**Department of Energy**
Washington, DC 20585
January 30, 1998

RCRA Docket Information Center
Office of Solid Waste (5305G)
U.S. Environmental Protection Agency Headquarters (EPA, HQ)
401 M Street, SW
Washington, D.C. 20460

**Docket Number F-97-CS6A-FFFFF**

Dear Sir or Madam:

The Department of Energy (DOE) welcomes the opportunity to provide comments on the Environmental Protection Agency's December 30, 1997, notice, "Total Mercury and Particulate Continuous Emissions Monitoring Systems: Measurement of Low Level Particulate Emissions; Implementation at Hazardous Waste Combustors; Proposed Rule—Notice of Data Availability and Request for Comments" (62 FR 67788). Enclosed are an original set and two copies of the consolidated comments and recommendations on the notice from DOE program offices and field organizations. An electronic copy of this letter and enclosure (formatted as an ASCII file) has also been forwarded today to the RCRA Docket Information Center via the Internet.

Questions on these comments should be directed to Ted Koss (202-586-7964; e-mail: theodore.koss@eh.doe.gov) or Beverly Whitehead (202-586-6073; e-mail: beverly.whitehead@eh.doe.gov) of my staff.

Sincerely,

Raymond F. Pelletier
Director
Office of Environmental Policy and Assistance

Enclosure

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**UNITED STATES DEPARTMENT OF ENERGY**
**COMMENTS ON TOTAL MERCURY AND PARTICULATE CONTINUOUS EMISSIONS MONITORING SYSTEMS: MEASUREMENT OF LOW LEVEL PARTICULATE EMISSIONS; IMPLEMENTATION AT HAZARDOUS WASTE COMBUSTORS; PROPOSED RULE—NOTICE OF DATA AVAILABILITY (NODA) AND REQUEST FOR COMMENTS**
**(62 FR 67788; DECEMBER 30, 1997)**

## SUMMARY

In an April 19, 1996 Federal Register (61 FR 17360), the U.S. Environmental Protection Agency (EPA) proposed *Revised Standards for Hazardous Waste Combustors* under the joint authority of the Resource Conservation and Recovery Act (RCRA) and the Clean Air Act (CAA). As an element of complying with this rulemaking, EPA proposed requiring that continuous emissions monitoring systems (CEMS) for particulate matter (PM) and total mercury (Hg) be used to demonstrate compliance with the proposed PM and Hg emission standards. Requiring CEMS, however, in turn required EPA to first determine that the CEMS (1) are commercially available and (2) have been demonstrated to meet certain performance specifications.

On March 21, 1997 (62 FR 13776), EPA published its first CEMS notice of data availability (NODA) or "CEMS NODA 1" soliciting comment on its approach to demonstrating the feasibility of PM CEMS and Hg CEMS for hazardous waste combustors (HWCs) and requested comment on certain technical issues arising from the demonstration program. On December 30, 1997 (62 FR 13776), EPA published a second CEMS NODA soliciting public comment on the results of its demonstration program as well as important information relative to implementing PM CEMS at HWCs.

DOE offers the following general comments on the broad themes contained in the proposed rule and comments affecting multiple sections of the proposed rule. Specific comments focusing on particular sections of the proposed rule follow the general comments. The comments are organized and presented with the same numbering convention as the December 1997 proposed rule—NODA.

## GENERAL COMMENTS

The United States Department of Energy (DOE) continues to appreciate the efforts expended by EPA in developing and refining this challenging proposed rule under the joint RCRA and CAA authorities. As previously noted,[1] the HWC proposed rule in general is of significant interest to the Department due to its potential impact on the Department's cradle-to-grave management of hazardous/mixed waste including compliance-driven activities, and current technology development activities and plans, particularly those involving thermal treatment. The following comments respond to a number of issues arising from information presented in the December 1997 NODA and its technical support documents, which are relevant to the ongoing operation of the Department's mixed-waste (MW) incinerators. DOE has presented its perspective relative to EPA's proposed HWC regulations on a number of occasions. The following comments are intended to augment rather than supersede these previously submitted comment packages, briefing materials, and correspondence.

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[1] DOE letter from R. Pelletier to RCRA Information Center (RIC) dated August 19, 1996; DOE letter from R. Pelletier to RIC dated September 23, 1996; DOE letter from R. Pelletier to RIC dated February 6, 1997; Summary of DOE/EPA meeting [F-96-RCSP-FFFFF item #S0270]; DOE letter from R. Pelletier to E. Cotsworth dated May 23, 1997; DOE letter from R. Pelletier to RIC dated June 17, 1997; and DOE letter from R. Pelletier to F. Chanania dated October 1, 1997.

From DOE's perspective, a site-specific particulate matter (PM) standard would not be a good public policy. When interested parties decide to construct an incinerator, safety, operations and production designs are conceptualized, and then an additional design factor is used. This results in an "over-design" of a facility. When the facility becomes operational, owners/operators further reduce emission levels by setting waste feed cutoffs below permitted limits, design capacities, etc. The amount of buffer installed at a facility is dependent on the management philosophy. The purpose of "over-design" and a protective buffer is to allow for unanticipated excursions or spikes that may occur but will not cause a facility to be out of compliance.

EPA's proposed approach to establishing a site-specific standard appears to reward facilities that can increase their particulate emissions for one year to establish a higher PM limit. In the case of DOE's mixed waste incinerators, the option to manipulate for higher PM emissions is not available because of the radiological National Emission Standards for Hazardous Air Pollutants (NESHAP) permits. To increase the amount of particulate being emitted is not even fathomable from a responsible care perspective, yet this rulemaking appears to inadvertently promote that behavior. For example, at the DOE mixed-waste incinerator at Savannah River Site (SRS), the worst-case particulate emission from the 1997 Trial Burn was 5 mg/dscm. Given that the particulate emissions cannot be manipulated for radiological reasons, DOE estimates that one year of non-trial burn emissions would result in emissions in the 3-4 mg/dscm range (the best that was measured during the Trial Burn) or lower. DOE believes that a standard at such a level could adversely affect future DOE burn activities, because of our highly variable feed. Also, the site-specific particulate matter concept may be inconsistent with the CAA statutory language for developing maximum achievable control technology (MACT) "floor" and "beyond-the-floor" standards. If a facility can meet the proposed "floor" standard of 34 mg/dscm (0.015 gr/dscf), then it has met the level achievable by state-of-the-art air pollution control devices (APCDs). Section 112(d)(2) of the CAA states that to establish a standard beyond-the-floor, EPA needs to consider cost-effectiveness, any non-air quality impacts, and energy requirements. DOE requests that EPA revisit the concept of establishing site-specific PM limits.

Should carbon injection be mandated for dioxin/furan (D/F) control, then owners/operators of mixed waste incinerators equipped with high efficiency particulate air (HEPA) filters will need to decide if the carbon injection system will be inserted into the HWC's air pollution control system (APCS) configuration before HEPAs (probably not since the life of the HEPA will be shortened considerably) or will carbon injection occur after HEPAs (thus creating nonradioactive carbon), and an additional filter, such as a baghouse, may be required. If this scenario occurs, then the PM emissions will increase because a baghouse is not as efficient as HEPA filtration at removing particulate matter. Because of these additional mixed waste incinerator design and configuration considerations, DOE believes (and requests EPA consider that) the installation of the PM CEMS and the one year of data collection should be delayed until the carbon injection system is operable. After the installation, then the incremental increase in particulate emissions can be measured.

An additional general comment is that EPA should consider incorporating additional flexibility on acceptable PM CEMS approaches into these requirements to reflect more up-to-date emissions monitoring, such as those that have been developed by EPA and the American National Standards Institute (ANSI) for radionuclide NESHAPs emissions, which are applicable to CEMS under this rule.

