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October 23, 2020

U. S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attn: Docket ID No. EPA-HQ-OAR-2002-0058.

The Coalition for Responsible Waste Incineration (CRWI) appreciates the opportunity to submit comments on *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters; Amendments*; Proposed rule. 85 FR 52,198 (August 24, 2020). CRWI is a trade association comprised of 28 members representing companies that own and operate industrial boilers and process heaters and companies that provide equipment and services to the combustion industry.

Attached are specific comments on the proposed requirements.

Thank you for the opportunity to comment. If you have any questions, please contact me at (703-431-7343 or mel@crwi.org).

Sincerely yours,

Melvin E. Keener, Ph.D.
Executive Director

cc: CRWI members
J. Eddinger, EPA

Specific issues

1. CO as a surrogate for non-dioxin organic HAPs.

CRWI has supported the use of carbon monoxide (CO) as a surrogate for non-dioxin organic hazardous air pollutants (OHAPS) since the beginning of this rulemaking. We submitted comments for the 2011 rulemaking (EPA-HQ-OAR-2002-0058-3454) discussing the fundamental principles for why CO is a reasonable surrogate. We followed this with additional logic for the 2015 rulemaking (EPA-HQ-OAR-2002-0058-3917).

In this rulemaking, the Agency is responding to a question from the court on “whether the best performing boilers might be using alternative control technologies and methods that reduce organic HAP emissions beyond what they achieve by regulating CO alone.” EPA responded by discussing two methods for reducing OHAPS: combustion and recovery. The Agency stated that combustion will reduce CO and OHAPs equally. We agree and believe there is no need to discuss this option further per the remand order. The Agency also states that recovery can reduce OHAPs without impacting CO but only under certain conditions. EPA bases their discussion of recovery techniques on the *Handbook Control Technologies for Hazardous Air Pollutants*, EPA/625/6-91/014, June 1991, Center for Environmental Research Information, Office of Research and Development, U.S. EPA. While this publication is several years old, the fundamental principles discussed in the handbook have not changed.

In the preamble (85 FR 52,210), the Agency discusses three possible recovery methods: condensation; absorption; and adsorption. Based on the data from the Handbook, EPA is correct in concluding that “it is not possible for condensation with water as the coolant to achieve the low outlet concentrations that would be required in HAP control applications.” (85 FR 52,211). In addition, the Handbook states on page 3-5 that “for extremely low outlet HAP concentrations, condensation will usually be infeasible.” Given the data for formaldehyde in the emissions database, all of the top performers would be extremely low emitters.

In addressing possible use of absorption, the Agency is correct in concluding that this method is not suitable for reducing OHAPs from the flue gas of boilers because the method is dependent on which OHAPs are to be scrubbed. The effectiveness of absorption depends upon the solubility of that OHAP in the particular solvent used. One solvent (e.g., water) may be effective in stripping some OHAPs but not effective in others. It would be difficult if not impossible to develop a multiple solvent absorption system that would capture all OHAPs in boiler flue gas. In addition, the concentration of OHAPs in most boiler flue gases is much lower than the 250 ppmv lower limit of effectiveness as shown in Table 3-1 of the Handbook (page 3-2).

Carbon adsorption has some of the same issues as does absorption. Different organics compounds are adsorbed differently on carbon. Even if required, using carbon adsorption would not significantly reduce OHAP emissions from boilers for two reasons. The OHAP most mentioned in association with boilers is formaldehyde. Formaldehyde has a molecular weight of 33 g/mole. The Handbook (page 3-4) states that “Highly volatile materials (i.e., molecular weight less than 45) do not adsorb readily on carbon; therefore, adsorption is not typically used for controlling emission streams containing such compounds.” Based on this logic, carbon adsorption would not be effective in controlling formaldehyde. The second reason also comes from the Handbook (page 3-4) where it is stated that “concentrations as low as 10 to 20 ppmv can be achieved with some compounds.” When one examines EPA’s paired CO and formaldehyde data from the docket, they will find that all boilers that have less than 130 ppmv CO emissions levels also have less than 10 ppmv formaldehyde emissions. Even if carbon adsorption could control formaldehyde, the concentrations in boiler emissions for the best performers are already lower than what can effectively be controlled by carbon adsorption. EPA is also correct in their statement that none of the best performing boilers use carbon adsorption to control OHAPs. That is because it is not an effective technique for controlling these compounds at the levels present in the flue gas.

Finally, in their opening brief, Sierra Club suggested that OHAPs could be reduced by either fuel switching or higher temperatures. While theoretically correct, there are practical limitations to either of these options. In the June 4, 2010, proposed rule (75 FR 32,006), EPA properly rejected fuel switching as not appropriate for MACT floor determinations. For the same reasons, it is also not appropriate as an option for reducing OHAPs, particularly when fuel switching can raise emissions on one pollutant while lowering the level of another. The preamble of the 2010 proposed rule has a detailed discussion of these issues (75 FR 32,019). As for increasing the temperature to reduce OHAPs, boilers are designed for a certain firing rate and steam temperature. The major factor that affects the temperature of the combustion products in a boiler is firing rate. The harder a boiler is fired, the higher the temperature. If one could increase the temperature of combustion products, it would increase steam temperatures. This would increase tube metal temperatures and affect reliability and safety. Thus, it is not a realistic option to increase temperature beyond the design case. Three methods to increase temperature would be less staging of combustion, increasing burner tilts, and increasing excess air. These three methods greatly increase the NO_x emission rates while the actual impact on OHAPs is uncertain. The tradeoff of more NO_x emissions, which contribute to ozone formation and increases in NO₂ levels in ambient air, for uncertain decreases in OHAP emissions would not be justified. Many times this would cause violations of NO_x emission limits. Increasing excess air reduces boiler efficiency resulting in higher fuel consumption. Any of these methods would be causing the boiler to operate in a sub-optimum condition for boiler efficiency and NO_x emissions.

