Coalition for Responsible Waste Incineration

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Summary

We agree with the way EPA is handling the following issues.

1. Startup, shutdown, and malfunction plans.
2. Fugitive emissions.
3. Not setting operating parameters for ionizing wet scrubbers, electrostatic precipitators, wet precipitators, and fabric filters.
4. Not extending the operating parameter limits on dry air pollution control devices after the residence time has expired.
5. Not setting maximum pH limits for wet scrubbers to control mercury emissions.
6. Using section 112(d)(4) to set alternative standards for chlorine/HCl.

We have concerns about how EPA is handling the following issues

1. Chlorine/HCl standards of 1.5 ppmv for existing incinerators and 0.18 ppmv for new incinerators and he ability of facilities to meet those standards.
2. The incorporation of data from facilities that have already upgraded to meet the interim standards.
3. All beyond-the-floor standards.
4. How EPA will respond to the petition to initiate a rulemaking to require site-specific risk assessments for hazardous waste combustors.

Detailed discussion

Issues where we agree with EPA

1. It is our understanding that EPA will take comments on the startup, shutdown, and malfunction plan requirements but will not propose any changes in the current requirements. We agree with that approach. The current requirements were developed after many hours of negotiations. We believe current requirements are appropriate.

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2. It is our understanding that EPA will take comments on current methods of controlling fugitive emissions but will not propose any changes in the current requirements. We agree with this approach. The current requirements were developed after many hours of negotiations. We believe current requirements are appropriate.

3. It is our understanding that EPA will not propose specific operating parameter limits for ionizing wet scrubbers, electrostatic precipitators, wet electrostatic precipitators, and fabric filters. We agree with EPA that site-specific operating parameter limits will already be in place for these devices based on compliance with the interim standards. We see no reason to change something that is already working.

4. It is our understanding that EPA will not propose to extend dry air pollution control device operating parameters after the residence time has expired. We agree with that decision.

5. We understand that EPA will not propose to add a maximum pH limit to wet scrubbers to control mercury emissions. CRWI member's experience indicates that pH of the wet scrubber has little impact on mercury emissions and we support this decision.

6. We support concept of using the 112(d)(4) exemption for chlorine/HCl. We believe the basic principles for using this section (health-based threshold and an ample margin of safety) can be met for chlorine/HCl for many of the hazardous waste combustor subcategories.

Issues where we have concerns

EPA's proposed HCl/Cl_2 standards of 1.5 ppm for existing sources and 0.18 ppm for new sources are based on biased data of indeterminate quality and are unachievable.

Does the HWC MACT database for HCL/Cl_2 contain data of defined quality for the top performers?

- Data in the database results from the RCRA requirement to achieve HCl emissions of less than 4 lbs/hr (or alternatively, to emit no more than 1% of the potential HCl emissions).

- The RCRA standard is 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.
- At 4 lbs/hr, typical industry incinerators of 20–80 MM BTU/hr would have an HCl stack gas concentration of approximately 50 to 200 ppm.
- There are values in the database an order of magnitude or more below the RCRA standard. EPA is basing its HWC MACT 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 a RCRA test program, it would have been patently clear that the RCRA standard was passed. Typically, because of the order of magnitude gap between the result and the RCRA 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 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?

- Air Method 26A and its RCRA equivalent, SW 846 Method 0050, are acknowledged by EPA Methods Branch to suffer from a negative bias at low concentrations (< 20 ppm) especially when used in stacks with significant moisture content.[1]
- 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 ppm range.[2]

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[1] 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.

[2] 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.

- Most incinerators in the US 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 are 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[1], 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. [2]
- The majority of the data in the database was collected using RCRA SW 846 Method 0050 for the practical reasons that Method 0050 allows the simultaneous determination of both particulate matter and HCl/Cl_2, and because the data were being generated under the RCRA testing program. The required sampling temperature for Method 0050 is only 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.

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[1]. 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. Based on our understanding, CRWI attempted to duplicate EPA's method of selecting the top performers. Of the top 10 performers, 50 percent had stack gas moisture contents that exceeded 30 percent.