## SPECIFIC COMMENTS

### I. Introduction and Background

**EPA discusses the two threshold determinations that it must make before it can justifiably require HWC owners and operators to use CEMS when demonstrating compliance with total mercury (Hg) and particulate matter (PM) standards. Specifically, EPA states "To require CEMS for compliance the Agency, among other things, must determine that the CEMS are commercially available and have been demonstrated to meet certain performance specifications." (62 FR 67789, col 2)**

The proposed rule does little to demonstrate that CEMS are both commercially available and can meet certain performance standards. On page 67791 of the proposed rule, EPA acknowledges that service agreements/maintenance contracts/spare parts created a situation where an instrument was available 74% of the time. It goes on to state that the market will mature with demand. The rate that markets mature differs by sector, but it does not seem that the demand for an additional 200 instruments (the combined demand of lightweight aggregate kilns (LWAKs), cement kilns burning hazardous waste, and the RCRA segment) would be sufficient to drive a rush to create a market niche. If these instruments installed cost is about $100,000, then EPA will create a $20 million market. Whether this market is of sufficient size to justify creating a service group in America is conjecture. Further, data availability of 74% does indicate that the instruments need significant improvement to meet the proposed 95% data availability level proposed. DOE supports EPA's on-going testing of PM CEMS in a saturated stack and believes additional insight and refinement of PM CEMS may result; however, it would seem that EPA would want to fully evaluate the results of that testing before promulgating this regulation.

Also, DOE believes that developing emission standards on a site-specific basis does not improve the market place for PM instruments. Currently, there is one national standard that any manufacturer can use to develop a product such as calibration gases where the national standard is 0-200 ppm and 0-3000 for carbon monoxide (CO) and 0-25% for oxygen. A site-specific standard lends itself to developing a calibration gas for each site which is an expensive proposition. For the instrument manufacturer, a standard instrument range is preferred to spur mass production of a PM monitor. The existing stack instruments, such as CO and oxygen, are off-the-shelf at reasonable prices given their standardization. In summary, the commercial availability and the maintenance support structure does not appear to be ready to support this rulemaking.

### II. The Hg CEMS Demonstration Tests

**In describing aspects of the Hg CEMS demonstration testing that revealed substantial problems with CEMS accuracy and precision, "EPA found it difficult to dynamically spike known amounts of mercury (in the elemental and ionic form) and obtain manual method and Hg CEMS measurements that agree at the test source" (62 FR 67789, col. 3).**

The statement may indicate a fundamental research concern of demonstrating mercury removal in combustion systems. What degree of confidence exists in the scientific community that the reported trial burn results that appeared in the *Combustion Emissions Technical Resource Document* (CETRED) are a valid baseline? The reported mercury results indicate a broad range of results indicating that precision, accuracy and repeatability may not be met when attempting to quantify mercury emissions. Compliance with any mercury standard is dependent on a more thorough understanding of mercury behavior. The Department agrees with EPA's belief that the viability of Hg CEMS has not been demonstrated and suggests that continued work with mercury and attempting to complete material balances is probably required.

## III. The PM CEMS Demonstration Tests.

### III.A. PM Performance Specification (PS) 11 Levels

#### III.A.2. Data Availability

**In discussing the value of increasing the amount of PM data that is available, EPA explains that such data will allow HWC operators to better understand and define the relationships between operating parameters and emission levels. "As a result, the Agency encourages HWC facilities to use PM CEMS data to better define what operating parameters correspond to compliance with a facility's PM CEMS limit." (62 FR 67791, col. 2) Later in the NODA, "[f]or simplicity, EPA proposes to exclude data from all periods in which the facility operates outside of the operating envelope defined in the [Certification of Compliance] irrespective of whether the parameter in question affects PM control" (62 FR 67797, Footnote 16).**

These two statements appear to be philosophically inconsistent. The latter statement indicates that the facility will need to be in compliance with its latest permit on all parameters; thus, the rule is "business as usual" with no incentive for the HWC facility to better understand what operating parameters correspond to PM emissions. If all existing operating parameters remain in the permit, the PM CEMS is, pure and simple, a compliance device. To understand cause and effect, as the first statement implies, then some attempt should be made to reduce the number of operating parameters that are in operating permits to allow for some manipulation of variables to understand interrelationships of waste feed to operating parameters to stack emissions.

### III.B. Manual Method Accuracy

**EPA states that the PM CEMS demonstration tests have resulted in significant improvements relative to conducting particulate measurements. Improvements involve the use of a new Method 5I (M5i) for low level PM emissions. EPA continues by highlighting differences between M5i and traditional Method 5 (62 FR 67792 - 67793).**

The description of the potential interferences with PM leads one to believe that a field "clean room" is required. Few HWCs have such a clean room unless the reference is describing the laboratory; however, the potential for contamination exists in the field. If the sensitivity of the PM instrument is as described, then work on the instrument should be done in a clean room and the cost of a clean room should be reflected in the economic analysis.

## III. C. Transferability of These Demonstration Test Results to Other HWC Sources

**1. EPA presents three unique situations that it believes may require special considerations. Among these are waste heat boilers (WHBs) that blow soot periodically to clean boiler tubes. This practice increases PM emissions and may alter the physical properties of the PM. EPA proposes that WHBs address EPA's concern by conducting "soot-blowing episodes" during calibration runs and requests comment on this approach to address the special problems that soot-blowing may cause." (62 FR 67794, col. 1)**

DOE believes that EPA's proposal that incinerators equipped with WHBs be allowed to conduct "soot-blowing episodes" should be expanded beyond incinerators equipped with waste heat boilers. Most APCD systems have "cleaning phase" designs such as: (1) for baghouses, the frequency of pulsing for knocking cake off the fabric filter, (2) for wet electrostatic precipitators (WESP) and ionizing wet scrubbers (IWS), the wash down of the plates or rods, and (3) for wet scrubbers, the frequency of adding fresh water to replace evaporative losses. DOE believes that "soot-blowing" is no more deleterious than any of the other PM creating activities listed above. DOE requests EPA examine available information (e.g., public comments) highlighting the differences/similarities between the various PM cleaning-phase designs and either: (1) justify that soot blowing creates far more particulate matter emissions or results in far greater changes in PM physical properties than baghouse pulsing, etc.; or (2) promulgate regulations governing APCD cleaning phases that closely reflect those issued for incinerators equipped with WHBs.

**2. EPA is concerned that the variability of the feed to mobile incinerators at Superfund sites is beyond what was experienced at the mobile incinerator facility used for the PM CEMS demonstration tests. As such, a unique calibration might be required for every clean-up site, which EPA believes may be *unnecessarily burdensome* (emphasis added). EPA is thus considering whether to waive the PM CEMS requirement for Superfund mobile incinerators. If the PM CEMS requirement is waived for certain facilities, the other, traditional, operating parameters discussed in this NODA would be used instead to document compliance (62 FR 67794, col. 2).**

DOE is concerned that EPA has not proposed thresholds or ranges that constitute criterion such as (1) the amount of variability within a HWC feed that it believes would lead to unnecessarily burdensome calibration requirements, and (2) the number of unique calibrations it considers to be unnecessarily burdensome. Depending on the criteria used, the concern cited by EPA for mobile incinerators at Superfund sites could be the same or perhaps even greater for DOE's mixed waste incinerators (or other incinerators) that receive highly variable feed on an hourly or daily basis. This problem is further compounded for such incinerators with oxides of nitrogen ($NO_x$) abatement that use ammonia ($NH_3$) as a reducing agent for $NO_x$, especially when the incinerator is fed in a batch mode with highly variable feed. Specifically, highly variable concentrations of ammonium nitrate ($NH_4NO_3$) particulate are formed in the offgas, exacerbating the problematic PM variability due to variable feed and batch mode feeding. The latter problem may be especially significant for DOE's New Waste Calcining Facility (NWCF), where such $NO_x$ reduction is being considered.

Variability of the waste stream, however, may not be the best reason to exclude mobile incinerators. Commercial incinerators experience a broad array of differing waste streams. Conversely, the argument that an incinerator exists for cleanup could be broadened to include the DOE and Department of Defense (DoD) facilities. Each exists for a specified duration and for the mission of incinerating waste that is legacy waste. The incinerators have a publicized time-certain life that is tied to the cleanup of specified government sites. DOE requests that EPA

consider expanding the mobile incinerator argument to include incinerators that are dedicated to remediation/cleanup of Superfund-like waste.

