CREG Center - Maximum Emissions
Original CPP Air Permit Application A0041047 (3/11/2011), Ohio EPA Draft Air Permit P0107767 (11/30/2011), CPP Comments to Ohio EPA (2/23/2012) and Updated Air Permit Application A0044987

Pollutant	Category	1/2012 Major Source Threshold (TPY)	CPP Permit Application A0041047 March 11, 2011			Ohio EPA Draft Permit P0107767 November 30, 2011			CPP Comments to Ohio EPA February 23, 2012 and Update Permit Application A0044987			
			Exhaust Gas Concentration	Each Line (lb/hr)	4 Lines @ 92% (TPY)	Exhaust Gas Concentration	Each Line (lb/hr)	4 Lines @ 72% (TPY)	Exhaust Gas Concentration	Each Line (lb/hr)	3 Lines @ 96% (TPY)	% Change from CPP Permit Application
PM	NAAQS	100	20 mg/dscm	2.22	35.66	20 mg/dscm			20 mg/dscm	2.22	28.01	-21%
PM(F+C)	NAAQS	100	56 mg/dscm	6.22	99.84	56 mg/dscm		78.75	56 mg/dscm	6.22	78.51	-21%
SO_2	NAAQS	100	19.5 ppm	6.19	99.44	19.5 ppm		78.75	19.5 ppm	5.77	72.83	-27%
NO_2	NAAQS	100	51 ppm	11.63	186.76	51 ppm			28 ppm	5.95	75.11	-60%
NO_x	NAAQS	100	68 ppm	15.51	249.02	68 ppm		194.31	35 ppm	7.43	93.78	-62%
CO	NAAQS	100	50 ppm	6.94	111.47	50 ppm		87.95	50 ppm	6.46	81.53	-27%
VOC	NAAQS	100	0.026 lb/MMBtu	2.11	33.82	0.026 lb/MMBtu		26.59	0.026 lb/MMBtu	2.11	26.63	-21%
Ammonia	Air Toxic	NA	15 ppm	1.27	20.33				15 ppm	1.18	14.90	-27%
H_2SO_4	Air Toxic	100	1.2 ppm	0.58	9.37	1.2 ppm	0.58	7.4	1.2 ppm	0.54	6.83	-27%
CO_{2e} (Biogenic)	Other							112,796			112,796	No Change
CO_{2e} (Non-Biogenic)	Other	100,000						92,287			92,287	No Change
HCl	Air Toxic/HAP	10	2.9 ppm	0.52	8.42	2.9 ppm	0.52	6.55	2.9 ppm	0.49	6.19	-26%
Dioxin	Air Toxic/HAP	10	13 ng/dscm	0.0000014	0.0000232	13 ng/dscm		0.0000127	13 ng/dscm	0.0000014	0.0000176	-24%
Lead	NAAQS/Air Toxic/HAP	10	0.14 mg/dscm	0.0155	0.250	0.14 mg/dscm		0.25	0.14 mg/dscm	0.0155	0.196	-22%
Cadmium	Air Toxic/HAP	10	0.01 mg/dscm	0.0011	0.018	0.01 mg/dscm		0.013	0.01 mg/dscm	0.0011	0.014	-22%
Mercury	Air Toxic/HAP	10	0.05 mg/dscm	0.0056	0.089	0.05 mg/dscm		0.13	0.05 mg/dscm	0.0056	0.072	-19%
HF	Air Toxic/HAP	10	0.5 ppm	0.050	0.80	0.5 ppm		0.63	0.5 ppm	0.046	0.58	-28%
Total HAPs		25			9.57			7.32			7.04	-26%
Design Basis:												
Number of Gasifier Lines			4			4			3			
Daily MSW Fuel Pellets Input to Each Line (TPD)			140			140			140			
Potential Annual Heat Input to Furnaces/HRSGs			2,838,240			2,838,240			2,128,680			
Annual Allowed Heat Input to Furnaces/HRSGs			2,611,181			2,045,402			2,045,000			
Annual Capacity Factor (Allowed Heat Input/Potential Heat Input)			92.00%			72.07%			96.07%			

Example Calculations:

Exhaust Discharge = 50,346 cubic meters per hour for each gasifier line

Maximum Hourly PM(F+C) Emission Rate for Each Line = 50,346 m^3/hr x 56 mg/m^3 x 1 Kg/1,000,000 mg x 2.204 lb/Kg = 6.22 lb/hr (rounded to the nearest hundredth)

Maximum Annual PM(F+C) Emission Rate for Each Line = 6.22 lb/hr x 8,760 hrs/yr x 1 Ton/2,000 lbs = 27.24 TPY (rounded to the nearest hundredth)

Maximum Annual PM(F+C) Emission Rate for Three Lines = 96.07% x (3 lines x 27.24 TPY) = 78.51 TPY (rounded to the nearest hundredth)

mg/m^3 = (ppmv)(12.187)(MW) / (273.15 + ^oC)

Conversion from 19.5 ppm to mg/m^3 for SO_2: (19.5 ppm x 12.187 x 64.07) / (273.15 + 20) = 51.94 mg/m^3

Maximum Hourly SO_2 Emission Rate = 50,346 m^3/hr x 51.94 mg/m^3 x 1 Kg/1,000,000 mg x 2.204 lb/Kg = 5.77 lb/hr (rounded to the nearest hundredth)

Maximum Annual SO_2 Emission Rate for Each Line = 5.77 lb/hr x 8,760 hrs/yr x 1 Ton/2,000 lbs = 25.27 TPY (rounded to the nearest hundredth)

Maximum Annual SO_2 Emission Rate for Three Lines = 96.07% x (3 lines x 25.27 TPY) = 72.83 TPY (rounded to the nearest hundredth)