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Mr. Jim Eddinger
Energy Strategies Group (D243-01)
Sectors Policies and Program Division
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Dear Jim:

Subject: Review of Mercury Emissions Data for Biomass Boilers

We have been working with the January 19, 2010 boiler database to identify the units that would be in the "top 12%" of biomass units on the basis of the mercury emission test results contained in the database. In our analysis, we assumed a boiler listed as burning any amount of biomass during an emission test would be in the biomass subcategory, unless coal or petroleum coke was also burned during the test. Biomass was assumed to include all forms of solid biomass fuels including bark, wood residues, resinated wood, wastewater treatment plant residuals, bagasse, agricultural materials, and paper, but not liquid or gaseous forms of biomass.

All mercury emission tests for a given biomass unit were first averaged. Values reported as non-detect, below detection level, or detection level-limited were treated as if they were actual values. The averages for 101 units were arrayed from lowest to highest, and the 13 lowest (12%) chosen for further investigation. Selected information in the database for these 13 boilers is shown in Table 1. Average mercury emissions ranged from 0.05 to 0.22 $lb/10^{12}$Btu heat input. Several of these averages were based on non-detect values for all sampling runs.

We believe most of the emission test numbers for these 13 units suffer from various shortcomings. In general, any Method 29 result less than about 0.15 $lb/10^{12}$Btu is highly suspect. This number is based on a sampling volume of 4 cubic meters (the minimum sample volume required by EPA for the 2009 boiler MACT sampling, and nominally equivalent to a 4-hour sampling time), a stack gas concentration of 10% O_2 and an approximate laboratory sample detection level of 0.5 µg (towards the lower end of sample detection levels reported by different laboratories) for the sum of the five fractions in the Method 29 analysis. It seems likely pre-2009 Method 29 sampling for mercury would have been done with lesser sample volumes and higher laboratory detection levels, so the corresponding overall method detection levels would have been considerably higher than 0.15 $lb/10^{12}$Btu. As explained in our January 5, 2010 letter, the primary reason for the reporting of extremely low mercury results from Method 29 tests was the assignment of zero to one or more of the five fractions that were found to be below the laboratory minimum detection or reporting level for that fraction.

Specifics regarding potential problems with tests for each of the 13 boilers are provided in Table 1. We are contacting forest products companies on this list to alert them about these problems, and are

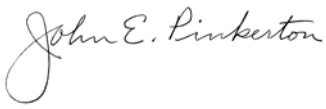
encouraging them to submit corrected, i.e. calculated in accordance with EPA's September 16, 2009 guidance, run-by-run numbers to EPA as soon as possible.

A preliminary review of mercury test results for coal and oil boilers strongly suggests similar problems exist with the reporting of Method 29 results. We are reviewing several test reports for coal/wood combination boilers to confirm that suspicion.

We continue to be concerned about using Method 29 mercury results that include below method detection level values to identify 'best performing units' and setting emission limits with the HMIWI procedure based on such results. As suggested in our January 5 letter, we believe EPA should determine the practical quantitation levels for the Method 29 test results in the January 19 database, and base MACT mercury emission limits on them.

We would be happy to discuss any questions you or your contractor may have on this analysis.

Sincerely,



John E. Pinkerton

cc: R. Wayland, EPA
B. Shrager, EPA
A. Singleton, ERG
A. Reitter, NewPage
D. Lane, Rayonier
T. Hunt, AF&PA
A. Jain, NCASI

EPA January 19, 2010 Emissions Database – Biomass Boilers with Lowest Mercury Emission Rates

Facility ID	Unit ID	Average Hg, lb/10^6Btu	Listed as ND?	Test Year(s)	Comments
ARDomtarIndustries	PB1	5.27E-08	no	2004	Non-detects in sampling train counted as zero; counting at MDL would give total of 7.8E-07 lb/10^6Btu. Test conducted when boiler had multiclones for PM control, wet ESP added in 2007.
LABoiseNewsprintDeRidder	69-03	5.50E-08	yes	2009	Laboratory reporting error. Correction will be submitted to EPA showing 1.05E-06 lb/10^6Btu when NDs are counted at the MDL.
SCInternationalPaperEastover	No. 2 Power Boiler	6.28E-08	yes	2009	Suspect error in how detection levels were reported by laboratory. When NDs are counted at sample MDL, average would be 1.7E-07 lb/10^6Btu.
FLUSSugarCorp	Boiler No. 7	9.73E-08	no	2003	Below M29 MDL
NDCargillWestFargo	Foster Wheeler Boiler (EU43)	1.22E-07	2009 yes, 2005 no	2009, 2005	2009 result 1.4E-08 lb/10^6Btu; 2005 test reported as 2.3E-07 lb/10^6Btu
ORFlakeboardEugene	Boiler-2	1.36E-07	yes	2009	Appears to be correct.
SCBowaterCoatedPaper	Combination Boiler No. 2	1.63E-07	2009 yes, 2004 no	2009, 2004	2009 result in database 8E-08 lb/10^6Btu, report lists 5.2E-07. 2004 test reported as 2.5E-07 lb/10^6Btu. Non-detects in sampling train were counted as zero; counting at DL total would be 8.1E-07 lb/10^6Btu .
SCBowaterCoatedPaper	Combination Boiler No. 1	1.75E-07	yes	2004	Non-detects in sampling train were counted as zero; counting at DL total would be 5.8E-07 lb/10^6Btu
TNKimberlyClark2397	WB	1.77E-07	no	2005	Only filter portion of sampling train reported; counting entire sampling train at DLs would give a total of 2.4E-06 lb/10^6Btu
MESDWarrenSomerset	No2 Power Boiler	1.92E-07	2009 yes, 2008 no	2009, 2008	2009 result in database is 7.2E-08 lb/10^6Btu; report lists 1.4E-07 lb/10^6Btu. Average for 9 runs in 2008 was 3.1E-07 lb/10^6Btu; unsure how NDs were handled.
FLSmurfit-Stone	5PB	2.05E-07	no	2007	EPA Method 101A used. Non-detects in the sampling train components were counted as zero. If counted at detection level, the emission rate would be 7.3E-07 lb/10^6Btu for the 3 run average. One run with non-detects in both fractions was not included in the 2008 EPA survey response.
MSMasoniteLaurel	BB-003	2.18E-07	no	2005	Two sampling runs; non-detects in sampling train counted as zero; counting at DL, total would be 8.9E-07 lb/10^6Btu. Boiler had wet scrubber in 2005, replaced with ESP in 2006. Boiler scheduled for permanent shutdown by September 2010.
FLRayonierPerformance	PB06	2.45E-07	yes	2009, 2008	Non-detects in sampling train were counted as zero for all 9 sampling runs; counting at DL the 9 run average would be 4.7E-07 lb/10^6Btu