

Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Inorganic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.29 µg/m ³			
Base Case - 1 hour			1.00 g/s	25.1 µg/m ³			
Base Case - 1/2 hour			1.00 g/s	30.1 µg/m ³			
Base Case - 30 day			1.00 g/s	0.117 µg/m ³			
Filterable Particulate Matter	<12.1 mg/s	<9.23 mg/s	<21.3 mg/s	0.028 µg/m ³	120 µg/m ³	0.023	S
Hydrogen Chloride *	77.9 mg/s	77.5 mg/s	155 mg/s	0.20 µg/m ³	20 µg/m ³	1.00	S
Hydrogen Fluoride	<2.49 mg/s	<2.54 mg/s	<5.03 mg/s	0.0065 µg/m ³	100 µg/m ³	0.0065	S
Hydrogen Fluoride	<2.49 mg/s	<2.54 mg/s	<5.03 mg/s	0.00059 µg/m ³	100 µg/m ³	0.00059	S - 30 day
Ammonia	6.07 mg/s	42.8 mg/s	48.9 mg/s	0.063 µg/m ³	100 µg/m ³	0.063	S
Sulphur Dioxide **	0 g/s	0 g/s	0 g/s	0 µg/m ³	275 µg/m ³	<0.0001	S
Sulphur Dioxide **	0 g/s	0 g/s	0 g/s	0 µg/m ³	690 µg/m ³	<0.0001	S - 1 hour
Nitrogen Oxides **	2.12 g/s	2.08 g/s	4.20 g/s	5.42 µg/m ³	200 µg/m ³	2.71	S
Nitrogen Oxides **	2.12 g/s	2.08 g/s	4.20 g/s	105 µg/m ³	400 µg/m ³	26.4	S - 1 hour
Carbon Monoxide **	0.29 g/s	0.33 g/s	0.62 g/s	18.6 µg/m ³	6000 µg/m ³	0.31	S - 1/2 hour

S - Standard

G - Guideline

URT - Upper Risk Threshold

* Measured by ORTECH using the acid gases test train.

** Emission data calculated using the CEM data measured by DYEC and the volumetric flowrates measured by ORTECH between May 2-4 and May 9-11, 2016.

Note: Unless otherwise stated all allowable limits are 24 hour standards or guidelines.

Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Semi-Volatile Organic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.29 µg/m ³			
Base Case - 1 hour			1.00 g/s	25.1 µg/m ³			
Dioxins, Furans and Dioxin-Like PCBs (TEQ)*	14.5 ng TEQ/s	0.22 ng TEQ/s	14.7 ng TEQ/s	0.019 pg TEQ/m ³	1 pg TEQ/m ³	1.90	URT
Naphthalene	<1.25 µg/s	<1.25 µg/s	<2.50 µg/s	0.000032 µg/m ³	22.5 µg/m ³	<0.0001	G
Biphenyl	<1.25 µg/s	<1.25 µg/s	<2.50 µg/s	0.000063 µg/m ³	60 µg/m ³	0.00010	G - 1 hour
Benzo (a) pyrene	<0.63 µg/s	<0.62 µg/s	<1.25 µg/s	0.0000016 µg/m ³	0.0011 µg/m ³	0.15	G
1,2-Dichlorobenzene	<0.63 µg/s	<0.62 µg/s	<1.25 µg/s	0.000031 µg/m ³	30500 µg/m ³	<0.0001	G - 1 hour
1,4-Dichlorobenzene	<0.63 µg/s	<0.62 µg/s	<1.25 µg/s	0.0000016 µg/m ³	95 µg/m ³	<0.0001	S
1,2,4-Trichlorobenzene	<0.63 µg/s	<0.62 µg/s	<1.25 µg/s	0.0000016 µg/m ³	400 µg/m ³	<0.0001	G
Pentachlorophenol	1.17 µg/s	0.84 µg/s	2.01 µg/s	0.0000026 µg/m ³	20 µg/m ³	<0.0001	G

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* Calculated using the WHO (O. Reg. 419/05) toxicity equivalence factors and half the detection limit for those isomers not detected in quantities greater than the reportable detection limit.