## IV. PM CEMS: Implementation and Compliance

### IV.A PM CEMS Compliance Schedule

**1. Prior to discussing implementation and compliance with PM CEMS, EPA notes that "HWCs are currently regulated under RCRA. Sources with a different regulatory history are likely to have a different compliance regime applied to them than the one described here" (62 FR 67794, Footnote 8). EPA goes on to describe the PM CEMS compliance schedule and the four key milestones, including the timing and use of the Precertification of Compliance (Pre-CoC) (62 FR 67794, col. 3).**

In reviewing this notice and the preceding notice (CEMS NODA 1) discussions regarding Pre-CoCs, it is unclear as to how EPA intends to implement the proposed PM CEMS phase-in period at facilities that are not currently subject to RCRA incinerator provisions (hereinafter "newly regulated HWCs"). For example, DOE's New Waste Calcining Facility (NWCF) at the Idaho National Engineering and Environmental Laboratory (INEEL) has not been regulated as an HWC under RCRA and therefore does not have RCRA-permitted operating parameter limits for PM emissions. Recently, the state of Idaho gave notification that the NWCF will be regulated under RCRA as an HWC. However, a RCRA permit for this facility is expected to take several years to obtain. Therefore, if EPA is persuaded or otherwise decides that Pre-CoC is inappropriate or unwarranted, the NWCF will be unable to comply with a requirement to use RCRA-permitted operating parameter limits in the interim period after the HWC MACT Compliance Date (CD), but before use of PM CEMS for operating parameter limits. Furthermore, there are many uncertainties as to how the RCRA permitting process, associated testing, and setting and use of operating parameter limits, would be coordinated with the requirements in this proposed rule as well as those in the forthcoming MACT rule for HWCs.

Relative to newly regulated HWCs, the Department recognizes that interim status incinerator provisions found in 40 *CFR* part 265, Subpart O would (most likely) initially govern such newly regulated HWCs (i.e., interim status provisions are self-implementing). Although EPA's proposed 40 *CFR* 265.340 (b)(2) appearing in the April 19, 1996 *Federal Register* (61 FR 17531) refers to a "notification of compliance" relative to triggering the need for interim status incinerators to begin complying with MACT provisions, the CEMS NODA 2 implementation preamble discussion (as well as the CEMS NODA 1 preamble) does not appear to contemplate the relationship between the phase-in period (i.e., Pre-CoCs, etc.) and interim status/newly regulated HWCs (i.e., preamble discussions appear to address the relationship relative to RCRA permit limits only). DOE requests EPA to describe the compliance and implementation scheme required for "sources with a different regulatory history," such as the NWCF, or describe the regulatory process by which such schemes will be developed. DOE believes that existing sources with a "different regulatory history" should be allowed to complete the RCRA trial burn process before being subjected to the proposed CEMS requirements. This would allow the implementation of, at least, owner-proposed and demonstrated PM emissions operating parameter limits.

**2. In discussing the need to recalculate PM CEMS operating parameters, EPA states "If the PM concentration and operating parameter limits resulting from the subsequent performance test are *more* stringent (emphasis added) than those from the previous test, the facility would have the option of not recalculating their PM CEMS operating parameter limit and continue to operate under the older, more stringent limit." (62 FR 67795, Footnote 11).**

DOE requests EPA clarify whether the phase “more stringent” should be “less stringent.”

### IV.B. PM CEMS Operating Parameter Limits

**1. EPA discusses the use of site-specific limits on key operating parameters of the PM APCD that will ensure compliance with the MACT PM standard, which it believes can be used as a surrogate to control emissions of non-enumerated HAPs [hazardous air pollutants] including antimony (Sb), cobalt (Co), manganese (Mn), nickel (Ni), and selenium (Se) (62 FR 67796, col. 1).**

Given that all RCRA permit parameters that are deemed necessary to protect human health and the environment will remain in full force and effect, DOE requests EPA clarify whether the specification of these non-enumerated metal HAPs require the operator to commence measuring for these metals in the waste feed to ensure compliance when the PM CEMS is non-operable. Furthermore, clarification is requested as to (1) when, if at all, facilities should commence monitoring for cobalt and manganese in the waste stream and (2) when can facilities cease analyzing for barium, silver, and thallium.

**2. The Agency proposed that the site-specific PM limit be a compliance parameter for the D/F standard irrespective of whether activated carbon injection was used as a control device. The Agency is now considering comments that significant D/F may not be adsorbed onto PM in all cases (62 FR 67796, Footnote 13).**

Unless there is data that demonstrates that D/F will be absorbed reliably, with the required efficiency, on forms of PM other than activated carbon, DOE believes that the site-specific PM limit should be a compliance parameter for the D/F standard only when activated carbon is used as a control technology for D/F. In the absence of activated carbon control for D/F, however, the site-specific PM limit could still be allowed to be used as a site-specific compliance parameter for the D/F standard when the owner/operator is able to supply data that adequately supports this.

### IV.B.2. Data Excluded From Calculating the PM CEMS Operating Parameter Limit

**1. For simplicity, EPA proposes to exclude data from all periods in which the facility operated outside of the operating envelope defined in the CoC irrespective of whether the parameter in question affects PM control (62 FR 67797, Footnote 16).**

EPA needs to define what is met by “operating.” Typically, RCRA assumes that whenever hazardous waste is being incinerated, the facility is operating by RCRA. Typically, the CAA regulations assume that a unit is operating whenever any fuel, including fossil fuel, is being introduced into the system. DOE requests EPA clarify which definition of “operation” is intended.

Nonetheless, the proposed removal of data points from rolling hourly averages from 3-24 hours in length will generate a “second set of books,” which is not good accounting practices. Once the batch Beta data are printed in the facility’s operating record, this rule would have the facility personnel parse that data which will create another rolling average. If the purpose is to determine what the particulate emission rate is, then no data parsing should be mandated.

The proposed removal of data involving upset conditions will require the definition of "upset." A better approach would be to have the facility report any instantaneous reading over 34 mg/dscm (0.015 gr/dscf) and what set of parameters led to the instantaneous reading. Such an approach would also eliminate the request to assist EPA in determining how to objectively distinguish between high PM emissions attributable to PM control device upset conditions versus normal emissions variability. The reporting of any batch over the instantaneous 34 mg/dscm would document the cause, but it would not necessarily be a non-compliance given the averaging period.

**2. When determining PM CEMS operating parameter limits, EPA explains "First, the facility must remove from the data set all PM CEMS data accumulated while the PM CEMS was not available or not performing acceptably as defined by the regulations. Examples of the data not included in the calculation of the PM CEMS operating parameter limit include data obtained when the PM CEMS was "out-of-control" as defined in Procedure 2 and PS11 [Performance Specification 11], periods when the PM CEMS was not analyzing stack gas (as would happen during calibrations, maintenance, etc.), and periods when the facility was not in operation. Next, the facility would further screen the data to exclude times when the facility was not operated in accordance with the operating parameter limits resulting from the performance test and reported in the CoC. Note that the CoC operating parameter limits would supersede the Pre-CoC operating parameter limits for this screening purpose. Although the Pre-CoC operating parameter limits may be less stringent than the CoC limits and were valid limits prior to submitting the CoC, the CoC limits are based on performance testing and as such show what operating parameter levels reflect compliance with the standards. The facility must also remove any data collected during periods of PM APCS upset irrespective of whether the operating parameter limits were exceeded.""For simplicity, we believe it is best for facilities to ignore periods when the CEMS recorded data which was screened out and calculate the rolling averages [for determination of the operating parameter limit] as if the remaining data occurred sequentially. EPA specifically requests comment on this approach." (62 FR 67797, col. 1; 62 FR 67798, Footnote 21).**

In determining the operating parameter limit, there is no justification for removal of data collected during periods of PM APCS upset irrespective of whether the traditional operating parameter limits were exceeded. There is no reliable method to do this.

