Coalition for Responsible Waste Incineration

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EPA Docket Center (EPA/DC)
U. S. Environmental Protection Agency
Mailcode: 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attn: Docket ID No. EPA-HQ-OAR-2006-0534

The Coalition for Responsible Waste Incineration (CRWI) appreciates the opportunity to submit comments on *Standards for Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Hospital/Medical/Infectious Waste Incinerators* (73 FR 72962, December 1, 2008). CRWI is a trade association comprised of 27 members with interests in waste combustion. CRWI members operate incinerators, liquid fuel-fired boilers, solid fuel-fired boilers, and hydrochloric acid production furnaces and are regulated under a number of MACT standards. CRWI members also provide technical expertise and services to facilities that own and operate various types of combustion devices. We appreciate the effort EPA has put into this proposed rule. We look forward to working with the Agency to develop regulations that are consistent with the requirements of the Clean Air Act and good engineering practices.

CRWI members are primarily concerned that about two things in this proposed rule: 1) the use of potentially biased data to set the hydrochloric acid (HCl) standard and 2) the inability of *any* facility in the database to meet all of the standards without making modifications. Our comments and suggested modifications to the rule are as follows.

1. EPA's proposed HCl standards of 2.4 ppmv for existing sources and 0.75 ppmv for new sources are based on biased data of indeterminate quality and are unachievable.

   The test results EPA used to set the HCl standards contains a known bias at low levels of HCl (Air Methods 26 and 26A and RCRA SW 846 Method 0050). If this bias were

consistent and repeatable, its presence may not preclude EPA using this data to set standards. However, that is not the case. EPA studies have concluded that the results vary widely with temperature and moisture at levels below 20 ppmv for one testing method, and that the other method is not accurate below 5 ppmv. Since all of the top performers for the Large (Table 1), Medium (Table 12), and Small non-rural (Table 23)[1] HMIWI units use wet scrubbing to remove HCl, they will have considerable moisture in their stack gas. Thus, their test results are suspect and the quality of the data EPA used to set the floor standard for HCl emissions is not sufficient to set a standard below 20 ppmv. Since the Agency also has concluded that neither available method is accurate below 5 ppmv, these measurement uncertainties affect both the validity of the proposed standard and a facility's ability to comply with it.

Methods 26 and 26A both exhibit a number of problems at low concentrations of HCl and in the presence of moisture in the stack gases. These are detailed in the following questions.

Does the HMIWI database for HCl contain data of defined quality for the top performers?

- Data in the database results from the 1997 requirement to achieve HCl emissions of less than 100 ppmv.
- This standard was a pass/fail criterion; either the incinerator met the standard or it didn't. Highly accurate results were only needed close to the pass/fail point.
- There are values in the database an order of magnitude or more below the current standard. EPA is basing its floor calculations on these values that were generated only for a pass/fail decision and not for the current purposes.
- When these low values were generated as a result of the current test program, it would have been patently clear that the current standard was met. Typically, because of the order of magnitude gap between the result and the current standard, there would have been little, if any, scrutiny of the quality indicators accompanying the results (i.e. the conclusion is the unit passed easily). However, if the results were close to the standard, then quality indicators would have been examined to verify the "pass" conclusion. Thus, based on the historical context under which the data

[1] Appendix C, of the Memorandum from Thomas Holloway to Mary Johnson, entitled "MACT Floors, Data Variability Analysis, and Emissions Limits for Existing and New HMIWI," dated October 24, 2008 (Docket No. EPA-HQ-OAR-2006-0534-0320)

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were collected, the low values that exist in the database representing "top performers" would be expected to be of indeterminate quality.

What evidence exists to suggest that the low values in the database may be biased and not be accurate?

- Methods 26 and 26A (and its RCRA equivalent, SW 846 Method 0050) are acknowledged by EPA's Methods Branch to suffer from a negative bias at low concentrations (< 20 ppmv) especially when used in stacks with significant moisture content.[2]
- Any trace of moisture condensation or wetting of the filter will remove HCl from the gas stream and result in a low bias in the result because the HCl does not reach the collecting impinger where it is supposed to be captured. This problem is even more serious at HCl concentrations in the low ppmv range.[3]
- All but one of the top performing HMIWI in the database have wet scrubbing systems that operate at the quench adiabatic saturation temperature of approximately 180° F (+/- 20° F). At these temperatures, a quick look at a psychometric chart shows that the stack gas will contain approximately 50% moisture. Many of these stacks also contain condensed water droplets or mist that is entrained by the velocity of the flow in the stack.
- Sampling systems are heated in an attempt to prevent moisture from condensing before the collecting impinger and to evaporate any water droplets that are captured from the stack gas. The EPA Methods Branch has suggested, based on a controlled laboratory study,[2] that a minimum sampling system temperature of 200° C (392° F) is necessary to eliminate the bias, but acknowledges that even this temperature might be insufficient if large amounts of water are present.[3]
- Methods 26 and 26A both require a sampling temperature of 248° F +/- 25° F. This is far below the 392° F suggested by the EPA Methods Branch to eliminate negative bias. Therefore, it can be inferred that the database contains data that has a significant negative bias.

