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November 29, 2010

VIA ELECTRONIC SUBMISSION

EPA Docket Center (EPA/DC)

United States Environmental Protection Agency (6102T)

Proposed Rulemaking – New Source Performance Standards and Emission

Guidelines for Sewage Sludge Incinerators

Docket ID No. EPA-HQ-OAR-2009-0559

1200 Pennsylvania Avenue NW

Washington, DC 20460

Via Electronic Mail: a-and-r-docket@epa.gov

Re: Comments of the National Association of Clean Water Agencies on the Proposed Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units, 75 Fed. Reg. 63260 (October 14, 2010)

The National Association of Clean Water Agencies (“NACWA”) appreciates the opportunity to comment on the United States Environmental Protection Agency’s (“EPA” or “Agency”) request for public comments on the *Proposed Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units*, 75 Fed. Reg. 63260 (October 14, 2010) (“Proposed Rule”) under § 129 of the Clean Air Act (“CAA”). NACWA represents the interests of nearly 300 of the nation’s publicly owned treatment works (“POTWs”), which collectively serve the majority of the sewered population of the United States, including approximately half of the sewage sludge incinerators that will be affected by this rulemaking. For over 40 years, NACWA has maintained a leadership role in legal and policy issues affecting the public agencies responsible for cleaning the nation’s wastewater, and has been at the forefront of the development and implementation of scientifically-based, technically-sound and cost-effective environmental programs for protecting public and ecosystem health.

EPA’s Proposed Rule, if finalized, would have a significant negative impact on the NACWA members that use incineration to responsibly manage the thousands of tons of sewage sludge generated on a daily basis from the treatment of the nation’s wastewater. Although wastewater treatment agencies rely on having multiple options for managing their sludge, the list of available options has slowly

shrunk over the years for many communities. EPA's proposed action, if finalized without significant revision, would severely limit the use of incineration – which is currently used to manage approximately a fifth of the sludge generated annually in the U.S. – into the future and eviscerate progress toward a new, viable source of renewable energy for the country. In fact, the extremely stringent proposed new source performance standards could effectively eliminate the construction of new sewage sludge incinerators ("SSIs"), with no current incinerator manufacturers indicating that they will be able to meet the new limits.

As discussed in more detail below, NACWA believes EPA should abandon this rulemaking and return to its previous plan to regulate SSIs under § 112 of the CAA. The technical corrections discussed in the comments below are warranted under any future rulemaking effort, whether pursuant to § 129 or § 112. NACWA encourages EPA to take the time now to develop a more thorough and accurate understanding of this sector. NACWA's major concerns and recommendations include:

1. EPA should recognize that the CAA requires that POTWs (including their SSIs) be regulated under § 112 and not under § 129.

NACWA urges EPA not to proceed with the promulgation of standards for SSIs under CAA § 129 and instead to return to EPA's earlier approach of addressing SSIs under CAA § 112. Congress directed that POTWs be regulated under § 112, and this includes the incinerators that POTWs operate to manage their sludge. EPA also faces legal obstacles to using § 129 to regulate SSIs because they do not fit the statutory definition of "solid waste incineration unit." As discussed more completely below, EPA faces a more defensible path under § 112 for regulating POTW-operated incinerators.

2. EPA should acknowledge the value of incineration as a local option for residuals management and as an emerging renewable energy source for generating electricity and steam.

Under the Clean Water Act ("CWA"), Congress reserved residuals management decisions to the local POTWs because of their unique ability to balance competing interests and make sound cost determinations on a site-specific basis. *See* CWA § 405(e) ("The determination of the manner of disposal or use of sludge is a local determination."). NACWA has long argued that local communities must have the flexibility to choose the residual management approach that works best for them. NACWA's members have for decades been balancing the complex concerns of local communities over residual management options.

As examples, The Metropolitan District's (Hartford, Connecticut) nearest landfill option is 375 miles away so its choice to incinerate results in less air pollutant emissions than the trucks would emit while transporting its sludge to landfill. The small community of Edmonds, Washington chose incineration because it is 270 miles from the closest landfill and Washington State may not allow that landfill to take sewage sludge. The Northeast Ohio Regional Sewer District ("NEORS") recently revisited its choice to incinerate and concluded that it was the "greenest" option available for managing residuals. NEORS is proceeding with a project to install new fluidized bed incinerators that will generate enough electricity to power 1800 homes, will minimize odors, and will avoid the extra fuel and air emissions from 8-12 trucks per hour

transporting sludge through its surrounding communities to a landfill that is 65 miles away. As Congress has recognized and affirmed, sewage sludge management is a responsibility uniquely suited for local control, where incineration is often the best and cleanest option for residuals management.

The Proposed Rule oversimplifies the decision making process involved in choosing a management option for sewage sludge and, as currently drafted, will make incineration a less viable option for all communities in the future.

3. EPA's rule writers should be given the time, data, and resources to understand POTWs and SSIs sufficiently to regulate them in an appropriate manner within the bounds of existing legal requirements.

EPA's rush to promulgate this rule has been done at the expense of EPA's understanding of POTWs, the nature and amount of sewage sludge that they manage, and the emissions that these incinerators actually generate. Mistakes in the Proposed Rule reveal the depth of this misunderstanding and necessitate fundamental changes to the rule and the analysis that EPA uses to support it. NACWA has asked repeatedly for EPA to slow the rulemaking pace to allow for a more reasoned approach. We ask that EPA withdraw the Proposed Rule until it can collect sufficient data to support an appropriate rulemaking.

4. EPA's fundamental misunderstanding of sewage sludge and the relative cost of landfiling undermine the credibility of its analysis of the rule's impact on small entities.

EPA assumed that "dewatered" sludge contains no moisture. In fact, the average moisture content in dewatered sludge is still 70-80 percent. EPA assumed that dry tons of sludge (instead of wet tons) would be transported to landfill, which underestimated the amount of sludge requiring storage, handling, odor control, and transport by a factor of three to five. EPA relied on this error in finding No Significant Impact on a Substantial Number of Small Entities ("No SISNOSE") under the Regulatory Flexibility Act ("RFA") and the Unfunded Mandates Reform Act ("UMRA"). Given as much as a five-fold increase in the assumed landfill costs, EPA is not justified in concluding that all small entities will prefer to landfill, and it must reconsider the adverse effects of this rule on small entities. EPA cannot know the local calculus for alternative residual management options, but it should start with correct assumptions regarding the amount of sewage sludge that must be diverted and the costs associated with that diversion.

5. EPA should revisit its beyond the floor mercury control determination after correcting the overestimation of the amount of mercury generated by POTWs and after considering more cost effective pollution prevention alternatives for mercury reductions.

EPA significantly overestimated the baseline mercury emissions used in determining the cost effectiveness of beyond the floor maximum achievable control technology ("MACT") controls for mercury. EPA also significantly underestimated the cost of mercury controls applied to SSIs. As a result, the cost effectiveness calculation used to justify beyond the floor mercury controls for SSIs is flawed and must be revisited. Local pollution prevention efforts targeting dental

offices demonstrate that mercury reduction can be achieved far more reliably and cost effectively upstream of the POTW than by installing add-on control devices at the incinerator.

6. EPA's decision to limit data collection to stack tests at nine facilities undercuts proper MACT floor determinations for the SSI subcategories.

EPA decided to circumvent the Paperwork Reduction Act ("PRA") and the Office of Management and Budget ("OMB") review and comment period by limiting its request for information to nine of the 118 POTWs operating SSIs. EPA then applied statistical methods to extrapolate from this limited data set as if it were a random sample of data representative of SSIs as a whole. The data are not random because the nine POTWs from which the data are drawn were selected based on the type of pollution control equipment employed, without considering sludge characteristics and other factors that affect SSI emissions. The data also are not representative because the tests were snap shots that do not reflect seasonal, regional, or inherent variability in the domestic sewage treated by POTWs. EPA should use other available data to understand the variability and to incorporate that variability into the MACT floor determinations.

7. EPA should use all of its available discretion to mitigate the impact of a rulemaking on public entities already financially over-burdened and resource constrained.

POTWs are facing significant costs to upgrade the infrastructure necessary to clean the nation's domestic wastewater to meet federal standards. Resources are not available for public entities to realistically meet all existing and proposed federal mandates. EPA must ensure that every dollar of implementation cost is absolutely necessary and required. Stack testing should be done every five years, not every year. New monitors should not be required when existing sludge sampling can be used to track compliance. Public entities should be entrusted to develop an operation and maintenance plan for their control devices that utilizes existing data to the maximum extent possible to minimize costs. Stack tests are not a reliable basis for setting operating parameter ranges that vary with the sludge characteristics.

8. EPA should use subcategories to set achievable standards and to further relieve the compliance burden on POTWs.

EPA has broad discretion to subcategorize SSIs to make the limits more achievable. EPA uses just two subcategories (fluidized bed ("FB") incinerators ("FBIs") and multiple hearth ("MH") incinerators ("MHIs")) for existing sources and a single subcategory for new sources. EPA inappropriately assumes that no new MHIs will be constructed or modified. By requiring all new sources to meet FBI standards, EPA is precluding upgrades to MHIs that could improve efficiency and performance for some pollutants. EPA should also create subcategories for limited use units, small units, and isolated units that are so far from a usable landfill that emissions of hazardous air pollutants ("HAP") from incineration are less than HAP emissions from transporting sludge to landfill.

EPA's errors in the Proposed Rule indicate that the Agency has been rushed to regulate without a clear understanding of POTWs and the incinerators they operate. Additional time is needed to understand the unique regulatory context for POTWs that dictates their regulation under § 112 of the CAA. Additional time is also needed to understand the nature of sewage sludge and its inherent variability and to understand the unique attributes associated with incinerating a material that is 70-80 percent water.

NACWA urges EPA to take this SSI rulemaking off the fast track so that it can be done right. Congress under the CWA wisely left POTWs with the power to choose the residual management option that best meets the needs of each local community after directing EPA's Office of Water to ensure that public health was adequately protected under every option. *See* 40 CFR Part 503. EPA should use the authority Congress granted under CAA § 112 to regulate the remaining HAP in a way that preserves incineration as a viable residuals management option.

I. SEWAGE SLUDGE INCINERATORS MUST BE REGULATED UNDER CAA § 112

Congress has directed EPA to regulate SSIs in a way that is unique from all other incineration source categories. However, EPA's Proposed Rule fails to recognize these differences and instead treats SSIs like one of the several categories of solid waste incineration units to be regulated under CAA § 129. This failure results in numerous legal and technical flaws in the Proposed Rule that EPA must correct.

A. Incinerators at POTWs Historically Have Been Successfully Regulated Under the CWA

Since 1993, POTWs that practice incineration have been subject to a comprehensive, risk-based program for reducing the potential environmental risks of sewage sludge pursuant to CWA § 405 and the implementing regulations set forth in 40 CFR Part 503. Section 405(d) of the CWA requires EPA to establish numeric limits and management practices that protect public health and the environment from the adverse effects of toxic pollutants in sewage sludge. Section 405(e) prohibits any person from disposing of sewage sludge from a POTW or other treatment works treating domestic sewage through any use or disposal practice for which regulations have been established pursuant to § 405, except in compliance with the Part 503 regulations.

In the Part 503 regulations, EPA has identified the pollutants in sewage sludge that may adversely affect public health or the environment and has specified the management practices for the utilization and disposal of sewage sludge that are protective of public health and the environment. For disposal by incineration, the Part 503 regulations mandate, among other requirements:

- (i) Numerous management practices and general requirements;
- (ii) Risk-based, site-specific limits for arsenic, cadmium, chromium, lead, and nickel content in the sewage sludge incinerated;
- (iii) Compliance with National Emission Standards for Hazardous Air Pollutants ("NESHAPs") for mercury and beryllium (as discussed below);

- (iv) Operational technology-based emission limits for total hydrocarbon (“THC”) or an alternative emission limit for carbon monoxide (“CO”); and
- (v) Monitoring, recordkeeping and reporting requirements.

40 CFR Part 503, Subpart E.

Furthermore, in the course of developing the Part 503 regulations, EPA also proposed to establish requirements for dioxins (including specific congeners of dioxin, dibenzofuran, and coplanar PCBs).¹ However, after evaluating the emissions of dioxins from sewage sludge incineration, as well as surface disposal and land application, EPA decided such requirements were not warranted.² This decision was based on the results of a comprehensive risk assessment that demonstrated that dioxin levels in biosolids and biosolids incinerator exhaust gases do not pose a significant risk to human health or the environment.³

As explained in detail in NACWA’s 1997 comments to EPA (pages 15-17), the numeric emission limits and management practices requirements established under the Part 503 regulations were derived from years of study and evaluation of the potential risks to human health and the environment which could be posed by the incineration of sewage sludge.⁴ (Attachment A – Compendium of NACWA Correspondence to EPA) The regulation of SSIs under this existing regime is via risk-based standards that were developed to protect human health and the environment from any reasonably anticipated adverse effects from pollutants that may be present in sewage sludge. In fact, the Part 503 regulations for SSIs were developed through a partnership between EPA’s water and air offices – a partnership that continues today as EPA conducts its mandated review of the Part 503 standards. As a result, SSIs can clearly demonstrate that the emissions from their units are not adversely impacting human health and the environment by maintaining compliance with the Part 503 requirements. Moreover, the statutory framework of this regime provides ample means for EPA to identify and regulate additional concerns if supported by scientific evidence. For example, CWA § 405 provides for a biennial review process that was specifically established for identifying and regulating any additional pollutants of concern. EPA has repeatedly emphasized its confidence that the Part 503 regulations are adequately protective of public health and the environment.⁵

Additionally, since 1975 EPA has imposed NESHAPs for mercury and beryllium emissions that apply to certain SSIs. *See* 40 CFR Part 61, Subpart E and C. The mercury NESHAP applies, in relevant part, to any source that incinerates sludges from wastewater treatment plants. The NESHAP imposes emission limits for mercury, as well as stack testing, sampling, and monitoring requirements. *See* 40 CFR Part 61, Subpart E. The beryllium NESHAP applies, in relevant part, to incinerators that process beryllium-containing waste. This

¹ *See* Standards for the Use or Disposal of Sewage Sludge: Proposed Rule, 64 Fed. Reg. 72,045 (Dec. 23, 1999).

² *See* Standards for the Use or Disposal of Sewage Sludge: Final Notice, 66 Fed. Reg. 66,028 (Dec. 21, 2001).

³ *See id.*

⁴ Prior to 2006, NACWA was known as the Association of Metropolitan Sewerage Agencies (AMSA).

⁵ *See* Letter from James A. Hanlon, Director of EPA Office of Wastewater Management, to Greg Kester, State of Wisconsin Department of Environmental Resources (Sept. 20, 2004) (“EPA believes that 40 CFR Part [503] regulations are protective of public health and the environment and we continue to support biosolids management in full compliance with the Part 503 regulation.”) submitted with NACWA’s August 14, 2006 comments on the reconsideration of the final Other Solid Waste Incinerator rule, included in Attachment A.

NESHAP imposes emission limits for beryllium, as well as sampling requirements. *See* 40 CFR Part 61, Subpart C. These NESHAPs are expressly incorporated into the 40 CFR Part 503 requirements for POTWs.

Emissions from SSIs are already regulated by other Congressionally-mandated, comprehensive regulations that are adequately protective of human health and the environment. Accordingly, no public health or environmental benefit will be realized from including SSIs under CAA § 129.

B. The 1990 CAA Amendments Direct EPA to Regulate POTWs Under § 112

CAA § 112(e)(5) requires EPA to establish NESHAP for POTWs. Section 112(e)(5) states:

The Administrator shall promulgate standards pursuant to subsection (d) of this section [112] applicable to publicly owned treatments works (as defined in title II of the Federal Water Pollution Control Act [33 U.S.C.A. § 1281 et seq.]) not later than 5 years after November 15, 1990.

42 U.S.C. § 7412(e)(5).

The definition of “treatment works” contained in Title II is broad and includes:

... any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature to implement [section 201 of the Act], or necessary to recycle or reuse water at the most economical cost over the useful life of the works, including intercepting sewers, outfall sewers, sewage collection systems, pumping, power, and other equipment, and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of the treatment process (including land used for the storage of treated wastewater in land treatment systems prior to land application) or is used for ultimate disposal of residues resulting from such treatment.