**3. Episodes of high PM emissions caused by periodic, routine maintenance cycles (e.g., ESP rapping; soot-blowing for waste heat boiler equipped incinerators, etc.) would not be considered upset conditions. We request information on how to objectively distinguish between high PM emissions attributable to PM control device upset conditions versus normal emissions variability (62 FR 67797, Footnote 17).**

To distinguish between high PM emissions attributable to PM control device upset conditions versus normal emissions variability, the owner/operator can simply rely on recorded occurrence of any automatic waste feed cutoff due to exceedance of the "traditional" PM emissions operating parameter. An artificial, non-site-specific criterion should not be applied to determine upset versus normal conditions.

### IV.B.4. Averaging Periods for the PM CEMS Operating Parameter Limit

**In the PM CEMS operating parameter limit Introduction (62 FR 67796 and 67797), EPA notes that it is likely that the PM CEMS operating parameter limits (under this rulemaking) will result in a different calculated numerical value than the manual methods-based MACT PM standards. EPA then attributes this disparity to the fact that MACT PM standards would be based on manual methods testing with no fixed averaging period (emphasis added). In contrast, PM CEMS operating parameter limits would have both a fixed (and likely different) averaging period. EPA continues by explaining the relationship between emission limits or standards versus averaging periods. Specifically, EPA clarifies that at a fixed numerical value, a standard or limit is more stringent as the averaging period decreases and less stringent as the averaging period increases because of emissions variability (62 FR 67797, col. 2). In the proposed rule, EPA said that an appropriate averaging period for PM CEMS would be the length of time it takes to make three Method 5 runs. EPA proposed a 2-hour averaging period for PM CEMS. Comments received in response to CEMS NODA 1 said the sampling time for a Method 5 run can vary from 1 to 8 hours. Basing the averaging period for the PM CEMS operating parameter limit on the length of time it takes to perform three Method 5 runs would then result in an averaging period in the range of 3 to 24 hours (see 62 FR 67797, col. 2-3 and Footnote 20). This is still being evaluated (62 FR 67797, col. 2-3).**

Compliance with the fixed MACT PM standard will be demonstrated by manual testing over a site-specific averaging period equal to the time necessary to perform three manual sampling runs for PM testing. The PM CEMS operating parameter limit for that facility should be set to prevent the facility from exceeding its permitted MACT PM emissions limit set by performance testing. So long as compliance and primary CEMS calibration are based on the manual method (and therefore on the site-specific averaging period), for simplicity, consistency, avoidance of confusion, and scientific defensibility, the site-specific manual method based averaging period should be used for all emissions measurements, unless EPA sets a uniform fixed averaging period (e.g., such as 24 hours) that encompasses the range of site-specific, manual method-based averaging periods required for HWCs. Historically, this is similar to the approach used by EPA when the proposed Municipal Waste Combustor CO emissions limit was not achievable by certain classes of combustors using refuse derived fuel (RDF) using a proposed averaging period of 4 hours. This problem was due to the variability of RDF. That averaging period was therefore changed to 24 hours (56 FR, p 5488, Section VIII. C. 3).

Longer manual sample collection times are necessary for facilities that have low emissions. At the lowest levels (requiring 24 hours total manual method sampling time for three runs), the CEMs will be operating near its detection limit, therefore, allowing more averaging time for the CEMS at these PM levels seems appropriate. Alternatively, a set of averaging periods ranging from 1 to 24 hours, with corresponding values of the MACT PM standard, could be developed to allow a predetermined “site specific” averaging period (and corresponding standard) to be selected for each facility.

### IV.B.5. Options for Calculating the PM CEMS Operating Parameter Limit

**EPA proposes two options for calculating PM CEMS operating parameter limits. Under the first option (i.e., “rank statistics” option (NODA Section IV.B.5.a)), EPA proposes to establish a common averaging period and have each HWC calculate its PM CEMS operating parameter limit using rank statistics. As proposed, this option would require the facility to take the following steps: (1) Take the screened PM CEMS data (i.e., after non-compliance data has been removed) and calculate rolling averages sequentially from the Compliance Date using the best-fit mathematical**

**model and the averaging period EPA promulgates; (2) Observe the resulting rolling averages and sort them in order from lowest to highest; and (3) Identify the facility's PM CEMS operating parameter limit using the 95th percentile highest PM CEMS rolling average, by rank, experienced during the period the PM CEMS data was accumulated. (62 FR 67798, col. 1) The second option being considered ("traditional methods" option (NODA Section IV.B.5.b)) involves calculating the average and standard deviation of the data set and projecting an emissions level associated with the data. It would also result in every facility having the same averaging period and thus make it easier to track and enforce. However, more complicated statistics are involved.**
**(62 FR 67798, col. 1)**

To provide flexibility, if possible, the rank statistics method used to determine the operating parameter limits should be available to owners/operators. Some of DOE's mixed waste incinerators are expected to have very low PM emissions but high PM variability, both because of high feed variability and batch feeding modes. This may also make it difficult to set a reasonable operating parameter limit by the rank statistics or traditional standard setting methods alone. These concerns particularly apply to DOE sources, which control PM emissions to very low levels[2] as part of its strategy to control radionuclide emissions as well as the emissions of pollutants covered by this proposed rulemaking.

The referenced traditional statistical approach could be used on an individual facility basis for site-specific averaging periods rather than only for a fixed uniform averaging period for all facilities. (See accompanying comments for additional discussion of site-specific versus uniform averaging period (IV.B.4)). Tracking and enforcing a site-specific limit will presumably include comparing measured site-specific emissions with the applicable limit, whether it be site specific or not, and checking operational records and calculations. It does not seem readily apparent that the tracking and enforcement will be more difficult if a site-specific averaging period is used for the operating parameter limit setting, since the measured data in the calculations will all be site specific anyway.

### IV.B. 6. Consideration of a Variance Procedure to Project a Higher PM CEMS Operating Parameter Limit

**"EPA agrees in theory that establishing the PM CEMS operating parameter limit considering performance test operations (i.e., historical CEMS data when the source operated within the CoC operating parameter limits) could result in an overly conservative operating parameter for PM control at sources with low PM and low HAPs that require PM control to ensure compliance. To address the concerns expressed in the comments received on the proposed rule, the Agency is considering a variance procedure to establish a higher projected PM CEMS operating parameter limit. The variance procedure would allow facilities with very low concentrations of PM and HAPs requiring PM control for compliance to increase their PM CEMS operating parameter limit (derived from operations within the CoC operating parameter limits). The factor used to increase the PM CEMS operating parameter limit could be defined as the lowest ratio of 75% of any of the MACT standards for which PM control is required to assure compliance, to the performance test levels of those HAPs, including PM itself. To ensure that the source remains in compliance with the MACT PM standard, the same ratio would be**

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2 DOE facilities routinely use HEPA filters to control radionuclides. These HEPA filters achieve over a 99.97% removal efficiency at .3 microns for particulate.

**calculated for the PM standard to the unadjusted PM CEMS operating parameter limit [if the lowest ratio is not for PM itself]. This approach is based on the principle that, at a facility which has experienced no changes in facility operations, the ratio of emissions of HAPs which require PM control to ensure compliance to the PM concentration in the stack is either constant or decreases as the PM increases. In addition, revised (i.e., less stringent) traditional operating parameter limits for the PM control devices corresponding to the higher projected PM CEMS operating parameter limit could be established based on historical operating data at levels near the higher projected PM CEMS operating parameter limit." (62 FR 67798, col. 2-3)**

DOE agrees that the proposed variance method might address some concerns that overly conservative operating parameter limits would otherwise be applied for PM control at sources with low PM and low HAPs that require PM control to ensure compliance. The method of extrapolating beyond a demonstrated point, however, is counter to past EPA guidance and might have difficulty meeting good science, particularly when the Agency is considering using 75% of the proposed rule to develop the extrapolation formula.