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[2] Steger, J.L., Wagoner, D.E., Bursey, J.T. and Merril, R.G. of Radian Corporation; and Fuerst, R.G. and Johnson, L.D. of the Atmospheric Research and Exposure Assessment Laboratory, US EPA, "Laboratory Evaluation of Method 0050 for Hydrogen Chloride" in Proceedings of the 13th Annual International Incineration Conference, Houston, TX, May 1994, University of California, Irvine, CA, 1994.

[3] Johnson, L.D. of the Air Methods Research Division, National Exposure Research Laboratory, US EPA, "Stack Sampling Methods for Halogens and Halogen Acids" presented at the EPA/A&WMA International Symposium, Measurement of Toxic and Related Air Pollutants, Research Triangle Park, NC, May 1996.

How significant is this negative bias from moisture content of the stack gas?

- EPA found in a controlled laboratory study that the bias is between 17 and 29 percent at stack gas moisture content of 7 to 9 percent.[2] This stack gas moisture is much less than the nominal 50% moisture contained in US wet air pollution control system stacks. It is logical to expect much greater bias in the presence of higher water vapor content and in the presence of water droplets or mist.

Is EPA using data from sources that may be affected by this negative bias to establish the standards?

- Yes. All of the top performers in the Large, Medium, and Small Non-Rural categories use wet scrubbing systems to control HCl emissions. Thus, the data from every one of these sources has the potential to be biased.

What other potential negative bias may exist in the sampling methods used to generate the data in the HWC MACT database?

- During the field validation of the stack sampling methods used to generate data in the HWC MACT database, EPA identified a concentration bias. The Method 26A isokinetic type sampling had a negative bias of approximately 50% compared to non-isokinetic sampling or a continuous monitor at concentrations of approximately 5 ppmv HCl.[2] This bias did not exist at approximately 20 ppmv.
- Alkaline particulate matter collecting on the filter upstream of the measurement impingers is also acknowledged to result in a negative bias, although the magnitude of the effect has not been quantified[3]. Wet scrubbers in the United States typically use caustic (an alkali) to neutralize acid gases. Any droplets or mist from the scrubbing solution that carries over from the scrubber to the stack could be drawn into the sampling train, evaporated, and deposited on the filter as an alkaline salt. Therefore, HCl passing through the filter would be absorbed before the collecting impingers resulting in a negative bias.

Are the standards achievable? Can sources using EPA stack sampling methods reliably and defensibly determine compliance with standards set at 2.4 and 0.75 ppmv?

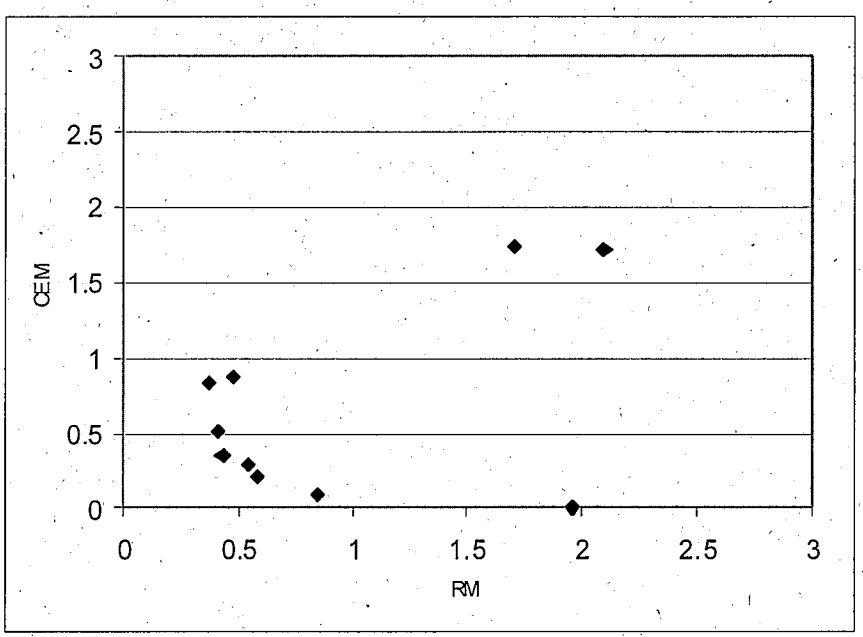
- It is likely that EPA Methods 26 and 26A were used to gather most of the data in the database. Section 13.1 of Method 26A states "The method