33 U.S.C. § 212(2)(A) (emphasis added).

This language clearly encompasses the areas of a POTW used to manage sewage sludge, including the incinerators that are “used for ultimate disposal of residues resulting from” the sewage treatment process. Congress’ intentional use of this well-understood term in CAA § 112(e)(5) has no other conceivable meaning. Likewise, EPA’s regulatory definition of “treatment works” makes clear the expansive meaning of the term under the CWA. The definition at 40 CFR § 35.905 includes:

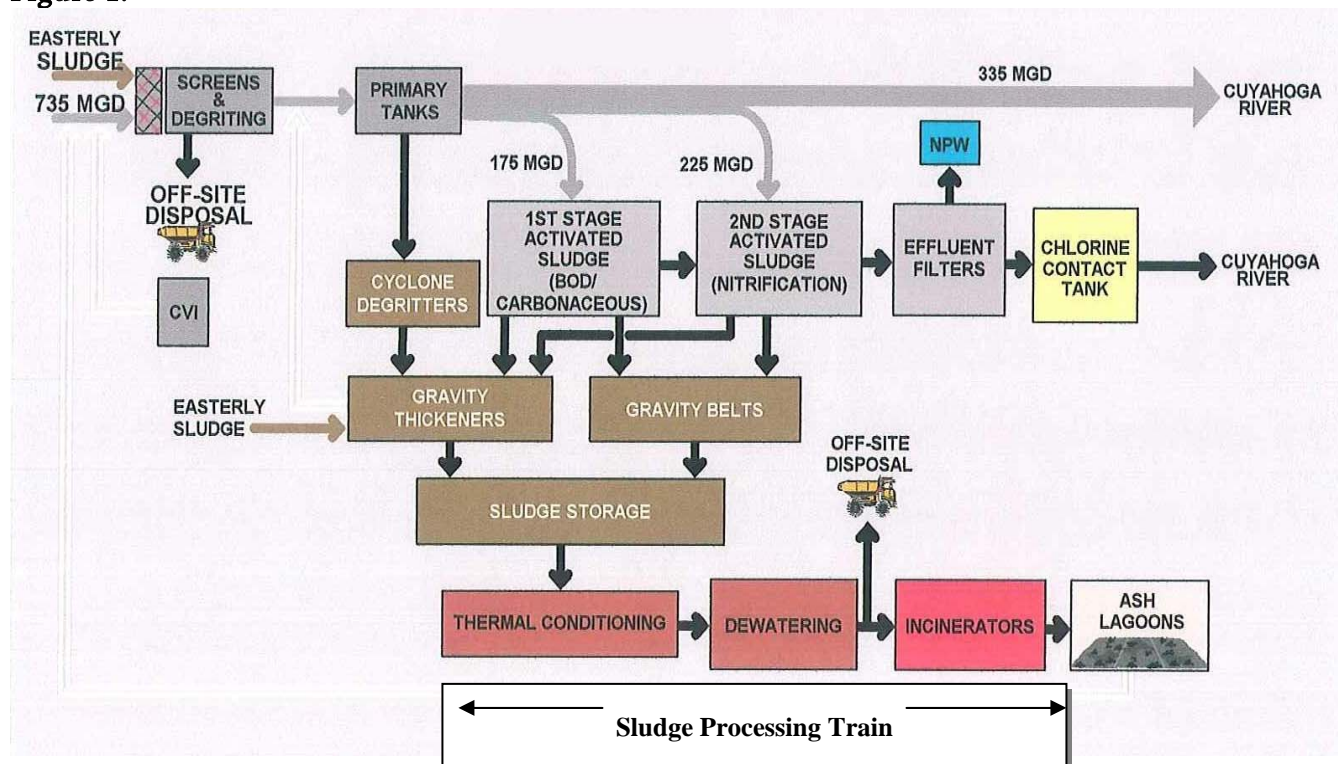
Any devices and systems for the storage, treatment, recycling, and reclamation of municipal sewage, domestic sewage, or liquid industrial wastes used to implement section 201 of the Act, or necessary to recycle or reuse water at the most

economical cost over the useful life of the works. *These include* intercepting sewers, outfall sewers, sewage collection systems, individual systems, pumping, power, and other equipment and their appurtenances; extensions, improvement, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and *any works*, including site acquisition of the land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment (including land for composting sludge, temporary storage of such compost, and land used for the storage of treated waste water in land treatment systems before land application); *or any other method or system for* preventing, abating, *reducing*, storing, *treating*, separating, *or disposing of municipal waste or industrial waste*, including waste in combined storm water and sanitary sewer systems.

(emphasis added).

All SSIs are located within the boundaries of a POTW and nearly all are owned and operated by the municipalities that own and operate the POTW.⁶ As Figure 1 (below) depicts, incinerators are integrated physically and operationally into the solids management process making them an essential part of the solids treatment process. Incinerators are designed and operated for the specific sludge volume, water removal capabilities (i.e., sludge thickening, chemical or thermal conditioning and dewatering), and other unique characteristics of a particular POTW.

⁶ NACWA is aware that two or three SSIs may be privately owned and/or operated by sludge management companies. These units are still located at a POTW, but for financial reasons the municipality may have chosen to establish a contract-operation agreement with a private entity or to relinquish ownership to the private entity. These SSIs are still integral to the operation of the POTW and are equally essential to reducing, treating and disposing of the sewage sludge generated by these POTWs.

Figure 1:

Furthermore, EPA has long viewed SSIs as included within the CWA “treatment works” definition through its implementation of the CWA Title II construction grant program. EPA consistently approved funding for the construction or upgrade of incinerators through its Title II grant fund, which is specifically limited to “treatment works” as defined above. NACWA has collected information from its members indicating that many SSIs were constructed and/or upgraded using Title II funding. The following NACWA members have confirmed that they received Title II “treatment works” funds to construct and/or upgrade SSIs:

- Northeast Ohio Regional Sewer District, Cleveland, Ohio (all seven existing incinerators)
- Hampton Roads Sanitation District, Virginia Beach, Virginia
- Central Contra Costa Sanitary District, Martinez, California
- The Metropolitan District, Hartford, Connecticut
- The City of Greensboro Water Resources Department, Greensboro, North Carolina

Indeed, it may well be the case that many or all of the 234 SSIs⁷ operated by municipalities in the US were constructed or upgraded with CWA Title II construction grants. This would have been contrary to the CWA, and EPA would have illegally approved the use of millions of dollars in grant funds, if the Agency did not consider SSIs to be part of the “treatment works.”

⁷ The Water Environment Research Foundation counted 234 active biosolids incineration units in its 2009 WERF Report at ES-1 (Attachment B). NACWA asks that EPA take the time to confirm the number of incinerators and that it include dormant incinerators with active operating permits in the total number of SSIs considered for this rulemaking.

EPA's recognition that sewage sludge management, including incineration, is an inherent part of POTW operations for which federal funding was made available is also reflected in the primary regulatory program for sewage sludge management, the Part 503 program.⁸ This was developed under the authority of CWA § 405 and RCRA. For example, EPA has stated that:

Sewage sludge has been an important concern of the Agency since 1972, when EPA, through the Federal Water Pollution Control Act construction grants program, began assisting in the financing of wastewater treatment facilities.

58 Fed. Reg. 9248, 9260 (February 19, 1993).

Treatment works treating domestic sewage, as noted above, include facilities dedicated to the disposal of sewage sludge (i.e., surface disposal sites and incinerators).

Id. at 9359; *see also* 40 CFR § 122.2, in which “treatment works” is expressly defined to include sewage sludge treatment systems.

The legislative history of CAA § 112 also indicates that Congress intended the air emissions from POTW operations covered by CAA § 112 to include air emissions from SSIs. For example, Congress indicated that

[t]he Administrator is specifically directed to include publicly owned treatment works (as defined in the Clean Water Act) and [certain RCRA facilities] among the categories of major sources pursuant to this subsection The Agency has also indicated that air emission standards for POTWs may be promulgated under the Clean Water Act. There is no standard of protection of either human health or the environment from releases to air under that Act. It is more likely that appropriate standards would survive a legal test, if established pursuant to these new authorities of § 112 of the Clean Air Act.⁹

Senate Report No. 100-231, Committee on Environment and Public Works, 1990 CAA Legislative History 9436, 9668.

The CWA-derived air emission standards that Congress intended to supplement with CAA § 112 include those that control emissions on SSIs. Thus, Congress was well aware that air emissions from SSIs were already regulated by the CWA § 405 requirements and chose § 112 as the means to update these requirements as warranted by the applicable protection requirements. In addition, POTWs and SSIs are both included on a Congressional list of source categories intended to be regulated under CAA § 112.¹⁰ By contrast, as NACWA has

⁸ 40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge.

⁹ Senate Report No. 100-231, Committee on Environment and Public Works, 1990 CAA Legislative History 9436, 9668.

¹⁰ Senate report No. 101-228, Committee on Environment and Public Works, 1990 CAA Legislative History 8338, 8528.

noted in previous correspondence to EPA, the legislative history of CAA § 129 is silent as to both POTWs and SSIs. *See* Attachment A.

Further demonstrating Congress' clear direction, EPA has already regulated SSIs as intended under CAA § 112 by identifying SSIs as an area source category under this section. EPA examined the issue of the CAA regulation of SSIs in 1992, when it issued its initial list of major and area source categories under § 112. *See* 57 Fed. Reg. 31576 (July 16, 1992). That initial list included SSIs as a § 112 source category. In this notice EPA expressly states "the Agency does not consider sewage sludge incineration units to be covered under § 129 so it has authority to list and set standards for these units under § 112." *See also* 58 Fed. Reg. 9248, 9262, 9276-77 (Feb. 19, 1993) (noting that SSIs are regulated under § 112 of the CAA).

In 1999, EPA promulgated a NESHAP under § 112 for POTW treatment plants. *See* 64 Fed. Reg. 57572 (Oct. 26, 1999). Significantly, while the definition of "POTW treatment plant" is appropriately focused on the treatment part of a POTW, the definition of POTW in that rule is much broader and encompasses everything that is eligible to receive grant assistance under Title II of the CWA. *See* 40 CFR § 63.1595. While EPA's rulemaking preamble inexplicably stated that EPA then believed that SSIs were subject to regulation under CAA § 129, EPA nowhere elaborated on the rationale for this change from its prior approach or justified this new interpretation of the statute. *See* 62 Fed. Reg. 1868 (Jan. 14 1997).

NACWA has previously raised this issue with EPA, including in the September 2009 correspondence mentioned in the preamble to the Proposed Rule. *See* Attachment A. Now EPA claims that it "has taken the position in its regulation of POTWs under the CAA that § 112(e)(5) does not apply to SSI units and for this reason did not regulate them in its POTW § 112(d) emission standards." 75 Fed. Reg. at 63264. Yet EPA still offers nothing but this bare statement to justify its interpretation. EPA does not explain how it reaches the conclusion that SSIs are not covered by the expansive CWA definition of "treatment works" incorporated into CAA § 112(e)(5), how its interpretation is possible in light of the integral role SSIs play in the management of sewage sludge, or how SSIs could have been built and improved using CWA Title II funds if they are not part of the CWA definition of "treatment works."

Further, EPA also fails to recognize its own contrary statements and actions. In fact, shortly after EPA promulgated the POTW NESHAP, EPA reversed its position and expressly stated that SSIs would be regulated under § 112 instead of § 129. *See* Unified Agenda 65 Fed. Reg. 23459-01 (Apr. 24, 2000). Then, in February 2002, EPA revised its list of source categories under § 112 to delete SSIs, not because they were not covered by § 112, but because there were no major sources in that category. *See* 67 Fed. Reg. 6521 (Feb. 12, 2002). EPA then added SSIs to the list of area source categories under §§ 112(c) and 112(k) of the CAA. *See* 67 Fed. Reg. 43112 (Jun. 26, 2002); 67 Fed. Reg. 70427 (Nov. 22, 2002). SSIs remain on EPA's current list of area source categories. *See* <http://www.epa.gov/ttn/atw/area/70list.pdf> (last visited Nov. 29, 2010).

CAA § 129(h)(2) states that: "no solid waste incineration units subject to performance standards under [§§ 129 and 111] shall be subject to standards under [§ 112(d)]." Thus, the language of CAA § 129(h) makes clear that EPA's regulation of sources under CAA § 129 or CAA § 112 is mutually exclusive. EPA has consistently recognized that sources regulated under CAA § 112 cannot also be regulated under CAA § 129. Since area source categories are subject to the promulgation of emission standards under CAA § 112(d), SSIs cannot also be regulated under CAA § 129. As the D.C. Circuit directed EPA in *NRDC v. EPA*, 489 F.3d 1250

(D.C. Cir. 2007), EPA must follow the plain language of the statute. In the case of SSIs, the plain language of the statute directs EPA to regulate POTWs (including SSIs) under § 112. The court in the *NRDC* case did not address § 112(e)(5), nor did it specifically address the regulation of POTWs or SSIs, so the decision in that case has no bearing on how SSIs are to be regulated under the CAA. Likewise, nothing in § 129 suggests that SSIs are not to be treated as part of the POTW to be regulated under § 112, and it is axiomatic that the specific direction of Congress contained in § 112(e)(5) is controlling over the general provisions of § 129 dealing with solid waste incineration. “However inclusive may be the general language of a statute, it will not be held to apply to a matter specifically dealt with in another part of the same enactment.” *Fourco Glass Co. v. Transmirra Products Corp.*, 353 U.S. 222, 228 (1957).

The bottom line is that CAA § 112(e)(5) unambiguously directs EPA to set emission standards for HAPs from SSIs under § 112(d), and this section does not contain language permitting EPA discretion to regulate SSIs under § 129. While Congress under § 112(d)(1) allows EPA to promulgate differing standards for major and area sources at POTWs and for differing categories of sources at POTWs, the Agency emphatically does not have the authority to set standards under § 129 for POTWs or parts of POTWs, including SSIs. Indeed, EPA has already adopted regulations based on this conclusion. While EPA can change its mind on *policy* issues if the Agency develops a reasoned analysis to support the change, *See Motor Vehicle Mfrs. Ass’n v. State Farm Mutual*, 463 U.S. 29 (1983), it cannot act contrary to a statutory directive that compels a singular outcome, as the CAA does here. The D.C. Circuit decision in *NRDC* does not alter these fundamental principles of statutory construction and, indeed, is based on an admonition to EPA to apply the CAA as written. Any action seeking to regulate SSIs under CAA § 129 is contrary to the plain meaning of §§ 112 and 129.

C. EPA Has No Authority to Regulate Sewage Sludge Incinerators Under § 129

1. **Sewage Sludge is Not a Solid Waste**¹¹

The CAA defines solid waste by referencing the definition of solid waste under RCRA: “The term ‘solid waste’ . . . shall have the meaning established by the Administrator pursuant to [RCRA].” CAA § 129(g)(6). RCRA defines “solid waste” as:

any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but ***does not include solid or dissolved material in domestic sewage***

42 U.S.C. § 6903(27) (emphasis added). This expressly excludes the sewage sludge in domestic sewage from the definition of “solid waste” in what is commonly referred to as the “Domestic Sewage Exclusion” (“DSE”).

This concept of a broad POTW exemption was established by Congress as early as 1965 in the Solid Waste Disposal Act.¹² There was an early recognition that a comprehensive solid waste program, designed

¹¹ See also NACWA’s August 3, 2010, comments on the proposed definition of solid waste (75 Fed. Reg. 31844) (Jun. 4, 2010), included in Attachment A.

¹² Solid Waste Disposal Act, Pub. L. 89-272, 79 Stat. 992 (1965).

primarily to address hazardous wastes, did not apply to POTWs as long as they were effectively regulated under the CWA, which has always been and remains the primary statutory authority for comprehensive regulation of POTW operations. The Solid Waste Disposal Act and RCRA included the DSE in explicit recognition of this critical policy choice.¹³

Indeed, as EPA began its long efforts to define “solid waste” and “hazardous waste” for purposes of Subtitle C of RCRA, the Agency explicitly understood and discussed the importance of the comprehensive federal sewage sludge management program. For example, in the 1980 preamble to EPA’s development of the Subtitle C regulations, EPA describes the importance, scope and ultimate supremacy of the to-be developed CWA § 405 program, indicating that, once this program was in place, it would serve as the comprehensive regulatory scheme for use and disposal of sewage sludge. *See* 45 Fed. Reg. 33084, 33102 (May 19, 1980) (“Once such a regulation is in place, sewage sludge will be exempted from coverage under other sets of regulations.”). EPA has similarly interpreted the scope of the DSE to include sewage sludge generated by POTWs in the preamble to the Agency’s 1990 Final Rule to identify and list hazardous wastes for petroleum refinery process wastewaters. EPA concluded that POTW sewage sludge falls within the DSE:

These wastes [P038 and K048 wastes] are being added to the list of [hazardous] wastes . . . in order to regulate sludges generated at wastewater treatment facilities on site at petroleum refineries as well as sludges generated at off-site wastewater treatment facilities. It should be noted that if wastewaters generated at petroleum refineries are discharged to a POTW and such wastewaters are mixed with domestic sewage from nonindustrial sources, *the sludges generated in the POTW are covered under the domestic sewage exclusion* and are not included in today’s listings.