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/Method 0050 isokinetic type sampling had a negative bias of approximately 50% compared to non-isokinetic sampling or a continuous monitor at concentrations of approximately 5 ppm HCl[2]. This bias did not exist at approximately 20 ppm. Data in the database was obtained primarily from Method 0050.

- 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[2]. 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/Cl_2 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 1.5 and 0.18 ppm?

- EPA Method 0050, which was used to gather most of the data in the HWC MACT database, states in section 1.2 that "this method is not acceptable for demonstrating compliance with HCl emission standards less than 20 ppm." Paradoxically, EPA indicates in the Technical Support Document to the HWC MACT that Method 0050 is appropriate for use in demonstrating compliance with the HWC MACT.[3]
- EPA's Methods Branch has concluded "good precision and accuracy become difficult to achieve with these methods (Methods 26, 26A, 0050 and 0051) at concentrations below approximately 5 ppm."[2]
- While Method 26A suggests a theoretical "detection limit" of 0.08 ppm for the combined HCl and Cl_2 based on the analytical measurement only, in practice laboratories have found that actual defensible reporting limits are approximately 5 to 10 times higher (i.e. 0.4 to 0.8 ppm). These values represents the lowest levels at which the laboratory can pass the accuracy and precision criteria in the analytical method due to the field sampling-induced matrix effects.

How do the proposed HCl/Cl_2 standards of 1.5 ppm and 0.18 ppm compare to other standards?

- The European Union standard for HCl only is 10mg/NM3 at 11%O_2. The equivalent value at US standard temperature and 7 %0_2 is approximately

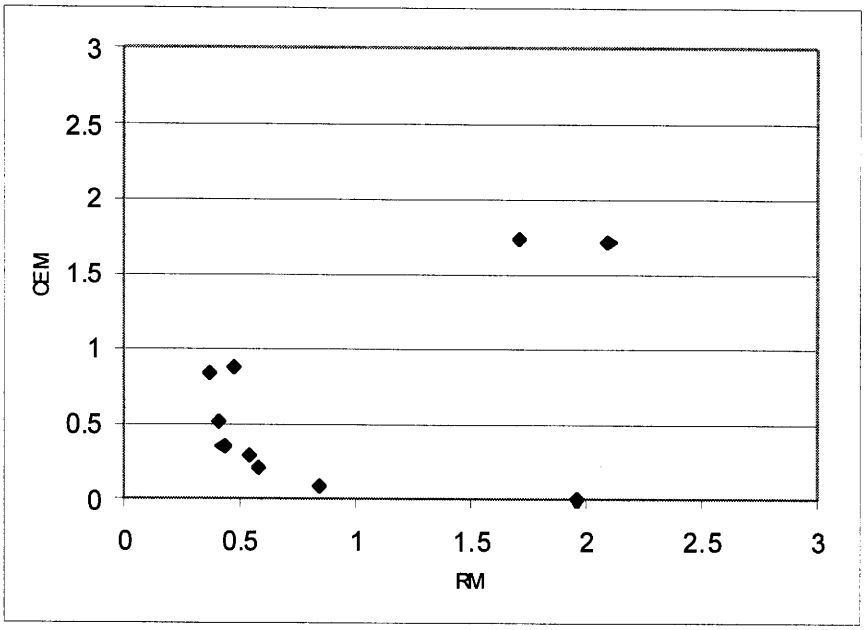
[3] Final Technical Support Document for the HWC MACT, Volume IV, Chapter 16, July 1999.

9 ppm. Therefore a US standard of 1.5 ppm for HCl plus chlorine is a competitive disadvantage that could result in production processes that use chlorinated solvents being sent to production facilities outside the US.

- The National Institute for Occupational Safety and Health has established 8-hour workplace exposure limits for chlorine and HCl at 1 ppm and 5 ppm respectively. While it is acknowledged that workplace exposures are regulated differently than environmental exposures, it is instructive to compare these health-based values to EPA's proposed top-of-the-stack values under the HWC MACT and consider that stack gas concentrations will be reduced several fold by air dispersion before reaching any exposed individual.