has a possible measurable negative bias below 20 ppmv HCl perhaps due to reaction with small amounts of moisture in the probe and filter." Method 26 does not have a statement concerning bias but since both use essentially the same extraction methods, it would be logical for both to have the same bias.

- EPA's Methods Branch has concluded "good precision and accuracy become difficult to achieve with these methods (Methods 26 and 26A) at concentrations below approximately 5 ppm."[3]

What other implications are there to setting the HCl standard at 2.4 ppmv and 0.75 ppmv?

- Setting the standards at these unachievable low levels will negatively impact the development and application of continuous emissions measurement (CEMS) technologies. Eli Lilly and Company has presented data (see below) to the EPA's Methods Branch demonstrating the lack of a correlation between Method 26A and a CEMS at concentrations comparable to the proposed standards. The Methods Branch acknowledged the limitations of Method 26A and recommended the use of cylinder gas calibrations instead. However, accuracy and stability of HCl cylinder gas concentrations is poor at low concentrations because of the reactivity of HCl. See the figure below.



CRWI brought these same concerns before EPA when they were promulgating the hazardous waste combustors MACT rule. EPA responded by correcting "all of the total chlorine measurements in the data base that were below 20 ppmv to account for potential systematic negative biases in the Method 0050 data..." (70 FR 59420, October 12, 2005). It should be noted that Method 0050 and 26A are functionally equivalent. They then used a statistical method to impute a standards deviation allowing them to incorporate variability into the development of the floor standard.

In summary, CRWI is concerned about two issues with the HCl data: 1) the usability and representativeness of the data in the database; and 2) the achievability of the resulting standard using the prescribed compliance method. Given the known and suspected sampling biases of Methods 26 and 26A at low concentration of HCl and in the presence of water vapor, we do not believe that data in this database below 20 ppmv are usable and/or representative and are technically indefensible. A possible solution is for the Air Office to follow the example used by the Office of Solid Waste when they corrected all HCl values below 20 ppmv to 20 ppmv, used a statistical method to imputed a standard deviation for these test runs, and calculated a floor standard based on the corrected data and an imputed standard deviation.

2. The method used to develop these proposed standards violates the Clean Air Act criteria for standard setting.

   Section 129(a)(2) of the Clean Air Act requires EPA to establish new source standards that are no less stringent than what is achieved in practice by the best controlled similar unit. It also requires EPA to set the existing source emission standards to be are no less stringent than the average emissions limitations achieved by the best performing 12 percent of units.

   This provision, commonly referred to as the "floor" provision, incorporates various concepts. First, the standards must be based on what "similar units" are actually doing. Second, the standard must be based on controls that similar sources are actually employing. Finally, floor standards must be actually achieved by the best performers. This insures that at least one source can meet all of the new source standards and a certain number of existing sources can meet the existing source standards without needing to install additional operating equipment or change their methods of operation.

   In an effort to see if the method EPA used to develop these proposed standards resulted in achievable standards, CRWI examined the data base to

see how many facilities could meet all proposed existing source standards. The data for this analysis was taken from Tables 1-24, Appendix C, of the Memorandum from Thomas Holloway to Mary Johnson, entitled "MACT Floors, Data Variability Analysis, and Emissions Limits for Existing and New HMIWI," dated October 24, 2008 (Docket No. EPA-HQ-OAR-2006-0534-0320).

Table 1 lists of all Large Existing sources that currently meet at least one of the proposed standards. As can be seen, no source can meet all of the proposed existing source standards. The closest was source 125 which can meet 9 of the 10 proposed standards. There were four sources that could currently meet 8 of the 10 proposed standards. CRWI believes that since no source can currently meet all proposed existing source standards, these standards are not achievable. Since no one source can meet the proposed existing source standards, no one source would be able to meet the more stringent new source standards either. The same is true for Medium Existing sources (Table 2 – best source can meet 7 of 10 proposed standards), Small Non-Rural Existing sources (Table 3 – best can meet 6 of 10 proposed standards), and Small Rural Existing sources (Table 4 – best can meet 9 of 10 proposed standards). Obviously, the method EPA has used to select the top performers for these categories is flawed and the Agency needs to develop another method for selecting the top performers. This is even more obvious when one examines the small non-rural and small rural categories. Both of these categories have only two units in each of these categories. Yet, with only two units, neither of them can currently meet all of the new or existing source standards for their categories.