**IV.B.6. a. HAPs for which PM control is necessary to ensure compliance**

**PM would be used as an operating parameter limit for semivolatile metals (SVM), low volatility metals (LVM), and, if activated carbon is used, dioxin and furan (D/F) and mercury (Hg). See 61 FR 17422 and 17430 (April 19, 1996). The Agency is reconsidering whether PM is an appropriate operating parameter to ensure compliance with the D/F standard in some cases.[3] (62 FR 67799, col. 1)**

It seems appropriate to use PM as D/F and Hg operating parameter limits, but only if activated carbon is used to control D/F and Hg, and only if there are sufficient controls to ensure other conditions affecting Hg and D/F emissions are within the envelope established in the performance tests for systems using activated carbon controls. To provide maximum flexibility, a PM emissions limit could also be allowed to function as an operating parameter limit for these pollutants if activated carbon is not used for their control, but the owner/operator can supply sufficient applicable supporting data to the regulatory agency for this situation.

**IV.B.6. b. Projecting a higher PM CEMS operating parameter limit considering the ratio of the standard to the measured level of a HAP**

**"It may be more appropriate to project the higher [operating parameter] limit using the following options [rather than the lowest ratio of 75% of the HAP standards to the corresponding measured emissions of those HAPs].**

**Under option 1, the ratio determined above [ratio of 75% of the relevant HAPs standards to the corresponding measured emissions of those HAPs] would be applied to the average PM emissions over time determined by the PM CEMS instead of applying the ratio directly to the unadjusted PM CEMS limit itself. The product of the ratio and the average PM emissions would then be subtracted from the average emissions to determine the correction to the PM CEMS operating parameter limit. This correction would then be added to the PM CEMS operating parameter limit to determine the revised PM CEMS operating parameter limit.**

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3 The Agency is considering comments indicating that significant D/F may not be adsorbed on emitted PM in all cases. Cement and lightweight kiln PM, in particular, is generally process dust (i.e., raw material) that has little affinity for adsorbing D/F."

**Under option 2, the PM CEMS recordings during the performance test would be analyzed to calculate a PM CEMS operating parameter limit, and that limit would be increased by the factor defined by the ratio discussed above (e.g., 6.8 in the first example). This approach would ensure that infrequent high PM episodes that occurred over months of CEMS operations would not be driving a PM CEMS limit that was then projected further upward using the factors discussed above (unless those high PM episodes actually occurred during the performance test). Given the truncated emissions database (i.e., the performance test) for calculating the higher projected limit under this option, however, the limit may in fact be lower than the limit normally calculated from the full CEMS emissions database (i.e., without attempting to project a higher limit). In this case, the limit which is numerically higher would be used.**

**The Agency requests information on which approach would be more appropriate for projecting a higher PM CEMS operating parameter limit." (62 FR 67799, col. 3)**

For these options, the owner/operator should have to provide information that demonstrates that the relationship of the actual emissions to the CEMS measured emissions is linear to within an acceptable degree, over the extrapolation range. If the extrapolation includes a nonlinearity or a rapidly changing curve, then more assurance that the MACT will not be exceeded will be needed. Providing the calibration data over the extrapolation range would be necessary at a minimum. For DOE mixed waste sources that expect to have high variability of feed and are batch fed, there is a concern that high variability of PM emissions and of PM emissions character may result in a need for much more frequent calibration than needed for the situations studied by EPA for this rulemaking and used as a basis for these options.

Option 1 seems reasonable and consistent with the methodology for setting the initial CEMS operating limits (before adjustment for low emissions) that ensure the MACT PM-related standards will not be exceeded.

Option 2 does not appear to be consistent with the methodology for setting the initial CEMS operating parameter limit (before adjusting for low emissions). That method uses data from the entire allowed data accumulation period (i.e., the phase-in period) to set the operating parameter limit but excludes data obtained during certain periods (for example periods of non-compliant conditions). Therefore, infrequent episodes of high PM not encountered during the performance test will still be normal occurrences for the facility, perhaps because of wide variability of waste feed and the current inability to predict PM well enough so that the full normal condition envelope can be assured to be included in the performance testing. Therefore, use of data from the full data accumulation period should be allowed to be used to represent the data variability during normal operation of the facility. If high PM emissions occur, but the CEMS are operational and no non-compliant condition exists (as determined from the non-CEMS operating parameters) and the emissions are lower than the standard, these emissions should be accepted as normal.

A question still remains, however, as to how normal, potentially high emissions resulting from routine maintenance/cleaning activities will be treated in the final rule. DOE requests EPA clarify how potentially high emissions resulting from routine maintenance/cleaning activities will be taken into account in setting the operating parameter limit or determining whether that limit has been exceeded, etc.

**IV.B.6. d. Establishing Revised Operating Parameter Limits for the PM Control Device Corresponding to the Higher Projected PM CEMS Operating Parameter Limit**

**1. Ideally, PM control device operating parameter limits (e.g, pressure drop across a fabric filter) should be established to ensure compliance with the higher projected PM CEMS operating parameter limit for compliance purposes while the CEMS is malfunctioning. Absent these revised (i.e., less stringent) [CEMS] operating parameter limits, the source would be required to: (1) Comply with the more stringent operating parameter limits established during the performance test that correspond to the original PM CEMS operating parameter limit; or (2) ensure that a back-up CEMS is always available.**

**The Agency is considering an approach to establish revised operating parameter limits for the PM control device corresponding to operations at the higher projected PM CEMS operating parameter limit. Under this approach, the source would analyze the historical operating parameter values during those periods of time that PM emissions were close to the higher projected PM CEMS operating parameter limit. Issues that must be addressed, include: (1) What range of PM CEMS operating parameter limit values should be considered to develop the database for PM control device operating parameter values; and (2) how should the database be analyzed to identify appropriate limits." (62 FR 67800, col. 2-3)**

Revising PM control device operating parameter limits to correspond with a higher projected PM CEMS operating parameter limit should be allowed but not required. For example revising the PM control device operating parameter limit(s) may not be feasible for some PM control systems such as HEPAs. To use this type of methodology, there must be a known continuous and smooth relationship between the emissions levels resulting from the control device and the control device operating parameter level, under all off-gas conditions expected for normal operations. For HEPAs, there is usually only some Yes/No indicator that indicates that the HEPA is functional or not, such as abrupt decrease in pressure differential, exceeding the manufacturer's rated pressure differential limit, radionuclide activity detection indicating a breach of the filter, or temperature increase beyond the manufacturer's specified limit. There are no operating parameters for HEPAs that correlate with efficiency (i.e., emissions) in normal operation. The rated efficiency or better is attained for all conditions within the manufacturer's specification. There is concern that requiring the use of this control device operation parameter adjustment methodology for sources using HEPA filters will unnecessarily complicate an already complicated CEMS compliance methodology. EPA should allow the methodology by which revised operating parameter limits are achieved (based on revised PM CEMS operating parameter limits) to be negotiated between the applicable regulatory agency and the regulated source and used at the discretion of the owner/operator. In any case, the source owner/operator should be required to demonstrate through revised performance testing, that the revised control device operating parameters will not cause an exceedance of the standards (or operating parameter limit).

**2. It may be appropriate to establish the revised PM control device operating parameter limits based on the 90th percentile of values that occur when PM levels are within 75% of the higher projected PM CEMS operating parameter limit. This would help ensure that a significant data set was available for evaluation and that the limits were not based on the most lenient values recorded. This is important because the higher projected PM CEMS operating parameter limit is likely to be well beyond the calibration curve." (62 FR 67800, col. 3)**

It is unclear whether this applies only to the PM control device or to all the control devices that affect the pollutants for which PM is a surrogate. Establishing the control device operating parameter limits based on the 90th percentile of values that occur when PM levels are within 75% of the higher projected PM CEMS operating parameter limit will only work if the CEMS PM operating parameter limit is mathematically related in a known and demonstrated fashion to the control device operating parameter limit and both are related similarly to emissions level. This is not so for HEPA filters, used on DOE sources with radioactive off gas systems. For example, HEPA filter pressure differential over the filter can increase 5 or 10 inches (WG) without measurably affecting filter efficiency, or perhaps even slightly increasing filter efficiency if the increase is due to PM deposition.