What other implications are there to setting the HCl/Cl_2 standard at 1.5 ppm and 0.18 ppm?

- 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 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 and Cl_2.



What is CRWI asking OMB to do?

- Request that EPA provide a scientific justification as to why the database is suitable for use in a statistical calculation to develop a MACT standard given that the data was generated for a distinctly different measurement objective (i.e. pass/fail question at a much higher compliance point).
- Given the known and suspected biases in the measurement system, method variability, and source variability, request that EPA provide a concrete rationale to justify that sources can realistically achieve compliance in a defensible manner with a standard of less than 20 ppm.
- Request that EPA investigate whether the identified measurement system biases may change over time or be different from source to source, and how achievability of compliance may be affected.

EPA should not incorporate data from facilities that have already upgraded to meet the interim standards into the calculations for the permanent replacement standards.

What are the concerns with the revised database?

- After the court vacated the 1999 HWC MACT standards, EPA initiated a data gathering effort to update the database.

- Part of the data in the 2002 NODA database were from RCRA trial burn results that did not reflect any changes in air pollution control equipment or changes in operating conditions.
- Other data were developed after facilities had either upgraded operating conditions and/or upgraded equipment to meet the interim standards.

Does the Clean Air Act address this issue?

- When the Clean Air Act Amendments of 1990 were passed, Congress never envisioned what would happen if one of the MACT standards were vacated, interim standards were agreed to, and revised standards were developed.
- There is no statutory or legislative history to guide EPA regarding how to handle incorporation of new data should this happen.
- In these circumstances, we believe that EPA should proceed with what seems fair and logical.
- We believe that when Congress enacted the "average of the top 12 % of existing sources" language of 112 (d)(3), it meant existing sources as of the date of the data gathering period for the particular MACT standard, not existing sources as of a date several years after the rule was finalized, challenged, vacated, reissued in interim form, and sources had expended capital to meet the revised interim standard.

Why is this a problem?

- We believe that including data from facilities that have already upgraded to meet the interim standards in the data base to develop the revised standards will unfairly ratchet down the permanent replacement standards and create a "MACT derived from existing MACT." If EPA were allowed to consider data from the upgraded sources, the MACT standard setting process would be a never ending upgrading approach, and the floor would be continually shifting. We do not believe that this was Congress' intent. The only place where Congress made it clear that EPA was to revisit each standard was in Section 112(f)(2), the "residual risk" provisions.
- EPA has partially acknowledged this and has already removed data from a new cement kiln because the new kiln was designed to meet the interim standards.

What would constitute data that should not be considered when developing the permanent replacement standard?

- There are two ways facilities can meet the interim standards: upgrade equipment and/or change operating conditions (e.g., lower feed rates, more restrictive operating parameter limits, etc.).
- Since operating conditions (e.g., feed rate) are used to choose the top performers for certain HAPs in certain subcategories, new feed rate limits must also be considered when assessing which data remain in the database.

Would removing data from upgraded facilities make any difference when developing the standards?

- This will only matter if one of the facilities that has upgraded or completed its comprehensive performance test is included in the top performers (EPA's way of designating the top 12% as required by Section 112 of the Clean Air Act).
- CRWI attempted to duplicate EPA's analysis for one HAP (SVM) for one subcategory (incinerators) using the worst-case, most-recent data, incorporated variability into the SRE (systems removal efficiency) and MTEC (maximum theoretical emissions concentration), developed rankings for both MTEC and SRE, combined the rankings, and re-ranked on the combined ranking. The top five performing facilities were chosen from the combined rankings.
- Two of the facilities (810 – Eastman Chemical, Kingsport, TN, and 3006 – Crompton Corporation, Friendly, WV) included in the top five for this HAP have upgraded or tested to meet the interim standards.
- In the 2002 NODA database, there is a note in the "source" tab for site 810 that states that there is a new APCS (air pollution control system) for newer data. In fact, this data was gathered to show compliance with the interim standards after the new air pollution equipment was installed.
- For the 3006 site, there is also a note in the "cond" tab that states that this data was mini-burn data to demonstrate compliance with the interim standards.
- From this limited analysis, we determined that 40% of the facilities in the top performers for this HAP and subcategory have already upgraded to meet MACT. This could have a significant impact on this standard for this subcategory.