CRWI has shown, using EPA's database, that the proposed standards do not reflect the performance of actual sources. As such, these proposed standards are not achievable. As such, they are not legal under section 129(a)(1) of the Clean Air Act. We strongly suggest that EPA revise their method of selecting the top performers so that at least one source can meet the all of the new source standards and at the certain portion of the existing sources can meet the existing source standards. This would require that EPA revise their method and re-propose this rule, giving all parties the opportunity to comment on the new method selected.

Coalition for Responsible Waste Incineration

Thank you for the opportunity to comment on this proposed rule. If you have any questions on our comments, please contact me (202-452-1241 or mel@crwi.org).

Sincerely yours,

Melvin E. Keener, Ph.D.
Executive Director

cc: CRWI members
Mary Johnson, EPA

Tables attached

Table 1. The ability of Large Existing HMIWI units to meet the proposed standards. An "X" in the column means that the average emissions for that HAP is less than the proposed standard.

Unit ID		HCl	CO	Pb	Cd	Hg	PM	CDD Total	CDD TEQ	NO_X	SO_2		Number met out of 10
125		X		X	X	X	X	X	X	X	X		9
5		X	X		X	X	X		X	X	X		8
29			X	X	X	X	X		X	X	X		8
36	1		X	X	X	X	X		X	X	X		8
120	2		X	X	X	X		X	X	X	X		8
40				X	X	X	X	X	X		X		7
1			X		X	X	X			X			5
15	2		X	X	X		X		X				5
36	2			X	X		X			X	X		5
51					X	X	X			X	X		5
54		X			X	X	X				X		5
60	1			X	X		X		X	X			5
98	1	X	X		X					X	X		5
120	1				X			X	X	X	X		5
130			X			X		X	X	X			5
55					X	X	X			X			4
84			X					X	X		X		4
15	1		X	X	X								3
20	1	X	X			X							3
20	2	X	X			X							3
44		X	X							X			3
46		X								X	X		3

Table 1. Cont.													
		HCl	CO	Pb	Cd	Hg	PM	CDD	CDD	NO_X	SO_2		Number met
Unit ID								Total	TEQ				out of 10
48		X	X			X							3
65	1	X						X	X				3
65	2	X						X	X				3
71		X								X	X		3
87					X	X	X						3
106		X			X				X				3
110					X		X		X				3
42							X				X		2
43		X								X			2
77						X			X				2
59	1								X				1
59	2								X				1
94		X											1
109					X								1

Table 2. The ability of Medium Existing HMIWI units to meet the proposed standards. An "X" in the column means that the average emissions for that HAP is less than the proposed standard.

		HCl	CO	Pb	Cd	Hg	PM	CDD	CDD	NO_X	SO_2		Number met
Unit ID								Total	TEQ				out of 10
34		X	X		X	X		X	X		X		7
63			X	X	X	X	X			X	X		7
108	1	X	X			X		X	X	X	X		7
30		X	X		X					X	X		5
38			X	X	X		X				X		5
41			X					X	X	X	X		5
95			X	X	X	X	X						5
13		X	X							X	X		4
81			X		X		X			X			4
82		X	X		X	X							4
111		X					X			X	X		4
16		X				X				X			3
18		X				X				X			3
25		X	X			X							3
47										X	X		2
21						X							1
88						X							1

Table 3. The ability of Small Non-Rural Existing HMIWI units to meet the proposed standards. An "X" in the column means that the average emissions for that HAP is less than the proposed standard.

		HCl	CO	Pb	Cd	Hg	PM	CDD	CDD	NO_X	SO_2		Number met
Unit ID								Total	TEQ				out of 10
86		X	X	X	X		X	X					6
129		X		X	X	X	X		X				6

Table 4. The ability of Small Rural Existing HMIWI units to meet the proposed standards. An "X" in the column means that the average emissions for that HAP is less than the proposed standard.

		HCl	CO	Pb	Cd	Hg	PM	CDD	CDD	NO_X	SO_2		Number met
Unit ID								Total	TEQ				out of 10
116		X	X	X	X		X	X	X	X	X		9
115		X	X			X	X	X	X				6