**3. "Based on further analysis, the Agency may consider other approaches to define an appropriate data set of PM control device operating limits and identify appropriate limits (e.g., considering a different percentage of the historical data and/or basing the limit on a different percentile of data). Alternatively, the Agency may conclude that these approaches to revise the performance test-based operating parameter limits would be too complicated or difficult for regulatory officials to oversee, or that it would be difficult to confirm compliance with the standards. In this event, sources would be required to continue to comply with the PM control device operating parameter limits established during the performance test when the CEMS malfunctions even though the PM CEMS operating parameter limit has been projected upward under procedures discussed above." (62 FR 67800, col. 3)**

It would be simplest and would apply uniformly to all types of PM control systems if, in the absence of the CEMS, the initial performance-test-based control device operating parameter limits are required to be used. If the source needs to revise these control device operating parameter limits, performance testing should be required unless the source owner can supply data and information supporting this proposed approach to adjust the limits. Such information would include the applicable demonstrated mathematical relationship between the control device operating parameter and CEMS measured emissions or actual emissions.

**IV.C. RCA [Relative Calibration Audits] Test Frequency**

**In the proposed rule, EPA said that facilities would be required to perform relative calibration audits (RCAs) on their PM CEMS every 18 months. This testing interval would have been relaxed to 30 months for small on-site incinerators. These time intervals coincided with the proposed Performance Test intervals. The Agency is considering requiring all facilities to conduct comprehensive performance tests every five (5) years, including concurrent RCA tests. (62 FR 67801, col. 1-2)**

DOE agrees that RCA testing should be performed coincident with Performance Tests and both should be performed, at a minimum, at 5 year intervals.

**IV. D. Extrapolating PM CEMS Calibration Data**

**"One-minute or batch PM CEMS readings during the course of operations are likely to occasionally exceed the highest M5i calibration point during the course of PM CEMS use. This is because the manual method results used to derive the calibration are (nominally) one hour block averages of emissions over the sampling period while the PM CEMS readings are averages of emissions on the order of minutes...In addition, emissions variability within the sampling period of M5 is not likely to represent the full range of emissions variability over all periods of PM CEMS**

**operation. Therefore, a system is needed to allow the extrapolation of data beyond the calibration curve...[T]he Agency proposes to allow the calibration curve to be used for measurements up to 25% more than the maximum [manual method] measurement observed during the calibration. (This will be referred to as the "125% point.") Beyond this point (125% of the highest M5 measurement) EPA is concerned that extrapolating the calibration data might lead to false compliance determinations. Therefore, some environmentally conservative approach must be employed.**

**Note that the ability to extrapolate beyond the calibration curve in no way would mitigate the facility's requirement to calibrate over its full range of PM emissions. If a facility experiences continuous periods of PM emissions beyond the calibration curve, it would be obligated to perform tests to capture these data into the calibration curve. For example, a facility may determine that it occasionally has several continuous hours of PM CEMS readings which are greater than the 125% point. Several continuous hours are enough time to conduct a M5 test, so the facility would be obligated to conduct M5 tests at this emissions level and include these data in the calibration curve used at the facility. EPA requests comment on how long a period of sustained operations at emissions levels greater than the 125% point would be necessary to require these additional calibration data points. (62 FR 67801, col. 2-3)**

Because the M5 calibration points are based on 1-hour or longer sampling periods (manual method sampling time), they will include some statistical distribution of higher and lower values than the derived average value. It is to be expected then, that normally some emission levels measured by the CEMS during 1-minute intervals will be higher than the highest calibration point obtained by the manual method. The calibration curve is valid only for data averaged over the same sampling period as that used to obtain the calibration data. It is statistically inappropriate to compare one- or two-minute emissions data with one-hour or longer manual method calibration data. Instantaneous, one-minute or two-minute exceedances of the calibration curve highest emissions point should be of no concern because such exceedances would also occur in the emissions being collected for the calibrations. It has to be assumed, that, in the absence of information that the system is non-compliant, that any exceedances of the calibration point in a one-minute interval are due to these normal statistical variations that are accounted for in the calibration data. If however, the 125% point of the calibration curve is exceeded for two rolling averages, whether consecutive or not, the calibration curve should be extended to the required emissions levels. The degree of correlation of the distribution of short time CEMs emissions levels during the emissions measurements with the distributions of short time CEMS emissions levels during the calibration runs might be an additional criterion for whether the calibration curve is usable, but this may involve an excessive amount of work.

### IV.E. Need to Calibrate to Twice the Emissions Standard

**1. One issue raised by commenters during the comment period for the proposed rule was EPA's proposal that facilities calibrate the PM CEMS to twice the emissions limit. Commenters raised concerns that facilities might not be able to emit PM at a concentration equal to twice the standard. They also said this aspect of the proposal in essence asks facilities to violate the emission standard and could lead to an enforcement action against the facility. Commenters also had concerns that facility personnel may not be sufficiently familiar with the various processes and APCD factors to acceptably calibrate the PM CEMS over the full range of operations experienced at the facility (62 FR 67802, col. 1-2).**

The de facto PM emissions limit for any source will be the limit determined by performance testing, not the MACT standard. A suggestion is to require calibration to 1.25 times the CEMS operating parameter limit (as adjusted for low emissions, if this adjustment is used). The sampling periods for calibration should be the same as the sampling time required for manual method sampling for compliance determinations. This will put all data on the same basis and remove unnecessary complexity. See the previous comment for discussion of the reason for not using the calibration data to obtain actual emissions data over shorter time periods than that used for compliance determinations and for calibration.

In Section 6.1.1.1 of the calibration procedure (Appendix II) it is stated that alternative high-level values may be used for calibration, provided the source can measure emissions throughout the full range of emissions concentrations experienced by the facility. The emissions concentrations referred to can only be those averaged over the time period required for compliance determinations and used for obtaining the calibration data, i.e., the time period required for three manual method runs for that facility. One or two minute data can not be calibrated with time averaged data obtained over a one-hour or longer period. The regulation wording should take this into account to avoid unnecessary and useless calibration efforts outside the expected range for integrated (average) emissions.

**2. "EPA agrees that it would be difficult for many facilities to emit PM at any prescribed level. Many facilities have redundancies in their PM APCDs to such an extent that emitting to the emissions limit may be problematic. However to have accurate PM CEMS measurements, facilities need to calibrate the PM CEMS over the full range of emissions experienced at the facility. As a result, it would be necessary to require facilities to calibrate the PM CEMS over the full range of operations, including PM emissions. This would eliminate the prescriptive nature of how high the calibration needs to be while still addressing the issue that the site-specific calibration of PM CEMS covers the broad range of PM emissions experienced at the facility.**

**EPA does not agree, however, that this approach could cause facilities to violate the manual method MACT PM standard. The PM standard would be defined as the average of three manual method measurements. Any single run above the standard would not be a violation by itself. Average emissions over the calibration would be below the standard for a source equipped with MACT controls. Therefore, we expect that sources would be able to calibrate PM CEMS at levels higher than the PM emissions standard and still remain in compliance with the standard. If this is not practical, however, EPA may consider a waiver of the manual method PM standard during periods of calibrating (and performing RCA tests of) the PM CEMS. The need to obtain and audit an accurate calibration at and above the PM standard may override any concerns about high short-term PM emissions. EPA would want to limit the frequency and duration of calibration runs that exceed the standard, however. We request comments regarding how such limits could be implemented. One way this could occur is to require that sources request in the performance test plan approval to exceed the standard during calibration." (62 FR 67802, col. 2)**

Until the technology is available to accurately and reliably calibrate the CEMs instrumentation on line at the incinerator over one- or two-minute intervals, and compliance is based on such information, the fact that the instruments can read PM level changes on a short time scale is relatively useless information. It seems that there is great concern over (a) one- or two-minute