What does CRWI think OMB should do about this issue?

- Request that EPA examine each HAP for each subcategory to determine if data from a facility that has upgraded (either through equipment upgrades or modified testing conditions) to meet the interim standard is included in the top performers.

- If data from upgraded facilities is included in the top performers, we believe that data should be removed and the data from the facility that is ranked next should be substituted. This would not require EPA to completely redo the analysis – only that they substitute one or more facilities and recalculate the second step of the standards setting process.

OMB should closely examine any Beyond-the-Floor (BTF) standard to determine if that standard is justified.

How many BTF standards are proposed in this rule?

- Six – PM and chlorine/HCl for coal-fired boilers; chlorine/HCl and dioxin/furans for lightweight aggregate kilns, dioxin/furans for liquid-fired boilers; and dioxin/furans for halogen acid furnaces.

How has EPA determined whether to set a standard at a BTF level as opposed to setting the standard at a floor level?

- In previous rulemakings, EPA has justified or rejected BTF standards on the basis of dollar costs per unit of pollution emission reduction and other factors. There has never been any hard and fast rule on what level of cost justifies setting a BTF standard. EPA has used values that vary from $3,500 per ton (59 FR 19402, SOCMI production processes) to $910,000 per ton (67 FR 40486, copper smelting final rule) as reasons to reject BTF standards.
- On the other hand, EPA chose to go beyond-the-floor even though the costs were $10.7 million per ton of chromium removed from small sources in the 1995 chromium electroplating rule (60 FR 4948). EPA justified this high cost based on the toxicity of hexavalent chromium.
- EPA has used cost in conjunction with risk to decide whether a BTF standard is justified.

How does any of this apply to these BTF determinations?

- Our understanding is that the chlorine/HCl floor level for coal-fired boilers is 440 ppmv. The BTF standard is 110 ppmv.
- Preliminary estimates from one CRWI member suggest that it will cost about $10 million per boiler to install the control devices necessary to reduce the chlorine/HCl emissions by about 75%.
- Preliminary results from air dispersion modeling for all sources in the coal-fired boiler category indicate that all sources within the subcategory would

create hazard quotients or hazard indices of less than 1.0, even if all units emitted chlorine/HCl at the 440 ppmv level.

- EPA has determined that a hazard quotient/index of 1.0 or less is protective with an ample margin of safety (see 68 FR 70953). Thus, it appears that the floor level in this case is protective of human health and the environment.
- Further reductions below the proposed floor level would result in no measurable improvement in human health. Accordingly, any requirement to extend the chlorine/HCl standard for this source category beyond the floor is simply not justified. We believe that imposing any significant cost on this subcategory for this HAP is not justified.

What does CRWI think OMB should do about this issue?

- EPA is on the record for having made decisions to promulgate BTF standards based on the toxicity of the pollutant. It appears reasonable to us that EPA should also be able to choose to stay at the floor level, even when the cost is fairly low, if the increased reduction does little to improve human health and environmental protection.
- Request that EPA re-examine the BTF determination for chlorine/HCl for the coal-fired boiler subcategory to determine if there is any human health and environmental protection benefits from going beyond-the-floor.
- Request that EPA re-examine all other BTF determinations to make sure that the reductions are justified based not only on cost per ton of HAP removed but on decreased risk to human health and the environment.

EPA should not require site-specific risk assessments (SSRA) as a part of the permanent replacement standards rulemaking.

What is the history of SSRAs?