It should be noted that if wastewaters generated at petroleum refineries are discharged to a POTW and such wastewaters are mixed with domestic sewage from nonindustrial sources, *the sludges generated in the POTW are covered under the domestic sewage exclusion* and are not included in today’s listings.

55 Fed. Reg. 46354, 46364 (Nov. 2, 1990) (emphasis added). Thus, there has been a clear recognition for over 30 years that sewage sludge is different than solid waste for regulatory purposes, and that sewage sludge is primarily regulated under the CWA, not RCRA.

Furthermore, when Congress incorporated RCRA’s definition of “solid waste” in CAA § 129 in 1990, Congress was well aware that the DSE was encompassed in the definition of “solid waste” and that CAA § 129 would not apply to sewage sludge. This statutory exemption for sewage sludge – the subject of broad consensus and reliance in the regulated community – can not be abrogated by subsequent rule making or preamble statements. Moreover, the 1987 CWA amendments and the subsequent Part 503 rules established a management program for sewage sludge dependent on its exclusion from RCRA regulation.

¹³ Solid Waste Disposal Act, Pub. L. No. 89-272, § 203(4), 79 Stat. 992, 998 (1965) (defining the term “solid waste” to exclude “solids or dissolved material in domestic sewage or other significant pollutants in water resources . . .”); *accord* Resource Conservation and Recovery Act, Pub. L. No. 94-580, § 1004, 90 Stat. 2795, 2801 (1976).

Lastly, the statutory and regulatory provisions that implement the sewage sludge management program distinguish between sewage sludge and solid waste, and thereby demonstrate that they are different types of material. For example, the preamble to the Part 503 rules states that:

The standards also do not apply to sewage sludge that is co-incinerated with large amounts of solid waste However, the standards established in the rule do apply to sewage sludge that is incinerated in a sewage sludge incinerator with incidental amounts of solid waste use as an auxiliary fuel (i.e., 30 percent or less solid waste by weight).

58 Fed. Reg. 9248, 9253. In keeping with the distinctions drawn by Congress between sewage sludge and solid waste, EPA's careful regulatory approach in the Part 503 regulations distinguishes between sewage sludge and solid waste.

2. SSIs Are Not Solid Waste Incineration units

Per § 129(a)(1)(A) and (b)(1), EPA is directed to set emission standards “for each category of solid waste incineration units.” Section 129(b) directs EPA to establish emission guidelines for existing solid waste incineration units. Thus, the definition of solid waste incineration unit serves a gate-keeping function – if the incinerator at issue is a solid waste incineration unit, then it is subject to standards under § 129. However, as EPA has recently asserted, sewage sludge combusted in SSIs is a newly generated solid waste derived from the treatment of domestic and industrial sewage within the POTW, a local government-owned and operated facility, and therefore is not a solid waste material “from commercial and industrial establishments or the general public” as defined under § 129(g)(1). *See* 75 Fed. Reg. 31844 (June 4, 2010). SSIs cannot be regulated under § 129 because they are combusting a material that is generated by the POTW, which is neither a commercial or industrial establishment nor the general public.

Section 129(a)(1)(B)-(C) also directs EPA to set standards for “solid waste incineration units [of specified sizes] combusting municipal waste” But to qualify as a unit combusting “municipal waste” the unit must first be a “solid waste incineration unit,” which does not include SSIs. Furthermore, the term “municipal waste” is defined as:

... refuse (and refuse derived fuel) collected from the general public and from residential, commercial, institutional, and industrial sources consisting of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials and non-combustible materials such as metal, glass and rock, provided that: (A) the term does not include industrial process wastes or medical wastes that are segregated from such other wastes; and (B) an incineration unit shall not be considered to be combusting municipal waste for purposes of section 111 or this section if it combusts a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal waste.

CAA § 129(g)(5). Although some of the types of wastes listed above (e.g., wood, yard wastes, rock) enter the sanitary sewer system, most of these types of waste are screened out at the POTW headworks and disposed of in landfills. *See* Figure 1 (above). The screened wastes and grit are separated to protect the POTW treatment system and are not contained in the solids that are combusted in SSIs.

With all of these legal impediments to proceeding under Section 129, including Congress' clear statutory intent to regulate SSIs under § 112 and not § 129, EPA should abandon this rulemaking and return to its previous plan to regulate SSIs under § 112 of the CAA, likely as area sources. The technical corrections discussed in the comments below are warranted under any future rulemaking effort. NACWA encourages EPA to take the time now to develop a more thorough and accurate understanding of SSIs.

II. EPA'S REGULATORY FLEXIBILITY ACT ANALYSIS IS FLAWED AND THE IMPACT ON SMALL ENTITIES MUST BE REVISITED.

A. EPA's Small Entity Analysis Assumes All Units Will Abandon Incineration

EPA is required under the RFA to prepare a regulatory flexibility analysis of this rule unless the agency certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities. *See* 75 Fed. Reg. at 63292. EPA concluded that none of the 18 small entities¹⁴ identified in the database have cost-revenue ratios greater than one percent because they would all find it cost effective to divert sewage sludge to landfills. Based on this conclusion, the Administrator certified that the Proposed Rule resulted in no significant impact for a significant number of small entities ("No SISNOSE"). In the Regulatory Impacts Analysis ("RIA"), EPA nonetheless identified the following small entity impacts if they were required to install one of the three control technology options under consideration for the final MACT standard:

- Option 1 (MACT floor)
 - 9 of 18 small entities affected at greater than 1 percent cost-revenue ratio
 - 2 of 18 affected at greater than 3 percent cost-revenue ratio
- Option 2 (MACT floor + afterburner for MH)
 - 13 of 18 small entities affected at greater than 1 percent
 - 2 of 18 affected at greater than 3 percent
- Option 3 (Option 2 + fabric filter for MH)
 - 16 of 18 small entities affected at greater than 1 percent
 - 3 of 18 affected at greater than 3 percent

See RIA Tables 4-5, 4-6, and 4-7. EPA's Option 3 with its beyond the floor mercury controls will significantly affect 16 of 18 small entities at greater than 1 percent of their cost-revenue ratios and three of those at greater than 3 percent. These levels of impact would require a more thorough consideration of small entity impacts based on EPA's *Final Guidance for EPA Rulewriters: Regulatory Flexibility Act as Amended by the Small Business and Regulatory Enforcement Fairness Act* (November 2006) (disallowing a presumption of No SISNOSE at these levels of impact). Only by assuming the cost-effective landfill alternative for small entities could the Administrator presume No SISNOSE under this guidance and shortcut the administrative protections that the RFA and Small

¹⁴ NACWA invites EPA to reassess the number of small entities operating SSIs when it confirms the number of active SSIs. Regional sewer districts may serve across municipal boundaries making the traditional 50,000 population criterion for small entities difficult to apply. In the absence of an ICR survey, we understand that the small entity determinations were made based on internet searches of population data for the closest related municipal entity. This is not a reliable methodology. For the purpose of this discussion, we rely on EPA's numbers.

Business Regulatory Fairness Act (“SBREFA”) provide for small governments. EPA’s rushed analysis, however, has a significant flaw as discussed below.

EPA also relied on this flawed small entity analysis as a central component of its UMRA cost-benefits assessment. *See* 75 Fed. Reg. at 63293 (claiming no Section 203 UMRA obligation because “EPA’s analysis shows that for the more likely scenario that small governmental entities switch to landfilling, none of the ratios was greater than 1 percent.”) Due to the central flaw discussed below, EPA must also revisit its UMRA analysis.

B. EPA Misunderstood that Sewage Sludge is Wet When Fed to an Incinerator

EPA’s rush to propose this rule provided insufficient time for the Agency to gain the fundamental understanding of sewage sludge necessary to this rulemaking. EPA presumes incorrectly that the material fed into an SSI is dry and does not contain moisture. In fact, sewage sludge is typically only 20-30 percent solids and 70-80 percent moisture. While SSIs are rated based on the number of dry tons per day they can combust, the sewage sludge being fed into the incinerator is not dry. When sewage enters the POTW headworks it is over 99 percent water. POTW processes increase the solids content to about 4 percent before it is “dewatered.” The dewatering process increases solids content to 20-30 percent before it is fed into the incinerator. The incinerator drives off the rest of the moisture and it combusts the volatile solids. Thus, an SSI rated at 100 dry tons per day will feed 400-500 tons per day of dewatered sewage sludge into the incinerator to combust that 100 dry tons of sewage sludge. EPA incorrectly presumed that the 100 dry ton/day SSI would feed and combust 100 tons of sewage sludge per day.

C. EPA’s Error Undercuts its Small Entities Analysis

EPA’s fundamental misconception about the nature of sewage sludge affects many aspects of the Proposed Rule. For instance, EPA’s cost analysis for the landfill alternative is based on dry tons of sludge, which underestimates the amount of sludge being sent to a landfill by a factor of three to five. The landfill alternative requires as many as five times more truck loads,¹⁵ five times more landfill tipping fees, and five times as much on-site storage and loading capacity. EPA assumed that onsite storage capacity would require a cement pad with a railing, instead of the more costly tankage necessary to contain sludge that is 70-80 percent water. EPA also failed to consider the cost and limitations associated with landfills rejecting wet sludge due to capacity restrictions and moisture limitations. POTWs will have to transport sludge farther in search of landfill capacity willing and able to take wet sewage sludge. NACWA is confident that when EPA corrects its cost analysis for small entities, the landfill alternative will not be cost-effective for many if not all of the small entities. As an example, the City of Edmonds, a small government entity located in Washington State, has reported to NACWA that it has no intention of trucking its sewage sludge to a landfill, the closest of which is 270 road miles away. EPA should abandon the landfill alternative presumption that it used to shortcut small government relief under RFA and UMRA. Instead, EPA should consider the full cost of its proposed control technology on small entities and engage in the appropriate RFA/UMRA processes to evaluate ways to mitigate the burden of this rule on these small entities.

¹⁵ EPA also overestimates the amount of sludge a single truck can hold. As an example, EPA estimated that 34 tons of sewage sludge can be hauled in each truck, when in reality only 15-20 tons can be hauled per truck based on the 80,000 pound total truck weight limit for roadways in Ohio. This alone doubles the cost that EPA assumed to be associated with trucking sewage sludge to landfill.

III. EPA’S ERROR ALSO UNDERCOUNTS THE ENVIRONMENTAL BENEFITS OF INCINERATION COMPARED WITH OTHER SLUDGE DISPOSAL ALTERNATIVES

When EPA develops a better understanding of the amount of sewage sludge to be handled, the Agency will also gain an appreciation for the environmental benefits that incineration can offer compared with other residuals management options. At a certain driving distance, the air emissions associated with trucking sewage sludge to landfill exceed the air emissions from incineration. Additional environmental benefits accrue when incineration is used to generate steam and/or electricity that offsets the need to burn fossil fuels. Incineration also avoids the generation of methane, a potent greenhouse gas, produced when sewage sludge is placed in a landfill and it begins to biodegrade. Incineration also reduces odors, which is generally the environmental issue of greatest interest to those living near POTWs. When all of these environmental attributes are evaluated, incineration can be the most environmentally beneficial option for residuals management.

The NEORSD evaluated residuals management options based on both cost and environmental benefits when considering whether to invest in new fluidized bed incinerators. In the final analysis, incineration was significantly “greener” than landfilling for managing sludge from its Southerly POTW. The NEORSD analysis estimated 11,300 to 16,200 truckloads of sewage sludge per year, making a 130-mile round trip to the closest current landfill. Criteria pollutants from the diesel trucks were comparable to the permitted emission levels from the incinerators. Significantly, the organic compounds from the diesel exhaust were over three times higher than the SSI emissions. *See* NEORSD Comments – Section D – on the Proposed Rule. NEORSD concluded that it would emit more air pollution by sending its sewage sludge to landfill 65 miles away than it would operating onsite incinerators. The air emissions benefit from incineration would be even greater for the POTWs that face a greater distance to landfill (e.g., The Metropolitan District of Hartford, Connecticut (375 miles to landfill); Edmonds, Washington (270 miles to landfill)).

The comparison is even more favorable for incineration when considering the electricity generation component of the NEORSD incinerator project. The new fluidized bed incinerators will use excess heat to generate steam, which will be sent to steam turbines to generate electricity for internal use. The electricity will offset approximately 25 percent of the current NEORSD demand for electricity each year, which is equivalent to the electricity needed to power 1800 homes. In Ohio, where most of the electricity on the grid is generated by coal combustion, this demand reduction reduces the mercury emissions and other air contaminants associated with utility coal combustion.

Electricity generation from sewage sludge is not an isolated phenomenon. Ohio, like many states, recognizes the generation of electricity from sewage sludge as eligible for renewable energy credit toward the state’s renewable portfolio standard. Utilities required to demonstrate that they generate the required portion of their electricity using renewable or alternate energy means will purchase the renewable energy credits generated from the SSI-electricity project. This provides additional economic incentives to invest in the electric-generating equipment for SSIs. Kern County, California recently announced its intent to install sewage sludge incinerators with 13.5 megawatts of electric-generating capacity to replace land application. This is a trend that is likely to continue because SSIs present a reliable renewable fuel source for baseload electricity generation that utilities will help fund to secure renewable energy credits to meet renewable portfolio standards.

EPA cannot accurately assess the relative benefits of incineration without understanding the true costs of landfilling. The Metropolitan St. Louis Sewer District notes that EPA's estimate of its additional cost to landfill without incineration is \$3.8 million per year, when the District's actual landfill option cost estimate is over \$11 million per year. NEORS similarly estimates that its annual cost to landfill is \$9 million more than incineration. This does not include the additional cost of a loading and storage facility that can accommodate up to 12 trucks per hour that NEORS estimates will cost over \$50 million. These costs are difficult to justify when they do not reduce emissions and they eliminate the opportunity to use sewage sludge as a viable alternative energy source for electricity and steam generation.

EPA's miscalculation of the amount of sewage sludge to be landfilled is not just a cost issue; it goes to whether EPA properly evaluated the feasibility of the landfill alternative. The Metropolitan St. Louis Sewer District would need to dispose of an additional 600 tons per day of sewage sludge that is 75 percent water after pressing/dewatering. This would fill the current landfill owned by the District well before it could locate and permit another landfill. NEORS has been advised that its closest landfill (65 miles away) will not be able to handle all of its sludge. Furthermore, NEORS has not been able to identify a landfill that will accept the necessary volume or type (wet) of biosolids. EPA has also failed to consider the feasibility of adding the necessary on-site storage, truck loading operations, and odor control measures in local jurisdictions. Landfilling and land application alternatives are just not feasible for many POTWs. EPA needs to revisit every aspect of its Proposed Rule that relied on a landfill alternative and correct its assessment of the feasibility and cost associated with the landfill option.

IV. EPA LACKS THE DATA NECESSARY TO EVALUATE BEYOND THE FLOOR MACT CONTROLS FOR MERCURY

In order to justify the proposed beyond the floor controls for mercury, EPA must make a proper cost effectiveness determination. This requires accurate data for the baseline level of mercury being emitted today, accurate information on the potential for mercury emission control, and accurate information regarding the cost of that control. EPA's data is lacking in each of these respects.

A. EPA's Mercury Assumptions Are Inconsistent with Available Data and Past Reports

EPA starts with the inaccurate presumption that baseline emissions from the 218¹⁶ existing SSIs in the U.S. include 3.1 tons of mercury emissions. This is inconsistent with EPA's 1997 *Mercury Study Report to Congress* in which it stated that 0.95 tons of mercury was emitted from sewage sludge incinerators in 1994. More recently, the Water Environment Research Foundation ("WERF") released a 2009 report entitled *Minimizing Mercury Emissions in Biosolids Incinerators* ("2009 WERF Report") (Attachment B). This report used the weekly sewage sludge samples required under Part 503 to calculate the amount of mercury in the sewage sludge being incinerated in the U.S. in a baseline year. The report conservatively assumed that all of the mercury in the sewage sludge was emitted despite the potential for some forms of mercury to be removed by existing particulate control systems. WERF calculated the average uncontrolled mercury concentration in the feed to SSIs and conservatively rounded up to 1 mg/dry kg. WERF concluded that SSIs collectively emit less than 1 ton of mercury to the atmosphere each year. This is consistent with EPA's 1997 report to Congress.

