Coalition for Responsible Waste Incineration

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April 29, 2005

Mr. Dan Bivins
U.S. EPA, OAQPS
D205-02
RTP, NC 27711

Dear Mr. Bivins:

The Coalition for Responsible Waste Incineration (CRWI) appreciates the opportunity to submit comments on EPA's draft Performance Specification (PS) 11 guidance documents (e-mailed on March 3, 2005). CRWI is a trade association comprised of 26 members with interests in hazardous waste combustion. CRWI's members are potential users of particulate matter (PM) continuous emission monitoring systems (CEMS) as well as manufacturers of PM CEMS equipment. We appreciate the effort EPA has put into publishing draft guidance documents and look forward to working with the Agency to develop an effective document that is consistent with the requirements of the Clean Air Act and good engineering practices.

In general, CRWI believes that guidance documents are well written and helpful to a facility that is installing, calibrating, and using a PM CEMS. The calibration spreadsheets could be very helpful. We like the idea of entering the raw data and letting the spreadsheet calculate the parameters for the different models and summarize the results. However, we believe that the Agency should modify the discussion in the documents of which model is the "best." In addition, we would like to see the precision and bias spreadsheets expanded to include the methods for identifying possible outliers, if feasible. Detailed comments follow.

V. Stratification

The guidance document requires that when using a PM CEMS to check for stratification, the duration of the sampling times should all be the same. CRWI can understand why

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that would be necessary with the reference method but does not see why it is necessary for using a CEMS. The measurement of PM using the reference method is time dependent. However, once the sampling time requirement of the instrument is met (e.g., a few seconds for light scattering instruments and 10 to 15 minutes for beta gauges), the readings from the CEMS are not time dependent. There is no reason why the sampling times have to be the same. From an experimental design, it might be good practice to sample the same amount of time per point on the transect, but it is not necessary. What is necessary is that the probe remains at the sample point until the response is relatively constant. That time may vary from point to point, depending on a number of factors. We suggest that the language on page V-5 be modified to allow for different sampling times at each sampling point where appropriate.

We also do not understand why there needs to be an example of scaling a response by 80% (see Table A-3). This does not change anything other than the slope and is counter to the argument made under V.4 (page V-3) that any stratification will be accounted for by the calibration curve. When EPA multiplied all the mA values by 0.8 and reran the regression, there was no change in the intercept, the correlation coefficient and the intervals. In addition, if one multiplies the slope of the new equation by 0.8 it becomes the slope of the old equation – just as would be expected. This exercise does not change anything. EPA has already stated on Page V-3 that the correlation equation will account for any stratification. The only thing that matters is if the stratification changes over time. If the stratification is constant over time, there is no real reason to even run a stratification test. CRWI believes that using even an un-calibrated CEMS would be a better way to determine stratification than using Method 5. Since this example does not add anything to the discussion and could be confusing, we suggest that EPA drop the 80% discussion in Example 1 of the Appendix.

W. Evaluation of RCA Data

At the bottom of W-1, the guidance states that it is not necessary to conduct the response correlation audit (RCA) over the three levels of PM concentrations described in section 8.6(4) of PS 11. CRWI does not believe that this matches the requirements in Procedure 2 and PS 11. The requirements to conduct a RCA are in Procedure 2 Sections 10.3(8) and 10.4(5). The only exception we can find in 10.3(8) is that a minimum of 12 runs are required instead of 15. In addition, it does not make sense to require a range of values for the calibration and not require a similar range for the RCA. In addition, Procedure 2, section 9.0(5) seems to contradict this because it states "RCA and RRA procedures, including sampling and analysis

methods, sampling strategy, and structuring test conditions over the prescribed range of PM concentrations [*sic*]." In this quote RRA refers to a relative response audit. CRWI suggests that this section be modified to correspond to the requirement in Procedure 2 and PS 11.