- EPA's Hazardous Waste Minimization and Combustion Strategy (1994) recommended that site-specific risk assessments (SSRA) become a part of the RCRA permitting process for hazardous waste combustors where necessary to protect human health and the environment.
- In 1998, EPA released draft guidance on conducting SSRAs.
- The preamble of the 1999 HWC MACT rule (see the discussion beginning at 64 FR 52840) recommended that for facilities subject to the new standards, permit writers evaluate the need for a SSRA on a case-by-case basis. EPA went on to state that "SSRAs are not anticipated to be needed for every facility, but should be conducted for facilities where there is

reason to believe that operations in accordance with the MACT standards alone may not be protective of human health and the environment."

- These instructions left considerable room for interpretation by the states and the regions. Some states and regions were using the policy statements made in 1994 as the justification for requiring SSRAs.
- CKRC petitioned EPA to withdraw the SSRA guidance, suggesting that it was a rule in the form of guidance and suggesting that if EPA believes that SSRAs are necessary, they should initiate the rulemaking process to make them mandatory.
- In partial response to the CKRC petition, a memo from the Office of Solid Waste and Emergency Response Assistant Administrator Marianne Horinko was sent to the Regions on April 10, 2003 (copy attached). This memo made it clear that the only authority to require a SSRA is the RCRA omnibus authority which requires a fully documented finding in the administrative record.
- Additional responses to the CKRC petition are incorporated in the proposed permanent replacement standards. EPA has not been willing to share what that response is.

How does CRWI believe SSRA requirements should be handled?

- We share CKRC's concerns about how the regions and states were requiring SSRA with a minimum of documentation.
- In our opinion, most of the concerns about how SSRAs were applied were addressed by the Horinko memo.
- We acknowledge that the current guidance is not perfect but appears to be better than any alternative we are aware of. EPA has the authority under RCRA (but not the Clean Air Act) and should use that authority when appropriate to require SSRAs when additional terms and conditions are necessary to protect human health and the environment. We agree that states and regions have the authority to require additional requirements. However to do so, they must make a showing that it is needed, respond to any comments made by the facility, and place all discussions and decisions in the administrative record. This was exactly what was pointed out in the Horinko memo.
- Thus, we believe the current policies pertaining to SSRAs, while not perfect, are probably the best way to approach the application of SSRAs to hazardous waste combustors.
- We believe that codifying the current SSRA guidance via a rulemaking would create more problems that it would solve.

What are the potential ramifications if EPA chooses to require SSRAs in the permanent replacement standards?

- Risk assessments for HWCs are a constantly evolving tool. The draft guidance was published in 1998 and has yet to be finalized. One of the reason it was published as guidance is because the pathways used and the parameters used in the models are continuously being updated as additional information is uncovered.
- If it became a requirement to run a SSRA for each HWC, then the Agency would also have to specify the pathways and the parameters to be used. In addition, the Agency would have to fix an acceptable risk level.
- These could not be altered except by additional rulemaking. By the time the rulemaking was finished, the model and model parameters would be outdated. Attempts to update the model or the parameters would have the same fate. This is exactly the type of document that should stay as a guidance document and not as a regulation.
- In addition, people who build and run SSRAs understand that the answers received from these models are simply a starting point to assess risk. Should a model show a very small risk, it is likely that no evidence of adverse effects will be found for that facility. If the model shows a very large risk, it is possible that additional constraints are warranted. However, in that intermediate range, models are often re-run with additional data or different scenarios to determine if the risk is real or simply an artifact of the modeling process. It is difficult to understand how such an iterative process can and should be codified.
- Few of these models have been tested or verified. What little verification work that has been done has shown that the models can over predict environmental loading by several orders of magnitude. We believe that EPA should verify that the models match actual results before any attempts are made to codify specific requirements for SSRAs.
- EPA would never promulgate an untested method to set a standard or to show compliance with an already existing standard. Yet, if they propose to use untested and unverified models, this is exactly what they will be doing.

What does CRWI think OMB should do about this issue?

- If EPA does not propose to require SSRAs but keeps the status the same as it currently is, no action by OMB is needed.
- If EPA proposes to require SSRAs, we suggest that you ask EPA to address all the issues raised under the previous question and especially to justify requiring an untested method to set site-specific operating parameters to show compliance.