¹⁶ Again, NACWA asks that EPA take the time to confirm the number of incinerators and that it include dormant incinerators with active operating permits in the total number of SSIs considered for this rulemaking.

The actual amount of mercury in sewage sludge has been going down consistently over time. This is supported by test data from POTWs, including the data from the Upper Blackstone Water Pollution Abatement District (Millbury, Massachusetts) that reveals a significant reduction in the mercury content of its sewage sludge since 1997. *See* Table 1.

Table 1

	1997	2001	2010
Mercury content in Upper Blackstone Sewage Sludge	8.9 mg/ dry kg	1.1 mg/dry kg	0.84 mg/dry kg

The amount of mercury in sewage sludge is decreasing as communities implement efforts to control sources discharging mercury into the sewage system. Dental offices are one of the most significant sources of mercury to sewer systems. The Metropolitan Council Environmental Services (St. Paul, MN) implemented a dental amalgam separator program that achieved a 50 percent reduction in the mercury content of their biosolids. Other dental amalgam separator programs implemented by the City of Palo Alto Regional Water Quality Control Plant and the Central Contra Costa Sanitary District similarly achieved a 50 percent reduction in mercury flowing to their treatment plants. The total annualized cost per dental site has been estimated to be just \$717 per year in Palo Alto, California. *See* T. Barron and K. North, “Cost of Hg Diversion Through Dental Office Source Control” (November 16, 2010) (Attachment C). This pollution prevention program reduces mercury at an estimated cost of \$9,000 per pound, which is far less than NACWA’s estimates that range as high as \$190,000 per pound for end-of-pipe mercury control systems added to existing SSIs. These cost effective options for mercury control upstream of the POTW have sustained a declining trend in the content of mercury in sewage sludge.

Declining mercury content in sewage sludge is expected to continue. On September 27, 2010, EPA announced that it intends to propose a national rule to reduce the 3.7 tons of mercury waste discharged from dental offices each year by requiring the installation of dental amalgam separators in dental offices. The American Dental Association has been encouraging its members to install dental amalgam separators for some time and has signaled its support for this rulemaking. With no significant opposition, EPA would be expected to finalize a rule in time to significantly reduce mercury in POTW systems before the proposed SSI rules would become effective. Dental amalgams are generally believed to be at least 50 percent of the mercury loadings to POTWs, which means that the mercury in sewage sludge is likely to be cut in half from 2010 baseline amounts. NACWA supports these efforts to remove mercury from the POTW system as a pollution prevention initiative that is far more efficient and cost effective than SSI mercury controls.

B. EPA’s Extrapolation from Limited Data Significantly Overestimates Baseline Emissions of Mercury

In EPA’s rush to propose the SSI rule, it did not take the time to benchmark its mercury estimate against these other sources of data. The result is an estimate of mercury that is at least three times higher than other more credible estimates. EPA’s baseline 3.1 tons/year mercury estimate relies on the stack test data from the nine units that were the target of the Agency’s request for information. EPA generates a mercury emission factor from this data that it applies to all SSIs in the database. These data are snapshots taken over a few hours

on one day. EPA does not know if these data are representative of normal operating conditions or whether the metals content in the sludge was at the low end or the high end of a typical range. *See Proposed Rule, 75 Fed. Reg. at 63268* (requesting comment on whether the metals content in the sludge during the test was representative of low or high points in the typical mercury range). This range can vary significantly with a ten-fold difference between the minimum and maximum mercury values. *See Attachment A of NEORS D Comments on Proposed Rule.* Thus, EPA may have miscalculated the mercury content of sewage sludge because its data are not representative of typical mercury values.

EPA also makes significant incorrect assumptions about operating hours and sewage sludge feed rates that impact its mercury estimate. Rather than take the time to collect actual operating data through a formal Information Collection Request (“ICR”), EPA assumes that each incinerator operates at 75 percent of its rated capacity. POTWs and their incinerators are designed to accommodate significant wet weather events that can significantly increase the flow to the headworks of the POTW with minimal notice. As such, the typical operating conditions for the POTW and its incinerators are significantly below the design capacity. *See Table 2.*

Table 2

	NEORS D (3 plants)		Township of Wayne		Anchorage		HRSD Boat Harbor		HRSD Army Base	
	EPA Est.	2009 Actual	EPA Est.	2009 Actual	EPA Est.	2009 Actual	EPA Est.	2009 Actual	EPA Est.	2009 Actual
Sludge incinerated (dry tons per year)	71,000	37,000	4,340	1,560	16,968	6,100	12,306	8,132	8,190	3,337
Hours of operation per year	33,600	27,000	5,430	2,590	8,400	8,200	8,400	8,135	8,400	7,912

These examples indicate that EPA has overstated the amount of dry tons of sludge incinerated per year by a factor of two or more. Hours of operation are also overstated in EPA’s analysis but by a lesser amount. EPA must take the time needed to collect the feed rate and operating hours data from all SSIs before it uses this information to calculate the baseline mercury emissions from SSIs. An accurate assessment of baseline mercury content is critical to a proper beyond the floor analysis of the cost effectiveness of additional mercury controls.

The anecdotal information available to NACWA indicates that EPA’s calculation significantly overestimates mercury emissions. NEORS D compared EPA’s mercury estimate for two of its facilities with its own calculation based on the actual sludge samples taken in 2009 to demonstrate compliance with Part 503 requirements. The NEORS D calculation reveals that EPA’s mercury estimate for its Southerly and Westerly plants combined was nearly three times higher than the actual concentration of mercury in the sludge in 2009 based on the Part 503 sampling. Wayne County, New Jersey performed a similar analysis using stack test data

and found that EPA's mercury estimate was nearly three times the estimate based on site-specific stack test data. Other NACWA members have reached similar conclusions, calling into serious question the reliability of EPA's baseline mercury emissions estimates.

Given these significant errors in the baseline mercury estimate, EPA must revisit its decision that beyond-the-floor mercury controls are cost effective. Cost effectiveness can only be reliably assessed after an accurate baseline is established. EPA assumed at least three times more mercury is being emitted from sewage sludge incineration than has been measured in the sewage sludge. This cannot be right. Moreover, with local and national efforts underway to reduce mercury significantly from dentist offices across the country, the mercury in sewage sludge will be even further below EPA's estimate by the time a rule is promulgated and effective. The actual mercury in sewage sludge after upstream pollution prevention efforts does not justify the significant cost that this Proposed Rule would impose on public entities.

C. EPA Does Not Have Sufficient Data on the Effectiveness of Mercury Control

EPA's mercury control assumptions are also flawed. EPA assumes incorrectly that activated carbon injection ("ACI") can work without significant changes to the existing particulate control devices. This theoretical assumption does not work in practice for POTWs. Most of the existing SSIs use wet scrubber systems for particulate control. The exhaust temperature before the scrubber is typically 1200-1600 degrees Fahrenheit, which is too hot for injecting activated carbon or for adsorption to occur. Also, a contact chamber is necessary to provide adequate residence time for the mercury to adsorb onto the activated carbon. Some POTWs lack the space for these exhaust train changes. Even if the ductwork could be reconfigured to allow the exhaust temperature to cool and to accommodate a contact chamber, the wet scrubber particulate control device will not consistently remove mercury. This is because the scrubber water is typically sent back to the headworks of the POTW for cleaning, thereby recycling any of the mercury that is captured by ACI back through the process that generates sewage sludge. This increases the likelihood of elevated mercury in the POTW effluent and it concentrates mercury in the sludge. EPA has not performed a life cycle analysis to evaluate the potential for the mercury to be released from the activated carbon in a form that is more difficult to keep out of the environment.

Furthermore, when EPA corrects the flawed baseline analysis for mercury, the amount of mercury in the exhaust gas will be significantly reduced. At lower levels of mercury, ACI becomes less efficient at adsorbing and removing mercury resulting in mercury reductions significantly less than EPA's estimated 85-95 percent control efficiency. By contrast, other options for mercury control, including upstream pollution prevention measures at dentist offices and elsewhere, are expected to be far more effective at reducing mercury emissions from SSIs at far less cost per pound of mercury removed.

ACI is not a proven technology on MHIs. NACWA has been unable to locate *any* MH units utilizing the ACI technology advocated by EPA in the Propose Rule. The only active mercury controls known to NACWA are installed on FBIs:

1. Metropolitan Council Environmental Services (St. Paul, MN) installed an ACI system that consists of a carbon contact chamber followed by a fabric filter. Heat exchangers and a boiler upstream of the carbon injection point lowers the exhaust gas temperature to 350 degrees Fahrenheit, and

2. Ypsilanti, Michigan uses a carbon adsorption system.

Both of these facilities reported serious abrasion and corrosion problems shortly after installation. Unless and until this technology is proven effective and reliable on both FBIs and MHIs, EPA should not consider it as a feasible beyond-the-floor control option.

D. EPA Significantly Underestimated the Cost of Mercury Control Equipment

EPA's cost estimate for the beyond-the-floor mercury control is unreasonably low. EPA determined that the MACT floor mercury limit would require just two of the 163 multiple hearth incinerators to install mercury controls. EPA proposes beyond-the-floor mercury controls for the other 161 MHIs. EPA estimates that these 161 units could install mercury controls for an additional capital cost of \$5,000,000 (\$31,056 per incinerator) and an additional annualized cost of \$32 million (\$198,758 per incinerator). *See* 75 Fed. Reg. at 63276 (Table 8). These costs are wildly inaccurate. NACWA members estimate actual capital costs for multiple hearth units will exceed \$4 million per incinerator.

First, EPA's cost data assumes that activated carbon can be injected upstream of existing particulate control devices, and does not account for the installation of new fabric filters for each ACI installed. As explained above, ACI systems will require baghouses to collect the carbon injected by the ACI system and heat exchangers and/or boilers to reduce the exhaust gas temperature below 400 degrees Fahrenheit. However, no existing MHIs are equipped with baghouses for particulate control. Instead, all existing MHI units employ wet scrubbers. Wet scrubbers can become clogged by the injected carbon, and this carbon can also be released back into the POTW system through the recycling of the scrubber water to the POTW headworks. Any units equipped with ACIs will therefore require the addition of a baghouse, a fan to pull the exhaust through the fabric filters and a bag leak detection monitor. EPA does not account for these capital costs in its beyond-the-floor cost effectiveness analysis for mercury.

EPA must also consider the annual operating costs of a baghouse. This includes the significant cost of electricity to operate fans large enough to pull the exhaust through the fabric filters. EPA should also consider the mercury and other air emissions associated with the generation of this electricity when it determines whether this beyond the floor option yields a net environmental benefit. EPA must also consider the cost of replacement bags clogged by activated carbon.

EPA also fails to account for other costs associated with ACI mercury controls. The Metropolitan Council Environmental Services (St. Paul, MN) discovered during the design of its incinerators that exhaust gas temperatures leaving the incinerator are so high that carbon injected will combust before it has a chance to adsorb mercury. The Metropolitan Council Environmental Services, as previously reported, installed additional ductwork, along with heat exchangers and boilers to cool the exhaust gas before the activated carbon is injected. They also installed a contact chamber to ensure sufficient adsorption, followed by a fabric filter. These are complex systems that require significant engineering costs for site-specific design and installation oversight. EPA does not account for any of these additional costs in its assumed mercury control cost. NACWA members estimate \$3.5 - 4 million for the minimum equipment necessary: a carbon contact chamber and a baghouse for each incinerator. Total capital costs for the 161 MH incinerators would be in the range of \$564 -

644 million. However, the costs to add the required heat exchangers and the boilers, reconfigure the existing air pollution control train and expand the incinerator building could easily raise the price to \$8 - 10 million/incinerator or higher. This would result in total capital costs of \$1.3 - 1.6 billion or higher.

Applying these mercury control costs to the actual site-specific mercury content (instead of EPA's inflated estimate), reveals extremely high cost effectiveness ratios, many times greater than EPA's \$6,000 per pound of mercury control estimate. *See* ERG, Analysis of Beyond the Maximum Achievable Control Technology Floor Controls for Existing SSIs. NEORSD's mercury control cost analysis concluded that its incinerators would need a carbon contact chamber and fabric filter, as well as a heat exchanger and boiler, all of which would require engineering design services and construction management. The average mercury removal cost for NEORSD would be more than \$100,000 per pound of mercury removed.¹⁷ The City of Palo Alto Regional Water Quality Control Plant conducted a similar cost analysis that put the national cost of mercury removal at nearly \$190,000 per pound, and over \$400,000 per pound for the City based on its actual emissions level. *See* Comments filed by the City of Palo Alto on the Proposed Rule. These cost figures are not reasonable when demonstrated pollution prevention options are available at \$9,000 per pound for dental amalgam separators.

Carbon adsorption for mercury control is also a costly option. For example, if POTWs were to procure and install activated carbon adsorbors the cost would be at least \$3.5 - 4 million per incinerator just for the equipment, for a total capital cost in of \$564 - \$644 million for the 161 MH incinerators evaluated in the beyond-the-floor analysis. The cost to expand existing incineration facilities, add new ductwork and controls, and engineering related design and construction management costs could easily raise the cost of these units to \$5 - \$6 million. The resulting total cost would be \$800 million - \$1 billion or higher for the 161 MH incinerators. It should also be noted that no one in the U.S. manufactures carbon adsorbors and they would have to be imported from overseas.

Ypsilanti, Michigan's experience suggests that this technology may not be feasible, on a long-term basis for SSIs due to the significant corrosion problems that they have experienced. At a minimum, carbon adsorption polishing must be placed after the particulate control device. For SSIs, the existing particulate control is a wet scrubber, which generates significant amounts of steam and moisture in its exhaust that are incompatible with carbon adsorption. Therefore, the exhaust must be heated high enough so that moisture does not condense as it moves through the carbon adsorption system. Edmonds, Washington reports that it faces a capital cost of \$1,500,000 for the exhaust heater and carbon adsorption system to control a portion of 1.5 lbs of mercury measured in the sewage sludge per year. With a useful life, based on Ypsilanti's experience, of less than 10 years, the annualized cost per pound for capital alone is over \$100,000 per pound of mercury removed. Edmonds is a small entity that does not have a sufficient footprint for the installation of this system. EPA cannot justify carbon adsorption as a beyond the floor mercury control.

EPA is required to consider energy impacts as part of its beyond the floor analysis. EPA should consider the projects currently underway that will generate electricity from the heat produced by SSIs. Every kilowatt hour of electricity generated by the SSI reduces the POTW demand for electricity from the grid. NEORSD plans to meet 25 percent of its electricity demand through SSI-generated electricity by 2014. In Ohio, NEORSD's reduced demand for electricity from the grid means less coal combustion and less of the emissions that coal would have generated, including less mercury emissions and less reliance on fossil fuels. Beyond the floor

¹⁷ NEORSD's detailed cost analysis is included as Attachment D.

controls could discourage this advanced energy option, resulting in more coal combustion and more mercury emissions.

EPA's rush to develop the Proposed Rule has resulted in an improper baseline emissions estimate for SSI mercury, inadequate assessments of the feasibility of mercury control as applied to SSIs, and a significant underestimate of the cost of mercury controls for this sector. EPA is compelled to explore alternative, less costly ways to decrease mercury emissions before imposing beyond the floor controls. Therefore, EPA's beyond the floor mercury limits are not justified by the record and should be removed from the final rule.

V. EPA's MACT FLOOR METHODOLOGY IS FLAWED

In setting emission standards under § 129, EPA is obligated to start with an analysis of the performance of existing sources. From that analysis, EPA is required to determine the "MACT floors," which for new units is "the level of control that is achieved in practice by the best controlled similar unit" and for existing units is "the average emissions limitation achieved by the best performing 12 percent of units in the category..." CAA § 129(a)(2). EPA can set standards more stringent than the MACT floor only after considering cost, energy and other factors. EPA's assessment of existing source performance was insufficient to set accurate MACT floors.

