0.45	-	-	-
	Cadmium	7440-43-9	4.00E-07	AERMOD	2.46E-04	24	0.025	Health	3	1%
	Carbon Monoxide	603-8-0	6.28E-01	AERMOD	2.96E+02	0.5	6000	Health	3	5%
	Hydrochloric Acid	7647-1-0	5.50E-04	AERMOD	3.39E-01	24	20	Health	3	2%
	Lead	7439-92-1	1.70E-06	AERMOD	1.05E-03	24	0.5	Health	3	0%
	Mercury	7439-97-6	2.50E-06	AERMOD	1.54E-03	24	2	Health	3	78%
Oxides of Nitrogen	10102-44-0	3.13E+00	AERMOD	1.47E+03	0.5	1880	Health	3	18%	
Particulate Matter	NA	5.28E-02	AERMOD	2.10E+01	24	120	Visibility	3	0%	
PCDD/F (TEQ) (pg/m3)	-	3.50E-12	AERMOD	2.16E-03	24	5.00E+00	Health	2	0%	
Sulphur Dioxide	7446-9-5	5.16E-02	AERMOD	2.37E+01	1	690	Health	3	3%	
Total Hydrocarbons	NA	7.03E-02	AERMOD	2.76E+01	1	27.6	-	-	-	

Notes:

[1] The term "MOE POI Limit" identified in Table D-4 refers to the following information (there may be more than one relevant MOE POI Limit for each contaminant):

- air quality standards in Schedules 2 and 3 of the Regulation; and
- the guidelines for contaminants set out in the MOE publication, "Summary of Standards and Guidelines to Support Ontario Regulation 419: Air Pollution – Local Air Quality"

[2] The PCDD/F (TEQ) based on the total toxicity equivalent for all individual compounds based on stack sampling program conducted by Ortech.

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 Prepared by: SS
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Emission Summary and Dispersion Modelling Report
Stericycle, ULC
Report #1201124
October 29, 2012

EXECUTIVE SUMMARY

This Emission Summary and Dispersion Modelling (ESDM) report was prepared in support of an application for an Environmental Compliance Approval for the applicant's facility located at 95 Deerhurst Drive, Brampton, Ontario. The site currently operates under Certificate of Approval (AIR) Number 8646-7AUQEA (included in Appendix A) and wishes to amend this certificate. This application is being submitted to achieve compliance of the Stericycle Deerhurst facility operations with the requirements of Section 9 of the Environmental Protection Act (EPA), R.S.O. 1990.

The purpose of this ESDM is to obtain approval to install a new boiler at the Deerhurst facility. Stericycle, ULC will replace the existing 150 BHP boiler with a 400 BHP boiler. The 200 BHP boiler currently in operation at the Deerhurst facility would be retained as a standby unit to be used when the 400 BHP boiler is out of service. In addition, there is a cooling tower in operation that requires approval and has been included in the assessment. There are no other anticipated changes for consideration under this amendment application.

The Deerhurst facility receives various streams of biomedical waste which are segregated for the appropriate method of treatment: i) suitable for autoclave treatment, and ii) "must-burn" anatomical, pharmaceutical, or chemotherapy waste for incineration. The facility currently has two autoclaves and one incinerator for the purposes of waste treatment. The incinerator at the facility is approved to operate with the processing capacity of 300 tonnes per month of waste, not to exceed the 670 kg/h design limit.

Under the North American Industry Classification Scheme (NAICS) the facility is classified as 562210. Deerhurst is a Schedule 5 facility and as such will be required to comply with Schedule 3 standards effective February 1, 2013.

Based on the annual incinerator emission testing program, a total of 91 contaminants were identified with respect to the facility. Of the identified contaminants, 24 do not have existing Schedule 2 Standards or relevant guidelines under O. Reg. 419/05, and 65 were discharged in negligible amounts. Of the sources on site, 20 were determined to be insignificant.

For the purposes of estimating emissions from the facility, a maximum operating scenario was considered. The primary scenario considered the predicted impacts due to the incinerator and the natural gas-fired equipment operating simultaneously at their maximum capacity. This scenario was used as the basis for the dispersion modelling analysis, which was conducted for a 30-minute averaging time. Emission rates were determined through the following estimation techniques; emission factors, source testing and historical reports.

The facility is located at 95 Deerhurst Drive, Brampton, Ontario, and the property is zoned for industrial use. Properties immediately adjacent to the Deerhurst facility are also zoned for industrial use. Within a radius of 300 m from the Deerhurst facility there are also areas zoned for open space to the north, agricultural to the east and commercial to the south. The local terrain is generally flat.



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Concentrations at points of impingement were predicted using the U.S. EPA's AERMOD model. Modelling input and output files have been provided in Appendix B. Predicted concentrations for all of the contaminants of significance were found to be less than their respective Standards or guidelines under O. Reg. 419/05 at all receptors in the area. The contaminant with the greatest percentage of the O. Reg. 419/05 Standard under normal conditions was predicted to be nitrogen oxides with a value of 63%. Therefore, Deerhurst is expected to be in compliance with the requirements of O. Reg. 419/05.