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Covanta - Durham York Energy Centre
Main Stack with Both Boilers Operating
Regulation 419 Dispersion Modeling Results using CALPUFF for
Metals

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.29 µg/m ³			
Antimony	<0.0033 mg/s	<0.0034 mg/s	<0.0067 mg/s	0.0000086 µg/m ³	25 µg/m ³	<0.0001	S
Arsenic	<0.00083 mg/s	<0.00084 mg/s	<0.0017 mg/s	0.0000022 µg/m ³	0.3 µg/m ³	0.00072	G
Barium (as water soluble)	0.031 mg/s	0.028 mg/s	0.059 mg/s	0.000077 µg/m ³	10 µg/m ³	0.00077	G
Beryllium	<0.00083 mg/s	<0.00084 mg/s	<0.0017 mg/s	0.0000022 µg/m ³	0.01 µg/m ³	0.022	S
Cadmium	<0.00083 mg/s	<0.00084 mg/s	<0.0017 mg/s	0.0000022 µg/m ³	0.025 µg/m ³	0.0086	S
Chromium	0.063 mg/s	0.037 mg/s	0.099 mg/s	0.00013 µg/m ³	1.5 µg/m ³	0.0086	G
Cobalt	<0.00083 mg/s	<0.00084 mg/s	<0.0017 mg/s	0.0000022 µg/m ³	0.1 µg/m ³	0.0022	G
Copper	0.030 mg/s	0.032 mg/s	0.062 mg/s	0.000080 µg/m ³	50 µg/m ³	0.00016	S
Lead	0.0052 mg/s	0.0043 mg/s	0.0094 mg/s	0.000012 µg/m ³	0.5 µg/m ³	0.0024	S
Manganese (as compounds)	0.024 mg/s	0.022 mg/s	0.045 mg/s	0.000058 µg/m ³	2.5 µg/m ³	0.0023	G
Mercury	0.0086 mg/s	0.0052 mg/s	0.014 mg/s	0.000018 µg/m ³	2 µg/m ³	0.00089	S
Molybdenum	0.15 mg/s	0.19 mg/s	0.34 mg/s	0.00044 µg/m ³	120 µg/m ³	0.00037	G
Nickel	0.067 mg/s	0.081 mg/s	0.15 mg/s	0.00019 µg/m ³	2 µg/m ³	0.0095	S
Selenium	<0.0038 mg/s	<0.0055 mg/s	<0.0093 mg/s	0.000012 µg/m ³	10 µg/m ³	0.00012	G
Silver	<0.0017 mg/s	<0.0017 mg/s	<0.0033 mg/s	0.0000043 µg/m ³	1 µg/m ³	0.00043	S
Vanadium	<0.00063 mg/s	<0.00063 mg/s	<0.0013 mg/s	0.0000016 µg/m ³	2 µg/m ³	<0.0001	S
Zinc	0.038 mg/s	0.014 mg/s	0.053 mg/s	0.000068 µg/m ³	120 µg/m ³	<0.0001	S