A. EPA Does Not Have Enough Valid Data to Establish Lawful and Proper MACT Floors

EPA's rush to regulate SSIs has left the Agency with inadequate data to assess existing performance among SSIs. EPA chose to limit its ICR to just nine entities because collecting information from ten or more entities would have triggered the PRA obligations and a more rigorous OMB review. *See* 44 U.S.C. 3502(3)(a)(i) (defining the threshold term "collection of information" as a request "imposed on ten or more persons" other than federal agencies.) EPA's plan to circumvent the PRA and OMB review resulted in an inadequate dataset for this rulemaking that leaves EPA unable to reliably take the first necessary step in a § 129 rulemaking: to determine which of the SSIs are the best performing sources. EPA has built a statistical house of cards on this flawed foundation, which undermines the legality and scientific credibility of the emission standards set forth in the Proposed Rule.

As a consequence of EPA's limited data collection effort, the dataset available for this rulemaking contains actual data from less than 12 percent of the population of sources in each subcategory. Even if all of the data collected could somehow be attributed to top performers, EPA would be unable to determine based on actual data the average performance of the top 12 percent as is required for the existing source MACT floor. *See* ERG Memo, *MACT Floor Analysis for the Sewage Sludge Incinerator Source Category* at 6 (June 2010) ("MACT Floor Memo"). In fact, EPA is using actual data from as little as 4.3 percent of a subcategory (7 of 163 MH units for HCl) to determine how the top 12 percent perform.

The way that EPA targeted its data collection undermines its ability to use statistics to fill data gaps. EPA targeted its ICR to the nine POTWs "expected to have the lowest emissions based on the type of unit and the installed air pollution controls." *See* MACT Floor Memo at p. 6. EPA then uses statistical methods that predict the distribution of all data based on a sample set. This statistical method relies on random sampling of representative data. *See* Attachment F of the NEORSD Comment on Proposed Rule. EPA's targeted approach to collecting data from expected top performers undermines its ability to presume the data is a random sample

representative of the entire source category or subcategory. If the data gathered is not representative at the outset, then the data cannot reliably be used in a statistical equation to predict the emissions data across the source category or subcategory. Thus, EPA improperly limited the data it considered and therefore cannot accurately determine the range of performance for the category or subcategory to determine the top 12 percent of the existing source subcategories.

NACWA members have determined a number of errors in the data used by EPA in this rulemaking. Specific references to these errors will be in the comments of those members from whom the data were collected. The errors are an indication of inadequate quality assurance and quality control on the data in the database. EPA should not rely on this public comment process for its check on the quality of the data it relies upon in this rulemaking. EPA should take the time to collect sufficient data so that outliers are readily apparent and properly excluded. EPA should also subject the data to a rigorous quality assessment to establish their validity before relying on them to create enforceable limits.

B. EPA's Data are not Sufficiently Representative to Establish Lawful and Proper MACT Floors

To make up for its lack of actual data, EPA tries to extrapolate from the data it has by claiming that it is representative of the source category. This approach fails because the data are not representative of the regional, seasonal and day-to-day variability of sewage sludge. EPA inexplicably characterizes sewage sludge as a "homogeneous" material (*see MACT Floor Memo* at 6), in an apparent attempt to support its extrapolations. EPA's only claim of support for this characterization is that sewage sludge concentrations are capped by the CWA regulations under Part 503. A closer look at Part 503 data confirms the common sense conclusion that domestic sewage is an unpredictable and highly variable source that generates heterogeneous sewage sludge that cannot be characterized by EPA's stack test database composed of snap shot measurements over 3-4 hours on a single day during the winter.

Unlike other types of industrial and commercial incinerators that EPA regulates under CAA § 129, POTWs – and their SSIs – are statutorily obligated to manage all of the sewage that enters into the sanitary sewer system. Many different entities and individuals have virtually unlimited access to the POTW through thousands of toilets, sinks and drains throughout the system that flow into the treatment works. The screening system at the headworks of the POTW filters out wood and stones and other large debris, but dissolved material and small particles enter the treatment works and ultimately end up in the sewage sludge. This results in highly variable and often unpredictable spikes in concentrations. POTWs are designed to clean and protect water resources, so treatment focuses on removing metals and other compounds from the wastewater and capturing them in the sludge. The result is a highly variable and heterogeneous waste stream.

POTW inlet concentrations also vary based on the nature and type of dischargers. POTWs treat wastewater from residential, commercial and industrial dischargers in varying degrees. POTWs that are dominated by residential customers will have a different range of sludge constituents than those with significant commercial and industrial dischargers. Some POTWs have significant industrial dischargers that contribute constituents in their wastewater that result in sludge concentrations unlike other POTWs. Pretreatment opportunities also vary because POTW authority to control discharges into the sewer system is limited and the way that authority is exercised varies. Finally, the nature of sewage entering the POTW changes over time as the character of a community changes, the age of the population changes, and commercial and

industrial dischargers come and go. Sewage sludge constituents and concentrations vary because the discharge to each POTW is unique. Without the use of long-term data to support the level of emission standards, this variability makes numeric technology-based limits impractical and infeasible and should provide EPA strong motivation to look to other regulatory options.

POTWs also face significant regional and seasonal variability that is not captured by EPA's dataset. Initial high flow periods in the spring often scour the sewers and dislodge heavier material that has settled in the sewer system during low-flow periods, which often results in a spike in metals concentrations (e.g., mercury, cadmium, lead) in the sewage sludge. The ICR stack tests in January and February that were used for the EPA database would not have captured these events. In addition, northern cities that use salt for de-icing roadways experience significant increases in chlorides during the winter months. High chloride concentrations are known to improve the effectiveness of mercury control at existing wet scrubbers. *See* 2009 WERF Report at 2-4 (Attachment B). Stack test results during January and February in these communities may not be replicable during other times of year.

EPA has the data it needs to examine sludge variability for metals. Most POTWs have been required to collect weekly sludge samples and test them for the Part 503 metals. In the Table 3 NEORS has compiled the monthly average sewage sludge content of cadmium, lead, and mercury at two of its facilities. Even when averaged over an entire month, the range of average metal concentrations varies by a factor of three or more.

Table 3: 2009 Monthly Average Sewage Sludge Concentrations (mg/dry kg)

	Cadmium		Lead		Mercury	
	Southerly	Westerly	Southerly	Westerly	Southerly	Westerly
January	7.95	13.25	62.23	97.00	0.68	0.44
February	8.45	11.95	75.60	123.10	0.77	0.41
March	8.90	14.46	84.94	141.20	0.69	0.34
April	9.11	14.96	67.93	123.00	0.84	0.37
May	10.40	12.97	87.16	145.95	0.78	0.36
June	4.60	7.94	99.54	204.30	1.24	0.77
July	4.46	7.92	123.15	218.55	1.24	0.92
August	4.78	9.08	114.10	188.23	3.12	0.59
September	5.13	8.12	103.41	183.93	2.08	0.87
October	3.99	7.19	94.33	129.27	0.98	0.63
November	4.14	6.22	82.78	104.81	0.91	0.58
December	3.80	5.97	74.66	97.55	1.38	0.40

Data collected in January and February from these sources could not be considered representative of the sewage sludge during other months or seasons. NACWA has every reason to believe that other POTWs face variability at this level or greater and that this degree of variability applies to other constituents as well. EPA should consider the Part 503 data that POTWs submit to the Agency regularly to account for variability when setting emission limits.

In the Proposed Rule, EPA bases its MACT floor analysis solely on a limited set of emission test data. However, nothing in the CAA restricts EPA to emission test data when determining MACT emission rates and

intra-source variability. As EPA recognized in its MACT floor analysis, emission tests provide only a snapshot of emissions at a particular point in time. It is therefore appropriate for EPA to consider non-emission test factors, such as metals content in sewage sludge, in evaluating variability and setting MACT floors. EPA has requested additional sewage sludge metals content information, but has restricted its request to metals content information collected during stack tests. *See* 75 Fed. Reg. at 63269. It is unclear why EPA would deem only metals content during stack tests relevant to variability. POTWs subject to Part 503 are required to track metals data in their sewage sludge year-round, during all periods of operation. *See, e.g.,* Weekly Lead (Pb) and Mercury (Hg) Concentrations from POTWs (EPA-HQ-OAR-2009-0059-0036) (providing lead and mercury variability from 2005 to 2009 at POTWs). True variability can be established by using all metals content data and applying the site-specific control efficiencies determined under Part 503 testing or additional air emissions testing.

C. Part 503 Limits Do Not Render Sewage Sludge Homogeneous

EPA claims that sewage sludge is homogeneous because the Part 503 regulations cap sludge concentrations. This ignores certain realities associated with the health-based standards established under Part 503. First, the Part 503 regulations do not address all of the § 129 pollutants (PM, opacity, SO₂, HCl, NO_x and dioxin/furans). Part 503 does not regulate the variability of sulfur, chlorine and nitrogen concentrations in sewage sludge, which have a direct effect on the amount of SO₂, HCl, and NO_x generated when the sludge is incinerated. Second, Part 503 establishes risk-based limits for lead and cadmium that are different for every POTW based on feed rates, stack heights, and exhaust flow rates. Within these limits, POTW performance varies significantly depending upon the sources of these compounds in the sewage system, including industrial sources, soil content flushed during rainfall events, or residual material within the sewer system that is cleaned out periodically. While the Part 503 regulations have focused attention on reducing lead, cadmium and mercury compounds in sewage sludge over the years, EPA is wrong to claim that they have eliminated the variability of these compounds in sewage sludge.

In fact, actual performance for all POTWs is far below the health-based limits established under Part 503. As such, the range of actual concentrations can vary by a factor of 100 or more without approaching the Part 503 limit. For example, compilations of weekly mercury data from POTWs demonstrate that concentrations of mercury can range from less than 0.1 mg/kg to as high as 17.25 mg/kg. *See* Weekly Hg and Pb Variability at POTWs, Docket ID No. EPA-HQ-OAR-2009-0059-0036. As a result, mercury concentrations can vary by two orders of magnitude without ever exceeding the NESHAPs limit. In the face of significant data supporting the heterogeneous nature of sewage sludge, EPA's reliance on Part 503 standards as evidence of homogeneity is seriously misplaced.

D. EPA's Misunderstanding of the Variability of Sewage Sludge Leads to Unachievable New Source Limits

EPA incorrectly presumes that stack test results account for the full variability of an SSI's performance. As indicated above, that is based on the erroneous conclusion that sewage sludge is a homogeneous waste with insignificant variability of relevant constituents. This is particularly troubling when applied to the new source standards that are based on a snapshot stack test of the single best performing unit. EPA concedes that it does not know whether the stack test data is even representative of typical operation for the source that was tested. The preamble to the Proposed Rule states:

It is not clear from the data available to EPA whether the sludge burned during the emissions tests (that were used to establish the MACT floor) represent typical sludge composition/concentrations or are closer to minimum or maximum levels.

75 Fed. Reg. at 63268. This is an essential missing step in determining how to use the data to set an emission limit. If the sludge burned during an emissions test was not at or near the maximum constituent concentration level (e.g., due to seasonal variability), a new source emission limit based on this data could not be achieved over the full range of expected normal operating conditions confronted by the best performing source. At a minimum, EPA must consider all available data (including Part 503 data) for the best performing source and use that to establish a variability factor applied to the stack test data. EPA's request for metals data during the stack test is insufficient to account for the full intra-source variability. Moreover, variability for the compounds not regulated by Part 503 must be accounted for as well before setting the new source limit.

E. EPA's Misunderstanding of the Variability of Sewage Sludge Leads to Erroneous MACT Floors for Existing Sources

EPA also mistakenly presumes that snapshot stack test data is sufficient to set limits for existing sources because sludge concentration variability is insignificant. As indicated above, EPA did not collect enough data to set existing source limits based on actual data. As such, EPA can only set emission limits by extrapolating based on the presumption that the data it has is representative of the top performing 12 percent of the source subcategories. The fact that these data were not randomly selected undermines the statistical credibility of this exercise. But even if the data were randomly selected from the full source category, the stack test data is inadequately representative as the basis for a lawful MACT floor calculation.

EPA cannot use statistics to make up for its lack of representative data because each step compounds the problem. EPA uses its flawed predicted data set to determine the top 12 percent of existing sources in each source category, and to determine the average emission rate, the intra-source variability, and the upper prediction limit ("UPL") for the subcategory. The sources that are statistically fabricated to fill the data gaps lack the variability of the actual sources that round out the top 12 percent. EPA's method creates a more stringent emission limit than would be justified under a proper assessment of the top 12 percent of existing sources. As such, the proposed emission limits constitute unlawful beyond-the-floor MACT standards that have been developed without considering the required criteria in the CAA, including cost.

EPA's request for additional stack test data to bolster its inadequate database is an inappropriate burden at this stage of the rulemaking. EPA has primary responsibility for gathering the data. It is a circumvention of the PRA and OMB's review to intentionally limit the scope of an ICR to nine entities and then ask NACWA and its members to provide additional stack test data during the 45-day public comment period. EPA's data analysis is an important part of generating the regulatory options. Waiting until the public comment period to gather new data undermines NACWA's ability to comment on the proposed options for regulation. EPA is rushing to the finish line with inadequate data and hoping that the public comments will contribute enough data to justify its proposed path. Even if NACWA and its members were able to secure the resources to conduct additional stack testing to supplement the record, EPA offers insufficient time to conduct

the stack tests, quality assure the data and submit it for EPA consideration. NACWA has requested, and EPA has rejected, an extension of time for the comment period on the Proposed Rule. EPA should not now blame POTWs for not generating sufficient data during the comment period.

F. EPA Should Not Adjust the Upper Predictive Limit to Compensate for its Lack of Data.

EPA seeks comment on whether to use the 99 percent UPL or a modified 95 percent UPL. EPA *should not* use a 95 percent UPL to compensate for its lack of data. This essentially presumes that sources represented by the database would be expected to be out of compliance 5 percent of the time. This is contrary to the CAA requirement that MACT limits must be met at all times and under all reasonably foreseeable conditions. See *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). EPA should use a 99 percent UPL to set enforceable limits as has been done in other recent rulemakings. Adjusting the percent basis for the UPL to get to a target emission limit that is more palatable to the Agency would turn the MACT process on its head and be vulnerable to legal challenge.

G. MACT Floor Methodology Must Reflect an Achieved Emission Limit

The proposed MACT standards for SSIs are based on pollutant-by-pollutant analyses that rely on a different set of best-performing sources for each separate § 129 pollutant. See 75 Fed. Reg. at 63270 (“The MACT floor analysis was then conducted using all the emissions information for each pollutant in each subcategory.”). EPA cannot demonstrate that any of these units is capable of meeting all of the proposed emission limits. The Metropolitan Council Environmental Services’ Metropolitan Treatment Plant, which is the best performing source for some pollutants, cannot reliably meet all of the limits under all operating conditions because EPA failed to consider the true operational variability of POTWs. The result is a set of standards that reflect hypothetical performance of a set of sources that simultaneously achieve the greatest emission reductions for each and every § 129 pollutant without regard to whether any such SSI actually exists or whether the resulting standards are in fact achievable by any SSI. This approach is untenable and contrary to the language of § 129.

CAA § 129 unambiguously directs EPA to set standards based on the overall performance of *incineration units*. Section 129 specifies that emissions standards must be established based on the performance of “units” in the category or subcategory and that EPA’s discretion in setting standards for such units is limited to distinguishing among classes, types, and sizes of units. These provisions make clear that standards must be based on actual units and cannot be the product of pollutant-by-pollutant parsing that results in a set of composite standards that do not reflect the overall performance of any actual unit. Congress provided express limits on EPA’s authority to parse units and sources for purposes of setting standards under § 129 and that express authority does not allow EPA to “distinguish” units and sources by individual pollutant as is proposed in this rule. See *Sierra Club*, 551 F.3d at 1028.

Section 129 MACT standards present very real problems in this regard because the statute requires maximum achievable limits for both nitrogen oxides and carbon monoxide. For combustion sources, carbon monoxide is controlled by increasing excess oxygen and combustion temperature and nitrogen oxides are controlled by decreasing excess oxygen and combustion temperature. A unit that is over-controlling its combustion unit for NO_x would be expected to increase CO. Similarly, a unit that is focused on CO reduction

in the combustion zone would be expected to increase NO_x emissions. If EPA chooses a top performer for NO_x and a different top performer for CO, the emission limits may well be unachievable for any source. While afterburners may be added for post-combustion CO control, these units burn fuel that results in a corresponding increase in emissions of NO_x and CO. The better alternative is to set limits based on the best performers for both pollutants simultaneously.

