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VIA HAND DELIVERY AND ELECTRONIC MAIL

April 16, 2012

Administrator Lisa P. Jackson
U.S. Environmental Protection Agency
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Assistant Administrator Gina McCarthy
U.S. Environmental Protection Agency
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RE: Request for Partial Reconsideration of EPA's *National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units,* 77 Fed. Reg. 9,304 (February 16, 2012) (Docket No. EPA-HQ-OAR-2009-0234)

Dear Administrator Jackson and Assistant Administrator McCarthy:

The Institute of Clean Air Companies ("ICAC") hereby requests that the Environmental Protection Agency ("EPA") reconsider certain Maximum Achievable Control Technology ("MACT") standards for mercury ("Hg") established for new sources in the recently promulgated Mercury and Air Toxics Standards ("MATS") Rule. ICAC is the industry association representing the approximately 100 companies that comprise nearly all the suppliers of air pollution control equipment and systems as well as measurement and detection equipment. ICAC and its member companies have been the leading force in the advancement of air pollution

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control technologies for over 50 years, ensuring that the necessary technology exists to meet or exceed Federal EPA and state regulations.

ICAC supports the EPA's final MACT standards for existing facilities and our member companies stand ready to assist electric generating units ("EGUs") in meeting these standards. After close review of the final MACT standards for new sources, however, ICAC believes that the basis for one of the new source Hg standards[1] is flawed since it fails to address the inability of emission monitoring equipment to continuously monitor extremely low concentrations of Hg in flue gas under a wide range of operating conditions. This makes the equipment unable to provide critical feedback data for operation of the Hg control system.

ICAC member companies have extensively tested all types of commercial and experimental Hg control technologies. This effort has led to the installation of air pollution controls on approximately 65 gigawatts ("GW") of installed coal-fired boiler capacity. Despite this extensive experience, however, ICAC member companies are unaware of data supporting the final Hg limit established for new sources not using low rank virgin coal. Utilizing the appropriate, commercial Hg continuous emissions monitoring systems ("CEMs") and sorbent trap systems with required quality control/quality assurance protocols in place, our member companies cannot ensure that the final new source Hg standard can be achieved in practice. Thus, ICAC member companies are not in a position to offer commercial guarantees to their customers to meet this particular standard. We therefore request that EPA promptly reconsider this new source standard and revise it to a level of 3.0E-3lb/GWh. Such a level can be supported by the available data and can be confidently measured by the systems that are available under EPA's Rule to demonstrate continuous compliance,[2] allowing achievement of these levels using state-of-the-art emission control systems.

I. The New Source Mercury Standard Cannot Be Reliably Measured

The MATS Rule established a Hg standard for new units (utilizing virgin coal that is not low rank coal) of 2.0E-4 lb/GWh. This is an extremely stringent standard, requiring approximately a 99.7% Hg removal efficiency based on the average Hg content of coal. This standard will make it nearly impossible to construct a new coal-fired EGU because financing of such units requires guarantees from equipment suppliers that all emission limits can be met. It also creates two fundamental problems for implementing the standard. First, Hg CEMs (continuous emissions monitors) and sorbent traps are unable to consistently measure emissions at a level that would

[1] Hg standard for "New-Unit not low rank virgin coal." 77 Fed. Reg. at 9,367.

[2] 40 C.F.R. § 63.10021, 77 Fed. Reg. at 9,479-9,481.

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allow an EGU to be confident of continuous compliance with the limit. There is simply insufficient experience with measuring Hg in flue gas at concentrations that are at or below the final standard. The 2.0E-4 lb/GWh standard translates into a flue gas concentration of approximately 0.023 micrograms per square meter ("*ug*/m^3"). This extremely low level is far below the National Institute of Standards and Technology ("NIST") standard of 0.5 *ug*/m^3 which serves as the lowest available NIST calibration point. It is also a level that cannot be maintained in practice, in the real world operating conditions that monitors will experience.

Second, the level of the standard creates problems for day-to-day EGU operations. For example, since sorbent traps require substantial time to take and analyze samples, it would be difficult for an EGU to "make up" any periods where analysis showed levels above the rolling 30-day emission limit. This could realistically result in the need for the facility to limit operations to maintain compliance. Based on past history, it is also clear that facility operators will seek to operate substantially below any limit that applies continuously. Facility operators normally target a level that is approximately 25 to 50% of an emission limit for their control set points in order to create a "margin for error" and to allow for normal fluctuations in emissions. Current monitoring methods cannot continuously and accurately measure such minute concentrations (approximately 0.010 *ug*/m^3) under all operating conditions. Not only are such levels unachievable in practice, they represent levels that are lower than the *uncertainty levels* of both CEMs and sorbent traps.

EPA therefore should revise the new source Hg standard to address the real world constraints of available monitoring equipment. One possible alternative would be to base a revised standard on NIST protocols. As noted above, there is no NIST protocol for traceability of Hg generators below 0.5 *ug*/m^3. If this limitation is translated into an output-based standard, the resulting standard would be at least 4.35E-3 lb/GWh.[3] The experience of ICAC member companies, however, indicates that a more stringent level of 3.0E-3 lb/GWh is supportable. Through extensive testing and field experience with the available monitoring equipment, ICAC believes that a level of 3.0E lb/GWh would yield the necessary level of assurance that plant operators require and that our industry can support through vendor guarantees. This level would also reflect the fact that we would expect facility operators to substantially under run any limitation

[3] A 2.0 E-4lb/GWh standard equates to a flue gas concentration of 0.023 *ug*/m^3. This results in a multiplier of 21.74 when converting the output-based limit to a comparable concentration of Hg in flue gas. Applying the same multiplier with reference to the NIST protocol level of 0.5 *ug*/m^3 yields a level of 4.35-3.lb/GWh standard (0.0002 x 21.74 = 0.00435).