Finally, we would like to point out that the data EPA developed in this rulemaking supports using CO as a surrogate for OHAPs. In EPA-HQ-OAR-2002-0058-3836 Appendix H, Chart H-1a, the Agency plots formaldehyde emissions versus carbon monoxide emissions. This graph shows a similar trend to what the Agency has found when graphing other organic HAP emissions against carbon monoxide – that is, when carbon monoxide emissions are low, OHAP emissions are low and when carbon monoxide emissions are high, OHAP emissions may or may not be high. This supports the Agency's overall conclusion that carbon monoxide is a conservative indicator of OHAP emissions. This makes it a reasonable surrogate.

2. 130 ppm CO threshold.

In the 2013 final rule (78 FR 7,138), EPA set the CO standards for 13 source subcategories at 130 ppm at 3% oxygen. The court remanded this decision asking the Agency for additional reasoning for making this decision. EPA is interpreting the court remand of the 130 ppm threshold issue as requiring responses in three areas; 1) why organic HAP emissions could not be further reduced once the CO emissions reached 130 ppm; 2) the Agency relied on formaldehyde data to support the 130 ppm threshold conclusion while in other parts of the rule, concluded the data was not a reliable indicator of organic HAP emissions at low levels; and 3) if there is a non-zero CO level below which organic HAP levels cannot be further reduced. We believe the Agency has adequately addressed issue 2) above so we will not be addressing that particular issue.

Issues 1) and 3) are essentially the same – is organic HAP emissions reduced by continuing to reduce CO emissions below a certain threshold. This can be addressed using the formaldehyde and carbon monoxide paired emissions data from the Agency's database. Comments submitted by the group led by the American Forrester and Paper Association (CRWI is a part of this group) have addressed this issue in detail. We believe that those comments show that the MACT floor standard limiting CO emissions to 130 ppm at 3% oxygen is an appropriate threshold for minimization of organic HAP emissions because EPA's data demonstrate that reductions in CO emissions below this level do not result in further reductions in organic HAP emissions.

3. Technical correction to 63.7540(a)(9).

The Agency is proposing to modify the language in 63.7540(a)(9) to make it clear that the requirement to certify a PM CEMs only applies to those instruments that are used as CEMs and not as a CPMS. CRWI believes the Agency is correct in making that change and supports the revised language.

4. Use of carbon dioxide (CO₂) monitors in lieu of oxygen (O₂) monitors to demonstrate compliance with CO emission limits

At 85 FR 52,218, EPA solicits comments on three proposed revisions relating to the use of monitors to show compliance. The three revisions are:

- (1) The replacement of the requirement to obtain Administrator approval of an alternate test method to allow use of CO₂ monitoring in lieu of oxygen monitoring as part of a CEMS to demonstrate compliance with a CO emission limit with inclusion of the methodology to be used a site-specific monitoring plan;
- (2) An expansion of these provisions for use of carbon dioxide in lieu of oxygen for all pollutants for which a CEMS is used to comply; and
- (3) The removal of requirements for continuous monitoring of moisture and flow.

The *Federal Register* notice does not include proposed regulatory language for any of the three issues listed above. However, a document in the docket (EPA-HQ-OAR-2002-0058-3961) provides draft rule language for revisions to 40 CFR 63.7525(a)(1) that would modify the requirement to obtain the Administrator's approval and allow this change to become self-implementing (item (1) above). CRWI supports this change. A member company (Eastman Chemical Company) has already obtained Administrator's approval of an alternate test method which is consistent with the suggested rule text changes. The use of CO₂ as a diluent in lieu of O₂ is a well-established and proven method that is used by many industrial and commercial boilers. The use of EPA Method 19 F-factor equations is straight forward method to calculate adjusted pollutant concentrations corrected to any given percent oxygen basis. When CO and CO₂ are measured on a wet bases, the moisture correction cancels out and thus moisture content is not relevant to the compliance determination. Finally, many boilers do not employ air pollution control equipment such as wet limestone scrubbers that generate CO₂ emissions. All this justifies EPA suggested rule text to bypass the requirement to obtain approval of an alternate test method, but, rather, allow the use of CO₂ as a diluent via a site-specific monitoring plan subject to a delegated state air program review.

While there is no proposed language in the *Federal Register* notice or in supporting documents for item (2) above, there is no technical reason why this too is not appropriate. Likewise, there is no suggested rule text deletions in the document in the docket that reflects item (3) above. We believe the provision to be deleted is 40 CFR 63.7525(a)(2)(vi). We agree this provision is not necessary.