PM emissions values that are higher than the highest calibration point values obtained from the time averaged (integrated) one- to 24 hour PM levels for the calibration points, (b) how to ensure that the instrument is giving correct readings at those higher one-minute levels, and (c) how to ensure that the incinerator PM one-minute levels (instantaneous levels) are not exceeding the instrument's calibration curve obtained for integrated PM levels over one- to 24-hours. There may be currently no practical method to achieve the latter online at the incinerator. As clearly stated in the NODA, the short-term emissions levels over a period of one or more hours are expected to vary substantially from the averaged value obtained from integrated PM emissions over the total time period. The longer the total time period, the larger the envelope becomes for the variability of the short term values over that time period. As one suggestion, the instruments might be able to be factory calibrated or calibrated offline for instantaneous response over the expected range, and the response curve and other supporting information provided for use as needed to show that the instrument, as designed and as factory calibrated, is capable of providing the requisite accuracy and precision over a given range. From that point on, at an operating source, only the integrated response over the same period as the manual method sampling period can be used for calibration. There is no basis to compare an integrated response obtained from the calibration point with one short term one- or two-minute response. If three replicate manual sampling runs result in satisfactorily agreeing values for each calibration point, and these replicate runs contain a variety of short term PM levels, then that should be adequate. However, when PM CEMS emissions measurements are being taken to determine the operating parameter values, a limit could perhaps be put on the fraction of time short-term (e.g. one or two minute) CEMS PM emissions measurements are allowed to exceed some fraction of the maximum value of short-term PM measurements encountered during the calibration runs for the highest calibration point. For example, no more than one or two percent of the one-minute levels could exceed 125% of the maximum one-minute reading encountered during calibration. Alternatively, the distribution of one-minute PM levels during operating parameter measurement and during calibration could be required to be similar, perhaps at an 85 or 90 % correlation. This would involve extensive EPA data gathering before it could be imposed however, to show that it is a reasonable and achievable approach. It could also involve considerable effort in analysis of CEMS data.

**3. Approval to exceed the standard [during calibration runs] would only be required if the average of all PM CEMS calibration runs is greater than the PM standard." (62 FR 67802, col. 2).**

For sources having widely variable and batch feeds, it will be virtually impossible to predict in advance whether the average of all calibration runs will or will not exceed the PM standard when there is no acceptable mathematical predictor of PM emissions. It would be better to state that during calibration runs the standard will not apply or the standard would be increased 30% during calibration runs to allow calibration at higher levels than the standard.

**4. "The revised draft PS 11 states that different PM levels should be obtained by varying process conditions or, alternatively, by adjusting the APCS. It is relatively silent in presenting a well-defined protocol with guidelines on how EPA expects calibration tests to be performed." (62 FR 67802, col. 2-3).**

For radioactive HWCs using HEPA filters for final PM control, the PM emissions cannot be varied as proposed for calibration, not only because of the PM control system characteristics, but because of the concerns for radioactive releases which must be kept as low as reasonably achievable (ALARA) at all times. These ALARA concerns also apply to all other radioactive HWCs. EPA should provide guidance on how it expects such sources to obtain proper CEMs calibration data over the required range, including the situation for using the maximum expected emissions as the upper end of the range rather than the standard, and including the case in which the operating parameter is allowed to be adjusted upward for sources having low emissions.

### IV.G.1. Waivers for the PM CEMS Requirement

> **EPA is considering whether to waive the PM and Hg CEMS requirements for small, on-site incinerators (SOSI). See the proposed rule, 61 FR at 17439. If a waiver is promulgated, a SOSI would be required to use existing operating parameters in lieu of a PM CEMS to document compliance with the PM, SVM, and LVM standards."(62 FR 67803, col. 1)**

To provide maximum flexibility, EPA should allow the owner/operator of small on-site incinerators and radioactive mixed waste incinerators to have the **option** to use the waiver (use existing operating parameters) or use the PM CEMS to document compliance with the PM, SVM, and LVM standards. The CEMS calibration requirements as proposed could be prohibitively expensive and not cost beneficial for HEPA filtered radioactive systems in HWCs that burn highly varying waste streams yet emit PM at levels far below the proposed MACT PM standard.

### IV.G.2. PM CEMS Waiver for Sources With Short Life-Spans

> **"EPA is considering a waiver of the PM CEMS requirement for HWCs operating under a legally binding agreement [such as a Record of Decision (ROD) or Compliance Order] that ensures the source will stop burning hazardous waste within three years of the Compliance Date.**
>
> **EPA could likewise grant a waiver from the PM CEMS requirement for facilities with short life-spans that lack the legally binding agreement discussed above. However, EPA is concerned that without a legally binding agreement to cease operations, the Agency lacks certainty that operations will cease by a prescribed date. For this reason, EPA would consider a waiver for other facilities that plan to cease operations within the first year of compliance with the HWC regulations, that is, prior to the need to use PM CEMS as the operating parameter for PM control. Facilities that operate after the first year would need to have PM CEMS installed and calibrated, meet data availability requirements, determine the PM CEMS operating parameter limit, and use the PM CEMS as the primary operating parameter for PM control."(62 FR 67803, col. 1-2)**

The Department agrees with the proposed approach EPA is considering, which would allow EPA to waive the PM CEMS requirement for (1) HWCs that under a legally binding agreement will stop burning hazardous waste within three years of the Compliance Date, and (2) HWCs that have short life-spans that lack the legally binding agreement. Further, DOE appreciates the cost/benefit considerations that have gone into formulating this approach. A closure plan and schedule submitted to and approved by the regulatory agency should also be sufficient documentation of the intent to close a facility in the interim between the compliance date and the three-year limit.

**V.B. Stack Sampling Test Methods**

> **Another question is whether EPA should simplify the task of determining the appropriate manual method tests to be used for compliance. Currently, stack sampling and analysis methods for HWCs are (with a few exceptions) located in RCRA's SW-846 for compliance with the BIF and incinerator rules, and in 40 *CFR* part 60, Appendix A for compliance with the NSPS and other air rules. Facilities could be required to perform two identical tests, one for compliance with MACT or RCRA and one for compliance with other air rules, using identical test methods simply because one method is an "SW-846" method and the other an "air method."**
>
> **Stack test methods HWCs use for compliance should be found in one place to facilitate compliance. EPA intends to reference 40 *CFR* part 60, Appendix A, when it requires a specific stack-sampling test method. A few SW-846 methods do not have equivalents in 40 *CFR* part 60, Appendix A, namely the VOST and semi-VOST methods. In these few cases, EPA would continue to refer to these SW-846 methods as well." (62 FR 67803, col. 3)**

DOE agrees with EPA's proposed approach to make 40 *CFR* part 60, Appendix A the primary stack test method for compliance with SW-846 methods referenced for VOST and semi-VOST methods.

**Appendix II. Performance Specification 11, Section 1.2.1.**

> **A new calibration may be required if conditions at the facility change and result in conditions which are unrepresentative of the previous calibration (i.e., changes in emission control system, concentration of PM emitted, or feed inputs to the device). Since the validity of the calibration may be affected by changes in the physical properties of the particulate (such as density, index of refraction, and size distribution), the limitations of the CEMS used should be evaluated with respect to these possible changes on a site specific basis." (62 FR 67807, col. 1)**

On the first page of the DRAFT Volume I DuPont PM CEMS Demonstration Report (October 1997), that supports the CEM NODA 2, it is stated, "However, using a COM (continuous opacity monitor) for PM has a serious limitation for certain sources within the scope of the proposed HWC rule: poor correlation between opacity and PM at PM concentrations near the proposed PM emissions limits ranging from 35 to 69 mg/dscm (at 7% $O_2$.)." It is disturbing to note that density, index of refraction, and size distribution are still factors that can affect the validity of the calibration when these appear to be primary reasons (in addition to range) for development of the PM CEMS proposal to replace opacity monitors for PM emissions. HEPAs should keep the particle size distribution relatively uniform, but density and index of refraction might still vary considerably as highly varying waste streams are burned at DOE mixed waste incinerators. EPA should carefully consider these problems in formulating the final rule.