VI. EPA'S TWO PROPOSED SUBCATEGORIES ARE INADEQUATE TO ACCOUNT FOR OPERATIONAL DIFFERENCES AMONG TYPES AND CLASSES OF SSIs

A. MACT Subcategories for Existing Sources Should Also Apply to New Sources

In the Proposed Rule, EPA correctly determined that MHIs and FBIs are distinct types of combustion units that justify separate subcategories. *See* 75 Fed. Reg. at 63268. FB incinerators have higher turbulences that increase combustion efficiencies and reduce particulate emissions, and many have internal afterburning zones that increase residence time to reduce carbon monoxide, hydrocarbon, and particulate emissions. MH incinerators do not share these characteristics. All of these differences result in lower emissions from FB incinerators that cannot be duplicated by MH incinerators.

Based on these distinctions, EPA created distinct MH incinerator and FB incinerator subcategories. However, EPA only recognized this distinction in setting emission limits for existing units. EPA abandoned these subcategories for new units by basing emission limits for all new incinerators, whether FB or MH design, on emission limits achieved by the best performing FB incinerator. EPA concluded that no new MH incinerators have been built recently and none are expected to be built in the future, and that therefore all newly built units would be FB design. EPA cannot make this determination for POTWs. In fact, EPA is essentially setting a beyond-the-floor MACT limit for MHIs without considering any of the criteria that the statute requires. The new source limits in the proposed rule must reflect the best performing similar source for the multiple hearth design.

EPA also seems to ignore the "modification" trigger for the new source standards. EPA's proposed definition of "modification" could make existing MH units subject to the new source FB-based standards. EPA would impose the new standards on units for which the "cumulative cost of the changes over the life of the unit exceeds 50 percent of the original cost of building and installing the SSI unit." First, EPA must make clear in the final SSI rule that the cumulative costs to be considered are only those costs incurred since the effective date of the final SSI rule. This is the approach taken in the Municipal Waste Combustor § 129 rule at 40 CFR § 60.51b. The "life of the unit" reference in the definition of modification could be misconstrued as a retroactive evaluation of incurred costs that pre-date the rule. Second, modified MH units are placed in the untenable position of having to meet emission limits set by the best performing FB incinerator – an impossible feat due to the inherent design differences already recognized by EPA. This will prevent all existing MH units, which make up 75 percent of existing SSI units in the U.S., from investing in changes to those units due to the risk that they might qualify as modifications of the type that would trigger unachievable new source performance standards. This includes combustion efficiency improvements or changes that increase steam output for electricity generation, when these environmentally beneficial changes meet the definition of modification proposed at 40 CFR § 60.4930.

EPA's approach would discourage incremental improvements at MH units because they would trigger FB-based emission limits that cannot be met. EPA has acknowledged the design differences that make meeting these limits impossible, and has provided no pathway by which these modified or reconstructed MH incinerator units may achieve compliance. EPA must retain the separate MH and FB incinerator subcategories for both new and existing sources to avoid illegally subjecting newly-constructed or modified MH SSIs to unachievable and unjustified beyond-the-floor emission standards. Establishing separate emission limits for new MH and FB incinerators will also preserve incentives to be innovative and improve the use of the 163 MH incinerators currently in use in the U.S. *See* 75 Fed. Reg. at 63268.

B. EPA Should Consider Additional Subcategories Based on Use, Size, and Class

Section 129(a)(2) provides that EPA “may distinguish among classes, types (including mass-burn, refuse-derived fuel, modular and other types of units) and sizes of sources within a category” when establishing MACT standards. These provisions vest EPA with broad authority to group like units for purposes of establishing emissions limitations. Given the significant differences in operating time, size, and input between incinerators in both the MH and FB categories, it is appropriate for EPA to create further subcategories. After choosing to gather data from only nine entities and consider only add-on pollution control technologies, EPA must not use the lack of data as an excuse for not establishing additional subcategories that may make this standard more achievable for SSIs of all sizes and types.

1. Limited Use SSIs

EPA should include an additional subcategory for limited use SSIs that function as back-up or emergency units and operate at only 10 percent of their annual capacity. These units may be essential to ensuring that POTWs can continue processing sewage sludge in a safe manner when a primary unit is unavailable.

In past rulemakings, EPA has created separate subcategories for limited use and emergency units, recognizing that their unique operating conditions could make it difficult if not impossible to meet the requirements applicable to regularly operating units. In the 2004 Industrial, Commercial, and Institutional Boiler and Process Heater MACT rulemaking, EPA recognized that back-up boilers, which operate “10 percent of the year or less,” “are different compared to typical industrial, commercial, and institutional boilers” and that “such limited use units should have their own subcategory.” 69 Fed. Reg. at 55232. Similarly, in setting NESHAP for Reciprocating Internal Combustion Engines, (“CI RICE”), 75 Fed. Reg. 9648 (Mar. 3, 2010), EPA recognized that stationary existing CI RICE should be divided into non-emergency and emergency categories “in order to capture the unique differences between these types of engines.” *Id.* at 9650. In that rulemaking, EPA found that as “emissions occur only during emergency situations or for a very short time to perform maintenance checks and operator training,” EPA found that “[e]missions from these units are expected to be low on an annual basis.”¹⁸

¹⁸ Subcategorization of Stationary Reciprocating Internal Combustion Engines ≤500 HP at 5 (May 15, 2006) (EPA-HQ-OAR-2005-0030-0012). While these statements focus on an “emergency use” subcategory, it is important to note that the limited duration of the use, not the purpose for using the CI RICE is the key issue. For example, the same rule also creates a subcategory for “black start” engines (engines used to start a turbine generator), which operate during both “emergency and high demand days.” 75 Fed. Reg. at 9662.

Some SSI units share several similarities with limited use boilers and emergency CI RICE units. Limited use SSIs are put into service during shutdown or curtailment of a primary incinerator and they operate until the primary unit returns to full service. As a result, these units operate for only a small portion of the year, typically 10 percent of the year or less. Because of this limited operation, annual emissions are expected to be low, making the cost of add-on pollution controls for beyond-the-floor mercury control, performance testing and other requirements unjustified. Also, since these units sustain operation for a shorter duration, they spend a larger percentage of their time in startup and shutdown modes, which have different emission characteristics.

Furthermore, limited use SSIs cannot feasibly accommodate the Proposed Rule's testing obligations without running for a considerably longer period than they would typically otherwise operate. Limited use units also may not operate under steady-state conditions for sufficient periods of time to enable testing. Testing would require these units to extend operations beyond routinely scheduled operations to conduct the testing required by the Proposed Rule. Testing is also problematic for limited use units because the Proposed Rule requires submission of a Notification of Intent at least 30 days before any performance test. *See* 75 Fed. Reg. at 63330 (40 CFR, § 60.5220(a)(8)). Due to this requirement, even if a limited use unit was operated for an entire month after an unplanned start, there would be no time to conduct a properly noticed performance test.

NACWA asks that EPA establish a limited use subcategory set at 10 percent of the annual heat input capacity of a unit. These units would have emission limits that are based on their unique emission characteristics from spending a larger percentage of their time in startup and shutdown modes. Also, beyond-the-floor mercury controls would not be justified because their relatively short periods of operation would render the additional controls not cost effective.

2. Space Constraints Justify a Size Subcategory

Additional subcategories based on size are also appropriate. EPA should exercise its discretion to establish a subcategory for small entities that operate SSIs to relieve the disproportionate cost burden on these small entities. EPA is required to consider mitigation measures for these small entities under the RFA, and establishing a separate subcategory that is consistent with the definition of small entities allows EPA to target relief to these entities to satisfy that obligation. Also, some POTWs will face significant challenges due to space constraints at their facilities. SSIs must be located within the solids handling portion of the POTW and space constraints in these areas of POTWs make it technically infeasible to install large pieces of control equipment. EPA assumes that control equipment can easily fit into existing sites, but this ignores the fact that many POTWs are located in areas where expansion is impossible or impracticable. At NEORS, only one of three treatment plants could accommodate the additional 30 feet of space needed to install the ductwork, contact chamber and fabric filter system necessary to accommodate an ACI system; the other two treatment plants cannot accommodate them at all. *See* NEORS Comments on the Proposed Rule. Even larger systems may be necessary to control emissions to control SO₂, NO_x, and HCl under the full range of operating conditions confronted by POTWs. EPA's control cost assumptions are based on data that do not reflect all operating conditions, so NACWA is skeptical of EPA's conclusion that most units will not need to install control equipment to meet other emission standards. A subcategory for these small or space-constrained units is warranted to accommodate the unique characteristics of these units.

3. Unique Sewage Sludge Characteristics Justify a Class Subcategory

Unique differences in the content of sewage sludge may also justify additional subcategories based on the “class” of SSI. For example, there are differences in the composition of sludge feed from treatment plant to treatment plant, which can also vary within a plant depending on the time of the year. There are also differences if the sludge is digested prior to incineration and differences between non-digested sludges that are thermally conditioned or chemically conditioned. Sludge that is digested prior to incineration typically has a solids content that is 50 percent volatile solids or less, compared with 55-80 percent volatile solids for non-digested sludge. See Water Environment Federation’s (WEF’s) Manual of Practice: *Wastewater Solids Incineration Systems* (MOP-30). The low volatile content in digested sludge necessitates more auxiliary fuel to sustain combustion, which changes emission characteristics. Also, thermally conditioned sludge typically has a higher solids content (up to 48 percent solids compared with 20-30 percent solids for chemically conditioned sludge), which results in a higher combustion temperature. Thermally conditioned sludge would be expected to have lower CO emissions and higher NO_x emissions due to its higher combustion temperature. These unique attributes justify separate subcategories for digested, thermally conditioned, and other (chemically conditioned) sewage sludge incinerators.

EPA should use its discretion to subcategorize by class to ensure all units have a path to compliance.

4. Distance to Landfill Justifies a Type Subcategory

As indicated above, some POTWs are so far away from a landfill that they will have higher emissions from diesel exhaust during sewage sludge transport than from incineration. EPA should not create emission standards so stringent that they force an environmental detriment. For example, MACT standards that force sewage sludge to be transported to landfill or land application sites equal to or greater than 65 miles away emit higher quantities of the pollutants regulated under § 129 than the emissions from their incinerator. These units should be placed in a separate subcategory to ensure that beyond the floor MACT limits do not force incinerators at these POTWs to shut down resulting in transportation emissions in excess of the emissions that would have been reduced by the MACT rule.

VII. THE PROPOSED RULE PLACES UNJUSTIFIED BURDENS ON OPERATORS

A. EPA Should Require Compliance Stack Testing No More Than Once Per Permit Term

The Proposed Rule requires annual stack testing to demonstrate compliance with emission limits for particulate matter, hydrogen chloride, dioxins/furans, mercury, nitrogen oxides, sulfur dioxide, cadmium, lead, opacity, and fugitive emissions from ash handling. See 75 Fed. Reg. at 63303. EPA estimates that stack testing for all of these pollutants costs an average of \$61,000 per test. See ERG Memo, *Cost and Emission Reduction of the MACT Floor Level of Control* at 5, Tbl. 6c (June 2010) (“Cost and Emission Reduction Memorandum”). NACWA members report that this number may be significantly higher. Factoring this additional annual cost into already strained municipal budgets will place an extraordinary burden on regulated entities. As EPA recognized, nearly all SSI units are operated by municipal entities. Municipal governments across the country have been struggling with the current economic climate, and many already face budget deficits in the face of declining revenues. Requiring testing on an annual basis would place a significant burden on the municipal entities subject to the SSI rule.

As noted in Part I.A., *supra*, POTWs are already subject to comprehensive management practices, strict health-based sludge content limits, and NESHAPs under CWA § 405 and the Part 503 regulations. Annual stack testing is not necessary to ensure compliance with emission limits, and such frequent testing would disrupt normal operations that are providing a critical public service.¹⁹ The final rule should require stack testing no more than once per permit term. Minimizing the cost and disruption of stack tests will help alleviate the burden on municipal entities and reduce interference with operations without increasing risks to human health and the environment.

B. The Relatively Inert Characteristics of Sewage Sludge Do Not Justify Stringent Operating, Monitoring and Recordkeeping Requirements

EPA attempts to make the monitoring requirements in the Proposed Rule consistent with those in the Hospital/Medical/Infectious Waste Incinerators (“HMIWI”) rule. *See Cost and Emission Reduction Memorandum* at 4. However, the waste combusted in HMIWI units is completely different from the waste combusted in SSIs. There are no similarities between the two waste streams that justify basing SSIs rules on rules developed for infectious waste. EPA’s decision to base monitoring and recordkeeping requirements for SSI units on those developed for HMIWI units simply because they are both incinerators is arbitrary and capricious.

Daily pressure taps, as proposed by EPA, are not necessary or feasible for SSI units. Disconnecting pressure taps from related parameter monitoring equipment can trip safety mechanisms and cause the system to shut down. Causing daily shutdowns of the system is an unreasonable interference with POTW operations. Furthermore, operators have not encountered problems with clogged taps, making daily checks unnecessary.

C. SSI Operations Respond to External Factors Affecting Operating Parameter Values That Cannot Be Kept Within an Arbitrarily Designated Range.

EPA has also set operating parameters that will be impossible for most SSI operators to meet. EPA proposes to set operating limits based on the operating parameter values during stack tests. As indicated above, stack tests take a snap shot of a highly variable process. It is unreasonable for operating parameters to remain within plus or minus 10 percent of the minimum or maximum value generated during a stack test. SSI feed rates and moisture contents necessarily vary widely depending upon the amount of wastewater that is coming into the POTW. During storms and other high flow events, the POTW is working hard to keep up with the influent and the sewage sludge feed rates and moisture content are necessarily on the higher end of the normal range. During low flow periods, SSIs may operate significantly below maximum feed rates with sewage sludge moisture at the low end of the normal range. POTWs are responding to external events and cannot control these variables sufficiently to stay within a designated range. To accommodate site-specific variation, operating and maintenance parameters should be established in site-specific operating plans that focus on the parameters that correlate with control device efficiency.

D. Use of a Bypass Stack Does Not Indicate a Deviation for All Emission Standards

¹⁹ EPA requires performance testing less frequently than annually in several MACT rules. *See, e.g.*, NESHAP for Coke Ovens: Pushing, Quenching, and Battery Stacks, 40 CFR. § 63.7321 (testing twice per permit term); NESHAP for Lime Manufacturing Plants, 40 CFR. § 63.7111 (testing every 5 years); NESHAP for Iron and Steel Foundries, 40 CFR. § 63.7731(a) (testing every 5 years).

During malfunctions or what our industry refers to as emergency conditions (e.g., loss of draft within a multiple hearth incinerator, loss of the induced draft fan, loss of scrubber water, loss of power, etc.), sludge feed to a multiple hearth incinerator is promptly stopped and all of the sludge within the incinerator (approximately 30 - 45 minutes worth of sludge feed) is burned out. It takes approximately 30 minutes for the burn-out to be completed. If a relief stack is not utilized during emergency conditions, the health and safety of operating personnel can be compromised and the incinerator and associated equipment can be damaged beyond repair.

Fluidized bed incinerators are not equipped with emergency relief stacks. During emergency conditions, the sludge feed to the incinerator is promptly stopped and the fluidizing air blower is shut down. Combustion within the fluidized bed incinerator will cease within a short amount of time, due to the low volume of non-combusted sludge within the unit.

In 40 CFR § 60.4900(d), EPA arbitrarily deems use of a bypass stack when sewage sludge is being charged an “emissions standards deviation for all pollutants listed in Table 1.” Bypass stacks are an essential part of the safety equipment and operators should be allowed to open the bypass stack immediately as part of a continuous series of events that includes stopping the sludge feed without triggering a deviation. Moreover, EPA does not have the authority to presume deviations of emission standards, particularly when the bypassed emission controls may not be necessary to meet the emission standard. Contemporaneous Part 503 data can show that the sludge content of cadmium, lead or mercury were so low that it could be met without operating a control device. Use of a bypass stack must not be *deemed* a deviation of emission limitations for these compounds in the face of this credible contrary evidence. Assuming that the use of a bypass stack results in emission violations for all pollutants is arbitrary and subsection (d) of 40 CFR § 60.4900 should be removed from the final rule.

