Hillsborough County Resource Recovery Facility, Municipal Waste Combustor Unit 4
Mercury Monitoring Report - September 29, 2011
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Hg Emission Standards and Limits

The Hg emission standard for a newer municipal waste combustor (MWC) from 40 Code of Federal Regulation (CFR) 60, Subpart Eb which was amended on May 10, 2006 is **50 µg/m^3** (concentration based). A Hg emission limit of **28 µg/m^3** was established in the original Prevention of Significant Deterioration (PSD) permit, PSD-FL-369, issued on October 2, 2006 for the Hillsborough County Resource Recovery Facility (HCRRF) MWC Unit 4 which is less than the federal Hg standard. A **0.022 lb/hour** (mass based) Hg emission limit was also established in the original PSD permit.

The 0.022 lb/hour Hg emission limit at 8,760 hours/year is equivalent to **192.72 lbs/year**. The PSD Significant Emission Rate (SER) for Hg is 0.1 tons per year (TPY, mass based) or **200 lbs/year**. The mass Hg emission limit established in the original PSD permit for HCRRF MWC Unit 4 was therefore at 96% of the PSD SER for Hg. This is very close to the level of emissions which would have required a Best Available Control Technology (BACT) determination for Hg in the original PSD permit. A BACT determination is required when a PSD SER for a listed air pollutant is exceeded. The lb/hour mass based Hg emission limit was established to avoid a BACT for Hg emissions.

Hg Monitoring Review

The federal regulation for new MWCs, 40 CFR 60, Subpart Eb which was amended on May 10, 2006, only requires annual stack testing for Hg emissions. However, the amendments did add the option to use a mercury (Hg) continuous emission monitoring system (CEMS). Under certain prerequisites the owner or operator may elect to use a Hg CEMS to demonstrate compliance with the federal Hg emission standard.

The State of Florida rule for new incinerators, Rule 62-296.401(3), Florida Administrative Code (F.A.C.) does not specify test frequencies other than what is contained in Chapter 62-297, F.A.C., Rule 62-296.401(3), F.A.C. simply refers to Chapter 62-297, F.A.C. The general testing frequency in Florida's EPA approved state implementation plan (SIP), Rule 62-297.310(7)(a)4., F.A.C. defaults to a minimum test frequency of annual for Hg emissions. The Florida rule for Waste-to-Energy Facilities, Rule 62-296.416(3)(a)3., F.A.C., specifies an annual test frequency for Hg emissions. Pursuant to Rule 62-297.310(7)(a)4., F.A.C. the test frequency for air pollutants may be established otherwise by permit.

Given that Hg emissions were so close to the PSD SER (96% of the threshold) and Hg emissions are variable, a test frequency of more than annual was appropriate to provide reasonable assurances that Hg emissions remain below the PSD SER, a TPY mass based value. The original PSD permit required quarterly Hg stack testing for the first two years of operation coupled with the requirement to provide more frequent monitoring by using a Hg CEMS to be installed within the first two years of operation. HCRRF MWC Unit 4 began commercial operation on September 5, 2009. Two years of quarterly Hg emission testing have now been completed. The quarterly Hg emission stack test results for the HCRRF MWC Unit 4 are shown in Table 1.

Table 1. Quarterly Hg Emission Stack Test Results for the HCRRF MWC Unit 4
(Emissions Unit ID No. 107, Facility ID No. 0570261)

Hg Stack Test Date(s)	Hg Emission Results [1], µg/m^3	Hg Emission Results, Calculated equivalent lb/hour [2]	Calculated % of 0.022 lb/hour (mass) Hg limit
1st Year of Operation			
08/31/2009	1.53	0.0080	36%
12/15/2009	2.69	0.0074	34%
03/04/2010	2.80	0.0075	34%
06/11/2010	2.21	0.0074	34%
Average:	**1.92**	0.0076	**34%**
2nd Year of Operation			
09/30/2010	2.33	0.0072	33%
12/06/2010	1.22	0.0062	28%
03/09/2011	7.68	0.0072	33%
06/10/2011	1.38	0.0072	33%
Average:	**3.15**	0.0070	**31%**

[1] Obtained from ARMS database, accessed on 09-28-2011.
[2] Using a conversion factor of 1.748 x 10^{-9} lb/ft^3 and the individual gas flow rates (dscfm) from the stack tests.