**Appendix II Performance Specification 11, Sections 6.1.1.1. and 6.1.1.2.**

> **"For a CEMS installed to measure emissions as required with an applicable regulation, the high level value between 1.5 times the emission standard and the span value specified in the applicable regulation is adequate." and Section 6.1.1.2. "Alternative high-level values may be used, provided the source can measure emissions throughout the full range of emissions concentrations experienced by the facility." (62 FR 67808, col. 1)**

When the actual PM emissions are much lower than the standard, for example 1/10 to 1/20 of the standard, requiring a facility to perform calibration tests in the much higher vicinity of the standard is unwarranted, particularly when the calibration would result in unnecessarily excessive emissions. Any unnecessary increase in radioactive PM emissions is of particular concern for DOE's radioactive mixed-waste incinerators. Therefore the wording in Section 6.1.1.2 should be retained. However, EPA should also reconsider whether mixed waste HWCs that use HEPA filters for PM control could be granted a waiver from the PM CEMS requirements if they have PM radioactivity monitors or other regulatory agency-approved operating parameter indicators already in place that can provide an acceptable indicator of HEPA functionality.

**Appendix II Performance Specification II, Section 6.2.1.**

> **"The response time of the CEMS should not exceed 2 minutes to achieve 95 percent of the final stable value (except for Batch CEMS: see 6.2.2). The response time shall be documented and provided by the CEMS manufacturer. Any changes in the response time following installation shall be documented by the facility" (62 FR 67808).**

This may be a good and reasonable specification for gas CEMS (e.g., oxygen, CO, sulfur and nitrogen oxides) that can be checked in the laboratory and in the field by introducing known amounts of the analyte gases from a cylinder. It is not a good specification for PM because of the difficulty of producing STEP changes to a final stable value within the span of the CEMS. This difficulty is even greater following installation. EPA should consider the value of the response time specification in light of the fact that the short time period measurements have little value apart from all the other short time period measurements that comprise the average values that are used for determination and documentation of compliance within the PM operating limit.

**Appendix II Performance Specification 11, Section 6.2.2.**

> **"The response time requirement of Section 6.2.1 does not apply to batch CEMS. Instead it is required that the response time, which is the equivalent to the cycle time, be no longer than one tenth of the averaging period for the applicable standard or no longer than fifteen minutes, which ever is greater. In addition, the delay between the end of the sampling time and reporting of the sample analysis shall be no greater than three minutes. Any changes in the response time following installation shall be documented and maintained by the owner or operator" (62 FR 67808).**

"Cycle time" is not defined in this specification. DOE believes that EPA should define the term or omit it. In the PS section(s) dealing with response time (or measurement interval time), DOE requests EPA to provide the rationale for specifying a particular maximum time period. As noted above, measurement results from periods that are very short compared to the averaging period for the applicable standard are extremely difficult (if not impossible) to check and have little usefulness for determination or documentation of compliance. Likewise, it is difficult to justify specification of a maximum delay of only 3 minutes between the end of a sampling time and reporting of the sample analysis result. Why must this delay be less than the longest response time allowed under section 6.2.2?

**Appendix II Performance Specification 11, Section 6.2.3.**

> **"Sampling is required to be continuous except during brief pauses when the collected pollutant on the capture media is being moved for analysis and the next capture medium starts sampling. In addition, the sampling time should be no less than thirty-five percent of the averaging period for the applicable standard or no less than thirty-five percent of the response time." (62 FR 67808, col. 3)**

EPA needs to be specific about what is meant by "brief." DOE believes that EPA should state, at a minimum, that the length of the brief periods not reduce the sampling time during the measurement interval to less than the percentage required for "data availability." (See NODA p. 67790, Section III, A. 2. Data Availability). See also, other comments given above regarding Section 6.2 Sampling and Response Time. DOE suggests EPA consider eliminating "response time" from this Section 6.2.3 specification.

**Appendix II Performance Specification 11, Section 8.1.2**

> **EPA suggests that the PM CEMS be located at least eight equivalent diameters downstream from the nearest flow disturbance (62 FR 67808, col. 3)**

Stacks and ducts do not have unlimited space to place the instruments in the required eight diameters. Most stacks have existing instrumentation and/or test ports. Placing a permanent instrument in test ports does not solve the space issue as performance tests will be required. Also, CO and oxygen meters, flow and temperature indicators are in the stack. The rule should specify that the presence of other instrumentation and performance testing probes need not be considered in meeting the eight diameter criterion. Assuming laminar flow (as opposed to turbulent flow), then additional re-engineering will be required. That time will significantly increase the amount of time that it will take for a facility to install a PM CEMS.

In addition, there are other standard methods and approaches for extractive sampling of PM in stacks that are applicable to CEMS under this rule, that have received EPA approval, but are currently utilized for the measurement of radionuclide emissions under the NESHAP provisions codified under 40 CFR part 61, Subpart H. These measurement standards have been approved by ANSI and involve (1) the selection of sample siting, (2) the use of single-point representative sampling, (3) computer modeling of sample loss in sample transmission lines, and (4) the use of a unique sample probe called the "Shrouded Probe," which has been shown to provide higher performance than standard isokinetic probes. These methods and approaches have been demonstrated to meet the high performance requirements necessary to conduct representative sampling of stack emissions. For instance, the ANSI standard provides a more viable alternative to sampling siting then the "eight diameter upstream and two diameter downstream requirement" instituted for CEMS under this rule. DOE requests EPA to incorporate provisions for utilizing alternate, EPA-approved methods where applicable.[4]

**Appendix II Performance Specification 11, Section 8.4.5.**

> **Irrespective of the extent of the range, the three PM concentration levels developed in the calibration tests must be distributed over the complete operating range experienced by the facility, and at least three of the minimum 15 measured data**

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[4] EPA letter dated November 21, 1994, from Mary D. Nichols, Assistance Administrator for Air and Radiation, EPA to Raymond F. Pelletier, Director of Office of Environmental Guidance (currently Office of Environmental Policy and Assistance), DOE

**points must lie within each of the following levels:**

- **Level 1: 0-30% of the maximum PM concentration**
- **Level 2: 30-60% of the maximum PM concentration; and**
- **Level 3: 60-100% of the maximum PM concentration. (62 FR 67809, col. 3)**

For facilities with very low particulate emissions, a 0-30% test is in the noise band of the instrument. The prospect of purposefully increasing particulate emissions is not good public policy for mixed waste facilities, yet that is the best way to stay out of the noise band of the instrument. EPA should consider exempting facilities from the PM CEMS if they meet the standard. Should EPA choose to make an incentive for facilities to install a CEM, then some operating parameters should be abolished. Regardless, there is still engineering concern that the PM CEMS cannot measure consistently low particulate emissions.

A desirable PM CEMS detection limit is stated in the October 1997 draft Particulate Matter CEMS Demonstration, Volume I (report of the PM CEMS test at the DuPont facility) as being one-tenth of the emissions limit. If the actual PM emissions are in the range of 1/10 to 1/20 of the emissions limit, as the case for example at DOE's Waste Experimental Reduction Facility (WERF) and Consolidated Incinerator Facility (CIF) incinerators, then calibrations and measurements would have to be done near the detection limit, possibly making it difficult to obtain sufficiently reliable data.

**Appendix II – Performance Specification 11, Section 12.2.4.2, Equation 24 and Equation 25 (62 FR 67812)**

The equations are incorrect or missing.

**Appendix II – Performance Specification 11, Section 13.1.**

> **In discussing its calibration drift performance specification EPA states "The CEMS internal calibration must not drift or deviate from the value of the reference light, optical filter, Beta attenuation signal, or . . . ." (62 FR 67813)**

EPA has not defined "internal calibration."

**Appendix III – Procedure 2, Sections 2 through 5 (62 FR 67816),**

> Much of the content of these sections (e.g., calibration drift, calibration standard, zero drift, Response Calibration Audit, Absolute Calibration Audit) has nothing to do with calibration in the strictest sense, namely, the relationship between the CEMS response and the results of the manual PM Reference Method. DOE suggests EPA consider using other language (e.g., span drift, check standard, instrument zero drift, etc.) to distinguish between various instrument checks and the CEMS calibration.