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Volatile Organic Compounds

Contaminant	Boiler No. 1 BH Outlet Average Emission Rate	Boiler No. 2 BH Outlet Average Emission Rate	Total Average Emission Rate	Calculated Impingement Concentration	Allowable Impingement Concentration	Percentage of Allowable Concentration	Status of Allowable Concentration
Base Case - 24 hour			1.00 g/s	1.29 µg/m ³			
Base Case - 1 hour			1.00 g/s	25.1 µg/m ³			
Acetone	0.045 mg/s	0.098 mg/s	0.14 mg/s	0.00018 µg/m ³	11880 µg/m ³	<0.0001	S
Benzene	0.026 mg/s	0.020 mg/s	0.046 mg/s	0.000059 µg/m ³	100 µg/m ³	<0.0001	URT
Bromoform	<0.0096 mg/s	<0.011 mg/s	<0.021 mg/s	0.000027 µg/m ³	55 µg/m ³	<0.0001	G
Bromomethane	<0.010 mg/s	<0.011 mg/s	<0.021 mg/s	0.000027 µg/m ³	1350 µg/m ³	<0.0001	G
1,3-Butadiene	<0.017 mg/s	<0.019 mg/s	<0.036 mg/s	0.000046 µg/m ³	300 µg/m ³	<0.0001	URT
2-Butanone	<0.025 mg/s	<0.028 mg/s	<0.053 mg/s	0.000068 µg/m ³	1000 µg/m ³	<0.0001	S
Carbon Tetrachloride	<0.011 mg/s	<0.012 mg/s	<0.023 mg/s	0.000030 µg/m ³	2.4 µg/m ³	0.0012	S
Chloroform	0.026 mg/s	0.020 mg/s	0.046 mg/s	0.000059 µg/m ³	1 µg/m ³	0.0059	S
Cumene (Isopropylbenzene)	<0.017 mg/s	<0.019 mg/s	<0.036 mg/s	0.000046 µg/m ³	400 µg/m ³	<0.0001	S
Dichlorodifluoromethane	<0.024 mg/s	<0.017 mg/s	<0.041 mg/s	0.000053 µg/m ³	500000 µg/m ³	<0.0001	G
trans,1,2-Dichloroethene	<0.0068 mg/s	<0.0077 mg/s	<0.015 mg/s	0.000019 µg/m ³	105 µg/m ³	<0.0001	G
Ethylbenzene	<0.0096 mg/s	<0.011 mg/s	<0.021 mg/s	0.000027 µg/m ³	1000 µg/m ³	<0.0001	S
Ethylene Dibromide	<0.0068 mg/s	<0.0077 mg/s	<0.015 mg/s	0.000019 µg/m ³	3 µg/m ³	0.00062	G
Mesitylene (1,3,5-Trimethylbenzene)	<0.017 mg/s	<0.019 mg/s	<0.036 mg/s	0.000046 µg/m ³	220 µg/m ³	<0.0001	S
Methylene Chloride	<0.019 mg/s	<0.016 mg/s	<0.035 mg/s	0.000045 µg/m ³	220 µg/m ³	<0.0001	G
Styrene	<0.0082 mg/s	<0.0094 mg/s	<0.018 mg/s	0.000023 µg/m ³	400 µg/m ³	<0.0001	S
Tetrachloroethene	<0.012 mg/s	<0.020 mg/s	<0.032 mg/s	0.000041 µg/m ³	360 µg/m ³	<0.0001	S
Toluene	0.029 mg/s	0.047 mg/s	0.076 mg/s	0.000098 µg/m ³	2000 µg/m ³	<0.0001	G
1,1,1-Trichloroethane	<0.0096 mg/s	<0.011 mg/s	<0.021 mg/s	0.000027 µg/m ³	115000 µg/m ³	<0.0001	S
Trichloroethene	<0.0075 mg/s	<0.0084 mg/s	<0.016 mg/s	0.000021 µg/m ³	12 µg/m ³	0.00017	S
Trichlorotrifluoroethane	<0.017 mg/s	<0.019 mg/s	<0.036 mg/s	0.000046 µg/m ³	800000 µg/m ³	<0.0001	S
Trichlorofluoromethane	<0.0071 mg/s	<0.0077 mg/s	<0.015 mg/s	0.000019 µg/m ³	6000 µg/m ³	<0.0001	G
Total Xylenes	<0.020 mg/s	<0.023 mg/s	<0.043 mg/s	0.000055 µg/m ³	730 µg/m ³	<0.0001	S
Vinyl Chloride	<0.0089 mg/s	<0.010 mg/s	<0.019 mg/s	0.000024 µg/m ³	1 µg/m ³	0.0024	S
Acetaldehyde	<0.92 mg/s	<1.03 mg/s	<1.95 mg/s	0.0025 µg/m ³	500 µg/m ³	0.00050	S
Formaldehyde	0.81 mg/s	<0.41 mg/s	<1.22 mg/s	0.0016 µg/m ³	65 µg/m ³	0.0024	S
Acrolein	<0.92 mg/s	<1.03 mg/s	<1.95 mg/s	0.0025 µg/m ³	0.4 µg/m ³	0.63	S
Acrolein	<0.92 mg/s	<1.03 mg/s	<1.95 mg/s	0.049 µg/m ³	4.5 µg/m ³	1.09	S - 1 hour

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