VIII. THE PROPOSED RULE FAILS TO PRESCRIBE ACHIEVABLE STANDARDS FOR STARTUP, SHUTDOWN AND MALFUNCTION PERIODS

NACWA is very concerned about EPA’s proposal to apply the same proposed emission standards for steady-state operating periods to startup, shutdown and malfunction (“SSM”) events. EPA incorrectly claims that its authority to prescribe unique standards for SSM periods is constrained by *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). Although the preamble states that EPA “believes” SSIs will be able to achieve the proposed standards during startup and shutdown (75 Fed. Reg. at 63282), this claim is not supported by the record and NACWA believes this position fails to recognize that some startup and shutdown conditions may temporarily increase emissions, even among the “best performing” SSIs. EPA makes no claim that SSIs will be able to achieve the proposed standards during malfunctions, yet it does not propose unique standards for malfunction periods because they “should not be viewed as a distinct operating mode and, therefore, any emissions that occur at such times do not need to be factored into development of CAA section 129 standards, which, once promulgated, apply at all times.” *Id.*

We believe that EPA’s proposed SSM approach is flawed from the outset because the Agency starts with the premise that the D.C. Circuit’s decision in *Sierra Club* supports EPA’s proposed SSM approach – applying

the same emission standards for all operating conditions. EPA states that *Sierra Club* “requires EPA to apply MACT emission standards on a continuous basis, thereby precluding *exemptions* applied for malfunctions or other singular events.” 75 Fed. Reg. at 63282 (emphasis added). EPA concludes: “Therefore, consistent with *Sierra Club v. EPA*, EPA is proposing that the standards in this rule [i.e., a single set of standards developed for steady-state operating conditions] apply at all times.” *Id.*

While it is true that a blanket exemption from any standard may be inconsistent with the *Sierra Club* holding, the opinion does not prohibit EPA from applying *different, even non-numerical*, standards during SSM events from those standards that apply during steady-state operations. The court only rejected EPA’s decision not to impose *any* emission standard whatsoever during SSM periods. See 551 F.3d at 1027-28. In fact, *Sierra Club* acknowledged that the definition of emission standard in § 302(k) indicates that any one standard need not apply at all times. The court noted that the Part 63 General Provisions at issue in *Sierra Club* were not a design, equipment, work practice, or operational standard under § 112(h) and expressly did not decide whether EPA could promulgate a work practice or engineering standard under CAA § 112(h) (much less under the analogous § 111(h)) instead of the exemption EPA sought to defend. See 551 F.3d at 1028. Far from supporting EPA’s effort to ignore SSM periods, *Sierra Club* actually highlights the legal weakness of EPA’s proposed SSM approach. Therefore, EPA cannot use *Sierra Club* to justify not setting different standards for SSM events.

A. EPA’s Rationale for its SSM Approach is Inconsistent with the CAA and Factually Unsound

Beyond not being supported by *Sierra Club*, NACWA believes EPA’s SSM approach is contrary to the requirement under § 129(a)(2) that emission standards be achievable in practice by the best performing units. EPA deals with the complex issue of setting standards for SSM with a bare statement that emissions from supplemental fuels during startup “are expected to generally be lower than from burning solid wastes” – presumably meaning sewage sludge – and that emissions during shutdowns “are also generally lower than emissions during normal operations because the materials in the incinerator would be almost fully combusted before shutdown occurs.” 75 Fed. Reg. at 63282-83. Finally, EPA claims that its variability analysis has adequately addressed “any minor variability that may potentially occur during startup or shutdown.” 75 Fed. Reg. at 63283.

For the same reasons discussed in Section IV of these comments, EPA’s variability analysis cannot justify the use of the same emission standards for SSM periods. That analysis includes only limited stack test data from the nine ICR POTWs and none of those data include SSM periods. Thus, the data used in the variability analysis are not representative of SSM events, and statistical analysis alone cannot correct this fundamental flaw.

Aside from the shortcoming that there is no information supporting EPA’s view that SSIs can comply with the proposed standards during SSM events, there is reason to believe that emissions of some pollutants can be expected to be higher during startups and shutdowns. For example, emissions of CO and PM can be expected to be elevated during startup when oxygen levels are higher due to lower combustion temperatures, resulting in higher pollutant concentrations when corrected to 7 percent oxygen. Similarly, absolute pollutant levels tend to increase during startup and shutdown due to incomplete combustion that is unavoidable at lower temperatures. The influence of unstable combustion may be more pronounced during shutdowns as the incinerator combusts the remaining sewage sludge for 30 minutes or more. EPA should also account for

situations where higher emissions occur during the time it takes to bring control equipment from startup to steady-state operations.

In the case of malfunctions, NACWA disagrees with EPA's newly articulated view that malfunctions are not distinct operating conditions from steady-state operations. SSI operators must treat malfunctions as very distinct events from steady-state operations, depending on the severity of the malfunction requiring anything from shutdown of the unit to emergency fire response actions. Depending on the nature and severity of the malfunction event, emissions often are not capable of being captured and routed to a stack for control and/or measurement and, when they are, test methods do not adequately account for the often short-term and unstable characteristics of the malfunction event.

EPA acknowledges that even the best performing SSIs are subject to any number of potential malfunctions and that the factual complexity of differing processes and of the severity, frequency and duration of malfunctions makes standard setting difficult. So it appears EPA's "determination" that malfunctions are not distinct operating conditions is simply an unjustified decision to ignore the impact that the inherent limitations of combustion and pollution control technologies have on the ability of SSIs to achieve the proposed standards. Compounding this error, EPA declines to use emissions during malfunction periods in its MACT floor analysis for normal operating conditions and fails entirely to address its authority under §111(h) to set alternative work practice and engineering standards. EPA's only explanation for this decision is its suggestion that applying the MACT floor concept of "best performing" to a source experiencing a malfunction "presents significant difficulties." 75 Fed. Reg. at 63283. This argument has no basis in the CAA, which requires EPA to distinguish among types and classes of sources in order to set achievable emission standards and which allows EPA to use a variety of alternative work practice standards when setting an emission standard is too difficult. EPA's thin semantic argument leads it to ignore the fact that there are work practices employed by the best performing SSIs that represent the best practices for minimizing emissions during a malfunction. These practices may include monitoring combustion parameters to identify a malfunction and stopping the charging of materials to an incinerator. While the measures that represent these best practices will depend on facility-specific issues, such as incinerator design, pollution control train, and other factors, they are nonetheless the "best technological system of continuous emission reduction ... adequately demonstrated."

NACWA believes the reality of the technological challenges, and the enormous potential cost that would be necessary to monitor SSIs during SSM, give EPA the basis to prescribe alternative design, equipment, work practice or operational standards for SSM. Therefore, NACWA asks EPA to reconsider its SSM approach and to allow for alternative work practice standards for SSM events in the form of a facility-specific SSM plan. EPA should consider a flexible compliance option that allows the source to elect to comply with the MACT floor emission standards for normal operating conditions or with the requirements of the SSM plan for the SSM event.

B. EPA's "Affirmative Defense" Rests on Unsound Legal Footing and Cannot Make Up for a Failure to Set Achievable Standards for SSM Periods

Recognizing that SSIs experiencing malfunctions will not always be able to comply with the proposed emission standards, EPA offers an "affirmative defense" that shifts the burden to the POTW to prove that a lengthy list of criteria are met and actions are taken by the source in order to avoid enforcement for civil

penalties. It is unclear where EPA finds the legal authority in the CAA to shift the burden to the regulated community of proving (or disproving) essential elements of an alleged violation. The statute is silent as to the issue and “the ordinary default rule [is] that plaintiffs bear the risk of failing to prove their claims.” *Shaeffer v. Weast*, 546 U.S. 49 (2005), *quoting* McCormick on Evidence § 337, at 412 (“The burdens of pleading and proof with regard to most facts have and should be assigned to the plaintiff who generally seeks to change the present state of affairs and who therefore naturally should be expected to bear the risk of failure or proof or persuasion”); C. Mueller & L. Kirkpatrick, Evidence § 3.1, p. 104 (3d ed. 2003) (“Perhaps the broadest and most accepted idea is that the person who seeks court action should justify the request, which means that the plaintiffs bear the burdens on the elements in their claims”). While the Supreme Court has recognized exceptions such as affirmative defenses, courts retain the authority to establish such rules unless Congress acts to delegate that authority.

EPA also does not justify why an affirmative defense would not apply to startup and shutdown events, and would be limited only to “civil penalties,” excluding other remedies such as claims for injunctive relief. The proposed regulations also contain elements that are vague and not reasonably connected to whether a source should be penalized for a malfunction event. The following lists some of the most extreme examples:

- The condition requiring “all possible steps” to minimize the impact of the excess emissions is unreasonable in terms of its potential operational and economic impact and therefore essentially impossible to satisfy.
- The requirement that emissions control systems be “kept in operation if at all possible” and that any bypass be permitted only if “unavoidable to prevent loss of life, severe personal injury, or severe property damage” are both unwise and unreasonable. It is often the best operating practice to shut down an emission control device rather than have the equipment risk serious damage. And the latter requirement suggests that EPA is tacitly encouraging sources to weigh worker safety practices (albeit not those that risk “severe” injury) against the risk of enforcement under the CAA.
- Some elements of the affirmative defense are impossibly vague, such as whether “proper design” would have prevented a malfunction.
- The requirement to prepare a written root cause analysis “to determine, correct, and eliminate the primary causes of the malfunction” is unreasonably stringent and would result in some categories of malfunctions potentially never satisfying the proposed affirmative defense. For example, the only method a source has to “correct and eliminate” a malfunction caused by a power failure from the grid is to install redundant power generating facilities. The technological and economic impacts of “super engineering” facilities in the way envisioned by EPA are unreasonable and disconnected from the authority EPA has to set standards under the CAA.

Due to the legal uncertainty and unreasonably stringent restrictions on the proposed “affirmative defense,” in a future rulemaking NACWA urges EPA to reconsider the need for separate SSM standards and to propose alternative work practice and engineering standards for SSIs.

IX. AVERAGING TIMES FOR EMISSION LIMITS AND OPERATING LIMITS SHOULD BE EXPANDED TO ACCOMMODATE THE SIGNIFICANT VARIABILITY OF SEWAGE SLUDGE

EPA requested comment on whether the averaging time using continuous emission monitoring systems (CEMS) should be reduced from 24 hours to 12 hours. *See* 75 Fed. Reg. at 63281. NACWA asks that EPA use broad averaging times (e.g., 30 days or longer) for CEMS, sludge concentration data, and operating parameters to accommodate the significant and unpredictable variability in the influent that must be processed by POTWs. Spikes in compound concentrations are unavoidable in a sewer system and they are unlikely to be captured in the data that EPA has gathered for its MACT database. High concentrations of mercury may be released when segments of the sewer are periodically cleaned downstream of a dentist office where mercury-containing amalgams have been discharged into the sewer. The sewer system can also be the discharge point for ‘spring-cleaning’ activities, spills, and other periodic discharges that typically arrive at the POTW without warning. The POTW does not have the luxury of refusing material discharged in most instances. It must do its best to respond by cleaning the wastewater before it is discharged to a local water body, which redirects these compounds in higher concentrations to the sewage sludge.

Longer averaging times help mitigate the effect of spikes on compliance demonstrations. NEORSD’s Part 503 data from weekly sludge samples taken from 2003 to 2009 reveal that the maximum concentration of lead and mercury were over five times higher than the median concentrations. *See* NEORSD Comments on the Proposed Rule. Spikes of this magnitude are typical for POTWs and they justify broad averaging periods. It takes a significant number of normal data points to bring the median back from a 5-times spike.²⁰ While the emission standards in the Proposed Rule apply during these spikes, these periodic elevated concentrations are not reflected in EPA’s database. EPA should help mitigate the burden of its lack of data by maximizing the averaging times for demonstrating compliance.

EPA should not dictate the averaging times for operating parameters. Facilities should have the flexibility to develop an operations and maintenance plan for their control devices and emission reduction methods. EPA improperly directs that the operating parameter range be limited to the range established during a single performance test. If a stack test confirms that emissions are 50 percent of the emissions limit, the operating parameters derived from that test would be ensuring that emissions remain controlled to 50 percent of the emissions limit during future operations. This more stringent limit is unlawful. It is set at a level that is unquestionably lower than the MACT floor, yet EPA has not conducted any of the analysis necessary to justify a more stringent, beyond-the-floor MACT limit. The operating parameter range should reflect the full range of operating conditions that correlate with emissions up to the emissions limitation. The POTW should be able to develop a continuous compliance plan based on the stack test data and all other available information regarding the correlation of operating parameters to control device performance. This ensures that the operating parameters actually correlate to performance at the emission limit and not at the rate captured during the stack test.

X. NACWA SUPPORTS EPA’S APPROACH ON THE FOLLOWING AREAS FOR WHICH EPA REQUESTED COMMENT

²⁰ Assuming for illustration purposes that the median concentration is 10 and the limitation is 15, a spike that is five times the median concentration would require eight weeks of normal sample results to bring the average back to the limit.

A. No Numerical Emission Limit for PM_{2.5}

NACWA supports EPA's determination not to include an emission standard for PM_{2.5} due to the potential interferences with moisture from scrubber controls. It is reasonable for EPA to control both total and fine particulate by using surrogates because the use of wet scrubbers is not always compatible with OTM 27. Entrained water droplets that occur when stack gas moisture levels exceed vapor capacity can bias PM_{2.5} particle measurements and provide inaccurate readings of filterable PM_{2.5}. It would be unreasonable for EPA to include emission limits that are not subject to accurate measurement. Furthermore, the same control devices would be required to control both total and final particulate. *Cf. Nat'l Lime Assoc. v. EPA*, 233 F.3d 625, 637 (D.C. Cir. 2000) (citing *Dithiocarbamate Task Force v. EPA*, 98 F.3d 1394, 1399 (D.C. Cir. 1996)).

Limits on filterable particulate matter and opacity provide an adequate surrogate for direct fine particulate matter contributing to PM_{2.5}. There is also a demonstrated correlation between reductions in SO₂ and NO_x and reductions in nitrate and sulfate contributions to PM_{2.5}.²¹ Therefore, the reductions in SO₂ and NO_x resulting from these emission limits will also serve to reduce contributions to PM_{2.5}. Given the technical difficulties with accurately measuring PM_{2.5} emissions, and the reductions in PM_{2.5} contributors already incorporated into the rule, it is reasonable for EPA to use filterable PM₁₀ as a surrogate for PM_{2.5} emissions.

B. No Beyond the Floor Controls for Non-Mercury Pollutants

NACWA supports EPA's decision not to impose beyond the floor controls for non-mercury pollutants, including CO. The 100 ppmv CO limit in Part 503 is not required for all sources; it is one option for demonstrating compliance with the total hydrocarbon limits contained in the rule. *See* 40 CFR § 503.40(c)(2). Thus, Part 503 does not require sources to install afterburners. Any beyond the floor controls for CO imposed under § 129 would require MH incinerators to retrofit a regenerative thermal oxidizer or other afterburner device onto existing equipment. EPA estimated that installing an afterburner device would increase the cost of MACT compliance by over \$145 million, and would have uncertain effects on emissions. *See* ERG Memo, *Analysis of Beyond the Maximum Achievable Control Technology (MACT) Floor Controls for Existing SSI Units* at 4-5 & Attachment C.2 (Aug. 2010). Furthermore, afterburners require the use of supplemental fuel, which EPA estimates could require annual combustion of an additional 1700 million cubic feet of natural gas. This would lead to emissions of an additional 84 tons of NO_x, 70 tons of CO per year, and an additional amount of greenhouse gas emissions. *See* 75 Fed. Reg. at 63277. In light of these determinations, EPA was correct to eliminate beyond the floor emission limits from the Proposed Rule.

C. Flexible Compliance Options**1. Use of Continuous Emission Monitors in Place of Parametric Monitoring and Annual Testing**

NACWA supports flexible compliance options allowing, but not mandating, CEMS for demonstrating compliance. NACWA also supports allowing sources to propose site-specific operation and maintenance plans with procedures for addressing missing CEMS data. Providing small entities with a choice of compliance options is particularly important, as it will allow each POTW to independently assess which compliance option

²¹ Russell R. Dickerson et al., PM_{2.5} *Maryland State Implementation Plan Weight of Evidence Report* 4-40 to 6-40 (Jan. 30, 2008)

is most economical for that facility. NACWA also supports EPA's determination that parametric monitoring and annual testing can be eliminated for those using CEMS. EPA has well-developed guidelines regarding the use of CEMS, and they are relied on by industry and EPA alike to provide accurate emission information. Requiring annual testing and parametric monitoring on top of CEMS would be duplicative and unnecessary.