Y. Example Calculations – Initial Correlation Test

For the four examples given in Section Y, the "best model" is always defined as the one having the highest correlation coefficient. While the guidance does state that any model that satisfies the three criteria (correlation coefficient, confidence interval, and tolerance interval) can be used, CRWI is concerned that facilities and permit writers may be unduly influenced by the concept that the "best model" is defined by the highest correlation coefficient. While the correlation coefficient does define how well a particular model fits the data, it may not reflect which model can best be used to predict PM concentration based on the response of the instrument. Often, the determination of the best predictor is a combination of quantitative factors (correlation coefficient, confidence intervals, and tolerance intervals) and qualitative factors (the shape of the curve, the range of the data, and how the data looks). The graph for Facility B (Figure Y-2) is a very good example of why one should not rely strictly on the correlation coefficients to choose the best model. The lack of data in the middle of the data range will create a higher correlation coefficient for the non-linear models than will be obtained from the linear model. Based strictly on correlation coefficients, the "best" model would be the exponential model. However, one should remember that the purpose of this calibration is to develop a robust relationship between instrument output and PM concentration, one that is an accurate predictor of PM concentration. It is highly important for the prediction to be as accurate as possible when the instrument readings approach the emission limitations (standard). Thus, the best predictor at or near the emission limits may not have the highest correlation coefficient and, in some cases, may not even pass the quantitative acceptance criteria. It is difficult to write guidance to describe some of these intricacies in developing calibration relationships. This understanding can only come from experience with developing these relationships and applying them. We suggest that EPA remove the idea that the "best model" is defined by the highest correlation coefficient. Instead, we believe that the guidance should state that any model that meets the acceptance criteria can be used.

In fact, CRWI suggests that the Agency take an additional step in the idea of choosing the best model. We can envision a circumstance where the best model for predicting PM concentrations at or close to the standard might not

meet one of the three acceptance criteria. Rather than choosing a model that does not accurately predict the concentration at the standard, CRWI suggests that Agency develop a method by which the facility can petition the Agency to use the more appropriate model. In this petition, the facility could explain the rationale for choosing this model. The permitting agency would review the rationale and decide whether to grant the request, require the use of a less appropriate model, or require the facility to redo the calibration test.

CRWI is also concerned that all the examples show data ranges (up to 33 mA) outside what we think are the normal output ranges for PM CEMS. It is our understanding that the range of most of the PM CEMS is 4 to 20 mA. We suggest that the examples be modified to reflect realistic ranges for these instruments.

CRWI believes there is a typographical error in the last paragraph on Y-31. Based on Table Y-16, the polynomial model also satisfies the acceptance criteria. On the next page, EPA discusses an additional acceptance criterion for polynomial models that requires these models be checked to determine where the maximum value occurs. This criterion is defined in Section 12.4 of PS 11. CRWI agrees that the additional criterion is needed for polynomial models. We are concerned that this is the first time this criterion has been mentioned in the guidance document. We suggest that this discussion be incorporated into each example in Section Y. Thus, for the first example, the discussion could state that now that the polynomial model has passed the correlation coefficient, confidence interval, and tolerance interval criteria, this model must now be tested to determine if it meets the maximum value criterion. The calculations would be shown and the text would conclude that it meets the criterion. By doing it this way, EPA would make sure the first example in the guidance document accurately reflects all the tests that must be made to ensure that a model is acceptable. This is not a major point but we believe that not discussing this criterion until the third example could result in it being overlooked.

Z. Precision and Bias

CRWI believes that this is a good discussion of precision and bias.

The spreadsheet also seems to be useful. CRWI found one error in the legends for the graph on the "Test Data" tab. The axes labels should be Train A and Train B. However, we note that the paper copies in the Appendix of Z have the correct labels. This error may have already been corrected but wanted to point it out in case it was missed. CRWI has an additional concern

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that the spreadsheet is limited to checking if the data is biased. CRWI believes that it would be useful if this spreadsheet could also be used to identify possible outliers using the relative standard deviations and/or residuals as is described in the text. CRWI suggests that EPA consider adding these functions to the precision and bias spreadsheets.

Again, thank you for the opportunity to comment on these draft guidance documents. We hope the comments will be useful to the Agency. If there are questions, please contact us (crwi@erols.com or 202-452-1241).

Sincerely yours,

Melvin Keener, Ph.D.
Executive Director

cc: CRWI Board