2. Use of Sewage Sludge Content Monitoring

EPA requested comment on whether facilities should be allowed to demonstrate compliance by monitoring the content of sewage sludge entering the SSI unit. *See* 75 Fed. Reg. at 63281. NACWA strongly encourages EPA to adopt content monitoring of sewage sludge as an alternative to annual testing or continuous emission monitoring for all pollutants for which a correlation can be established between emissions and sludge content. EPA's Office of Water regulates the average daily sludge content of cadmium, lead and mercury to ensure that SSI emissions stay below the health-based standards set under Part 503. *See* 40 CFR § 503.43. Part 503 requires a stack test to set the control efficiency of the control device for each metal. POTWs monitor the sludge feed and the moisture content and use this data to calculate the average daily sludge feed rate in dry tons per day. POTWs also calculate a monthly average concentration of each pollutant based on all the sludge samples taken in a month. EPA should offer this approach to demonstrating compliance as an alternative to the PM surrogate limit in the Proposed Rule. The Part 503 sampling procedure is something NACWA members are familiar with and it will decrease the burden associated with complying with this new rule. Sludge sampling is a cost-effective way for units already regulated under Part 503 to demonstrate compliance with mercury emission limits, and is significantly less burdensome than installing and maintaining CEMS or performing annual stack tests.

NACWA also supports using content monitoring for other pollutants (SO₂, NO_x, HCl) for which a correlation can be established between the content of the sewage sludge and the incinerator emissions. For instance, SO₂ stack testing with concurrent sulfur content monitoring can be used to establish a correlation between sludge concentration and emission rate. After that correlation is reliably established, stack testing would no longer be necessary to demonstrate compliance. The POTW could demonstrate compliance by monitoring the sulfur content and, if a control device is used, by monitoring an operating parameter that ensures proper control device operation. NACWA strongly encourages EPA to include a sewage sludge content-monitoring option in the final rule.

D. Use of Prior Performance Tests for Initial Compliance Demonstration

NACWA supports allowing initial compliance demonstrations to be based on earlier performance tests conducted prior to the rule if they represent current operating conditions and used the appropriate test method. EPA should not impose an arbitrary two-year cut-off period for the initial performance test. Any test that meets the above criteria should be accepted, including all emissions testing conducted for the ICR.

E. Less Frequent Testing Based on Test Results

NACWA supports less frequent emission testing when test results demonstrate that a source's emissions are less than 75 percent of the applicable emissions limits. However, as explained in Part VII.A, *supra*, the initial testing frequency should not exceed one test per permit term. The content of sewage sludge is already regulated

by the CWA to risk-based levels, and additional annual testing is not necessary to reduce health risks from SSIs. If EPA seeks to require more frequent testing, then any final rule should provide for less frequent testing when the results are sufficiently below the emission limit.

F. A Waste Management Plan Would Be Duplicative of the Waste Management Plans Already Required by Part 503

NACWA supports EPA's conclusion that requiring waste management plans under § 129 would be duplicative of the waste management practices already in place under the CWA. The numeric emission limits and management practice requirements established under the Part 503 regulations are based on one of the Agency's largest risk assessments, which was conducted in the late 1980s and early 1990s to protect human health and the environment from any reasonably anticipated adverse effects from pollutants that may be present in sewage sludge.²² As a result, SSIs demonstrate that the emissions from their units are not adversely impacting human health and the environment by demonstrating compliance with the Part 503 requirements.

Pursuant to 40 CFR Part 403 (Part 403), POTWs additionally implement, through local regulatory authority, pretreatment standards to prevent discharge of pollutants to the POTW that may pass through or interfere with treatment processes. Pretreatment reduces harmful constituents in the sewage sludge combusted by incinerators. Pretreatment has dramatically reduced the contaminants in sewage sludge and accordingly emissions from SSIs have become cleaner. Comparison of the sewage sludge quality measured in the 1980s²³ with the measurements in EPA's 2006-2007 *Targeted National Sewage Sludge Survey* shows a clear improvement in sewage sludge quality since Part 403 and Part 503 were implemented. Specifically, NEORSD, which serves the City of Cleveland and 61 suburban communities, has seen significant decreases in the concentrations of heavy metals in both its influent, attributable to the Part 403 regulations, and its effluent, attributable to both Part 403 and Part 503.²⁴ Between 1980 and 2004, NEORSD has seen the concentration of lead in the influent reduced by 95 percent while the concentration of lead in the effluent was reduced by 100 percent.²⁵

POTWs are already employing successful management practices to comply with Part 403 and Part 503 under the CWA. Requiring additional management plans under CAA § 129 would be duplicative of these efforts and needlessly waste resources that can be better allocated to complying with other provision of the Proposed Rule.

G. Emission Limits Appropriately Apply Only When Sludge Is Being Fed to the Incinerator

NACWA supports an approach that makes emission standards applicable only when an incinerator is being charged. Since an incinerator may only be regulated under § 129 if it is combusting a solid waste, it is appropriate to limit the application of the emission limits to the periods when a solid waste is being combusted. This may also simplify compliance during startup and shutdown, because the sludge is not being fed to the

²² EPA, *A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule*, at 107 (1995) ("[T]he risk assessments quantitatively identified allowable concentrations or application rates of pollutants in biosolids that are used or disposed that protect human health and the environment from reasonably anticipated adverse effects.").

²³ See EPA, 40 City Study (1982); EPA, National Sewage Sludge Survey (1988).

²⁴ See Lita Laven, Frank Foley and Robert Dominak, *Improvements in Biosolids Quality Due to EPA's Pretreatment and Biosolids Programs, Residuals and Biosolids Management Conference 2006*, at 142-147

²⁵ *Id.* at 147, Tbl. 1

November 29, 2010

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combustion chamber during typical startup and shutdown sequences. Most malfunctions are addressed by promptly shutting off the feed to the incinerator.

* * *

Again, EPA's Proposed Rule, if finalized, would have a significant negative impact on the POTWs that rely on incineration and further constrain the list of available sludge management options. NACWA encourages EPA to take the time now to develop a more thorough and accurate understanding of this sector before finalizing emission standards for SSIs.

We appreciate your consideration of these comments. Please do not hesitate to contact Chris Hornback at (202) 833-9106 if you would like to discuss these issues further.

Sincerely,

A handwritten signature in black ink, appearing to read "K Kirk".

Ken Kirk
Executive Director

cc: James Hanlon, Director, Office of Wastewater Management, OW, EPA
Ephraim King, Director, Office of Science and Technology, OW, EPA
Suzanne Rudzinski, Acting Director, Office of Resource Conservation and Recovery, OSWER, EPA
Susmita Dubey, Office of General Counsel, EPA
Amy Hambrick, Sector Policies and Programs Division, OAQPS, EPA

Attachment A: Compendium of NACWA Correspondence with EPA

Attachment B: 2009 WERF Report, *Minimizing Mercury Emissions in Biosolids Incinerators*

Attachment C: City of Palo Alto, California – Mercury Source Control Cost Memorandum

Attachment D: NEORS D Mercury Control Cost Memorandum

ATTACHMENT A

Compendium of NACWA Correspondence with EPA
(Submitted to the Docket Separately)

ATTACHMENT B

2009 WERF Report, *Minimizing Mercury Emissions in Biosolids
Incinerators*

(Submitted to the Docket Separately)

ATTACHMENT C

City of Palo Alto, California – Mercury Source Control Cost
Memorandum

Cost of Hg Diversion Through Dental Office Source Control

For: Brad Eggleston
Palo Alto RWQCP

Prepared by: Thomas Barron, PE

Reviewed by: Karin North

Date: November 16, 2010

Summary

The Palo Alto RWQCP source control program for dental offices has been active for the past decade. This cooperative effort with the local dental community has been successful in diverting an estimated 5.1 kg/yr from being discharged into the sanitary sewer system. For the entire service area the program is estimated to have an annual cost in the range of \$100,000, which consists mostly of expenses for maintaining amalgam separator units. This range in annual costs is equivalent to \$18 million per ton of mercury diverted from the sewer system.

Estimate Calculations

Step 1 - Number of Dental Offices

The RWQCP has 135 dental practices in its service area that perform amalgam placement or removal procedures. These practices are served by 116 vacuum systems that each have an amalgam separator installed.

RWQCP Dental Practices & Amalgam Separators

135	Dental offices in the service area that perform amalgam procedures
-19	Less practices that use a shared vacuum system and amalgam separator provided by another office, or by the landlord
116	Net number of amalgam separators

Step 2 - Amount of Hg Diverted

In its 2008 evaluation of waste mercury sources, the RWQCP estimated that dental practices in the service area have successfully diverted 5.1 kg/yr of this metal from the sewer system. This diversion is equivalent to 0.0056 tons per year.

Step 3 - Cost to Purchase & Install A Separator

In 2008 US EPA published a comparative study of amalgam separators, including their effectiveness and costs (See EPA-821-R-08-014). Data from Table 5-4 of the EPA report are used here, together with information on installation costs from local sources.

Annualized Amalgam Separator Costs

\$934	Cost to purchase an amalgam separator (i.e., a Solmetex Hg-5, which is the most common unit in the RWQCP Service Area)
\$187	Cost to install the separator (20%)
\$1,121	Total installed cost (2008 \$\$)
10	Anticipated useful life of the separator, yrs
\$112	Annualized Cost to Purchase & Install a Separator

Step 4 - Annual Maintenance Costs

Local dental practices indicate that they service their amalgam separators once every 12 to 18 months, with the frequency depending upon the number of practitioners served by the unit and the amount of work that these dentists do.

The following table presents estimated total costs for separators that are serviced once per year. This annual total includes: equipment amortization for 10 years; typical annual maintenance costs of about \$600; and 1/8th of a FTE for RWQCP staff to conduct on-going inspections. Costs for maintaining the Solmetex Hg5 amalgam separator are used here because this unit is the most common in the service area.

Cost per Ton of Diverted Hg
(If All Separators Are Serviced Once Per Year)

\$605	Maintenance Service at 12 month intervals (\$\$/yr)
\$112	Annual Cost to Purchase & Install a Separator
\$717	Total Annual Cost per site
\$83,181	Total Annual Cost for 116 Sites
\$15,625	Annual RWQCP Staff Cost
\$98,806	Annual cost for RWQCP Service Area
\$18	Equivalent cost per ton of Hg diverted (\$\$ Million/ton)

ATTACHMENT D

NEORSD Mercury Control Cost Memorandum

NEORSD Preliminary Cost Estimate of Complying with the Proposed SSI Rule

The following is the NEORSD's preliminary estimate of costs to procure and install additional air pollution control devices that would be required to achieve compliance with the proposed SSI rule.

1. Reduction in Particulate Matter and Metal Emissions

A. Advanced Scrubbing Systems

In order to reduce particulate matter and some of the particulate based cadmium, lead, and mercury, an advanced scrubbing system might be required.

Recent bids for the NEORSD's Southerly WWTP's new fluidized bed incineration project, the procurement cost of each of the new "Venturi Pak" advanced scrubbing system was \$0.75 million. Assuming \$0.5 - 1.0 million for delivery and installation costs, related instrumentation, controls and electrical modifications, and engineering related services, the total cost of a single unit installed would be in the range of \$1.25 - \$1.75 million/unit (2009 \$). This does not include the cost of additional space in a new facility and nor the cost to renovate or expand an existing facility.

B. Wet Electrostatic Precipitators (ESPs)

If wet electrostatic precipitators (ESPs) are required to reduce particulate matter and some of the particulate based metal emissions, costs would be substantially higher than the aforementioned costs for advanced scrubbing systems.

In 2001, bids for a new biosolids handling complex at the Metropolitan WWTP in St. Paul, Minnesota which included the installation of three wet ESPs. The bid price for the three units was \$2.49 million or \$831,000 per unit. The associated design work and the necessary ductwork, piping, structural, instrumentation and controls, electrical, etc., could total \$2.6 million (\$867,000 per unit). As a result, total costs averaged \$1.7 million per wet ESP (2001\$).

Given substantial increases in corrosion resistant metal costs since 2001, along with a 44% increase in the Engineering News Record's construction cost index, costs would be \$2.5 - \$3 million million per wet ESP (2009 \$). This does not include the cost of additional space in the new facility nor the cost to renovate or expand an existing facility.

For the NEORSD's Southerly WWTP new fluidized bed incineration project, approximately 15 feet would have to be added onto the new facility to house the wet ESPs and associated equipment and we do not have room at Westerly or Easterly to add this equipment.

2. Reduction in Sulfur Dioxide and Oxide of Nitrogen Emissions

A. Sodium Hydroxide

To reduce sulfur dioxide and oxides of oxides of nitrogen emissions, sodium hydroxide could be added to the wet scrubbing systems. Costs to design, procure and install a sodium hydroxide addition system at the Southerly WWTP were estimated to be \$0.5 million for three incinerators, with estimated annual chemical costs of \$0.7 million/year. This would result in capital costs of \$0.25 - \$ 0.3 million per incinerator (2009\$). This does not include the cost of additional space in a new facility and nor the cost to renovate or expand an existing facility.

B. Urea or Ammonia

To reduce oxides of nitrogen emissions, either urea or ammonia would be added to the hot gases leaving the incinerators. Cost to design, procure and install a urea injection system at the NEORSD's Southerly WWTP has been estimated to be \$ 5 million, with annual operating & maintenance costs of \$0.5 million (2013\$). This could result in capital costs of \$1.5 - \$2 million per incinerator. This does not include the cost of additional space in a new facility and nor the cost to renovate or expand an existing facility.

The procurement of an ammonia injection system at the Metropolitan WWTP in St. Paul, Minnesota in 2001 had a bid price approximately \$400,000/incinerator (2009\$). However, the unit is not being used due to the low oxides of nitrogen emissions from the plant's three fluidized bed incinerators. It should also be noted that the use of urea and ammonia results in the conversion of the oxides of nitrogen to nitrous oxide (N_2O) a greenhouse gas that has a global warming potential of 310. This means that each ton of N_2O emissions is equivalent to 310 tons of CO_2 emissions.

3. Reduction in Mercury Emissions

A. Activated Carbon Adsorbing System

In 2005, the Ypsilanti, Michigan WWTP installed a new fluidized bed incinerator equipped with a proprietary activated carbon adsorbing system to reduce mercury emissions. Ypsilanti's Consultant believes that this unit will also reduce dioxin emissions. The cost to procure and install the system was roughly \$3 million. This would result in capital costs of \$3.5 - \$4 million per incinerator (2009\$), and does not include a number of other costs which could easily could increase the costs to \$ 5 - 6 million per incinerator. In addition, the activated carbon will have to be replaced once every three years.

B. Activated Carbon Injection System followed by a Baghouse

EPA as estimated that the total cost to add simple activated carbon inject for the 163 multiple hearth incinerators will be roughly \$5 million. As previously reported, the cost is unrealistic and an entire activated carbon injection system, consisting of an activated carbon injection system, carbon contact chamber, baghouse and heat exchangers and boilers to reduce the exhaust gas temperature to below 350 deg-F prior to the injection point.

In 2001, bids were received for an activated carbon injection system/baghouse for each of the three new fluidized bed incinerators located at the Metropolitan WWTP in St. Paul, Minnesota. The bid price for the three systems, including procurement, installation, appurtenances and engineering related services, was \$6 million or \$2 million per unit.

Given substantial increases in corrosion resistant metal costs since 2001 and a 44% increase in the Engineering News Record's construction cost index, costs in 2009\$ would be approximately \$3 million per system. This would result in capital costs of \$3.5 - \$4.0 million per system. This does not include the cost of additional space in a new facility, the cost to renovate or expand an existing facility, the cost to revise the air pollution control train, nor the cost to procure and install heat exchangers and/or boilers to reduced the exhaust gas temperature prior to the activated carbon injection point below 350 deg-F. Taking all of this into consideration, the actual cost for all of the require improvements could be \$8 - 10 million/incinerator or higher.

It should be noted that the \$3.5 - 4 million/incinerator for a carbon injection system, carbon contact chamber and baghouse, or the carbon adsorber as contained in the docket for the proposed SSI rule (document # 2009-0059-0015), does not address the additional costs listed above and need to be updated.

4. Reduction in Carbon Monoxide Emissions

Carbon monoxide emissions can be reduced by utilizing either internal or external afterburners. However, this action, which requires the burning of substantial quantities of fossil fuel, will result in a substantial increase in oxides of nitrogen emissions and greenhouse gas emissions.

While the use of internal afterburners will result in reduced carbon monoxide emissions, most if not all of the POTWs that practice incineration will be required to install external afterburners to meet the potential MACT Standards.

It has been estimated that the cost to procure and install an external afterburning system, along with all appurtenances, engineering services and building space, will be in the range of \$3 - 4 million per unit. This does not include the cost to renovate or expand an existing facility.

5. Reduction in Hydrogen Chloride

At this time, we do not know of any method to reduce hydrogen chloride emissions from sewage sludge incinerators, which are negligible.