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that applies continuously.[4] It additionally represents, to our knowledge, the lowest level in any EGU permit for a new source based upon a case-by-case MACT analysis.[5]

A. CEMS Cannot Ensure Compliance

It is anticipated that many facilities are likely to use commercially-available CEMs to comply with the MATs Rule. CEMs, however, have not been fully certified at low levels of Hg concentration in flue gas, defined as levels <1.0 *ug*/m^3. And, as noted above, there are substantial questions as to whether CEMs can confidently measure emissions anywhere near the level of the final Hg standard for new sources. Empirical measurements back up our assessment. A 2011 study (attached)[6] tested two CEMs for their ability to replicate sorbent trap measurement of Hg in emissions. The CEMs were tested with respect to combusted natural gas (and natural gas that was "spiked" with Hg to precise concentration levels) and with respect to high sulfur coal (after such coal had been processed through various pollution control devices to contain a mercury concentration of between 0.25 to 1.0 *ug*/m^3). While the study demonstrated that CEMs could operate for 3 months with very little difficulty, several aspects of the study should compel EPA to reconsider the level of its final Hg standard for new sources.

First, the study indicates that the lowest level of Hg flue gas measurement that was achievable with necessary accuracy was far above the level of EPA's final standard. The study used the data collected from various test runs to calculate detection limits for the CEMs. Specifically, the study used the natural gas testing data -- where the amount of introduced Hg was precisely known -- to calculate a method detection limit of 0.01 *ug*/m^3 for one CEM and 0.04 *ug*/m^3 for another CEM. From these measurements, lower limits of quantification ("LLQ") were established for the monitors at 0.1 *ug*/m^3 and 0.4 *ug*/m^3, respectively. Thus, both CEMs had LLQs at least *4 times* the level of final new source Hg standard when utilizing the methodology for LLQs in the study.

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[4].We presume that a regulatory limit of 3.0E-3 lb/GWh would mean that a substantial amount of EGU operators would set controls to a level of approximately 1.5E-3 lb/GWh.

[5] The permitted plant is highly controlled and utilizes activated carbon injection, dry sorbent injection, an electrostatic precipitator, selective catalytic reduction, a wet flue desulfurization unit and a wet electrostatic precipitator.

[6] *Determining The Variability Of Continuous Mercury Monitors (CMMS) At Low Mercury Concentrations*, Final Technical Report, Illinois Clean Coal Institute Project Number 10/6A-1, January 1, 2010, through March 31, 2011. (Attachment A).

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Second, differences in the measurement of Hg occurred between the monitors used in the study when measurements occurred during the test firing of coal. One of the CEMs in the study experienced a deviation of 67% (biased high) from the level of Hg in the flue gas when compared with emissions as measured with a sorbent trap. As noted in the study, "[t]he difference is not a random error but appears to be more systematic in nature, as the CEM results were consistently higher than those measured using the sorbent traps."[7] These results indicate that there is simply not enough data to support EPA's conclusion that "measurement methodologies are sufficient to demonstrate compliance with the standards in the final rule."[8]

Finally, although the study concluded that CEMs are a valid measurement method for Hg, it specifically noted that "this only holds true when the concentration is above the calculated LLQ."[9] In other words, CEMs work well, but at flue gas concentrations from 4 to 16 times the level of the final Hg new source standard. It should also be noted that the sophisticated testing done in the study was accomplished through highly controlled mercury concentrations that ranged between 0.25 to 1.0 *ug*/m^3. These levels are 10 to 40 times the flue gas concentration allowed by the final Hg standard. Again, this demonstrates that EPA's assessment in the final rule regarding the sufficiency of current measurement capabilities was misplaced and that the Agency should take corrective action. Based on the most recent monitoring study of its kind -- a study that was undertaken in cooperation with the U.S. Department of Energy -- EPA should conclude that the final new source Hg standard cannot be reasonably implemented and needs to be revised upward to 3.0E-3 lb/GWh.

B. Sorbent Trap Systems Cannot Ensure Compliance

EPA's final Hg standard for new sources does not dictate the use of any one monitoring system, but rather for coal-fired, Integrated Gasification Combined Cycle and solid oil-derived fuel-fired units, CEMs or sorbent trap monitoring can be used.[10] Despite this flexibility, however, neither CEMs nor sorbent trap systems are able to provide assurance of compliance

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[7] *Id*. at 30.

[8] *EPA's Responses to Public Comments on EPA's National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units*, Volume 1, December 2011 at 621.

[9] *Ibid., Illinois* at 27. As noted previously, the LLQ for the CEMs used were calculated at 0.1 to 0.4 *ug*/m^3 compared with the final Hg standard of 0.023 *ug*/m^3.

[10] 77 Fed. Reg. at 9,370.

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with the extremely low level of the final Hg standard. The reasons are different; but the net result is the same.

With regard to sorbent traps, the mercury loading on a sorbent is proportional to the concentration of absorbent at the inlet of the sorbent bed. But the relative capacity of absorbent can be affected during prolonged operation of the unit in conditions that would be expected for coal-fired EGUs. As noted by the attached draft study,[11] the reduced capacity of traps at low mercury concentrations "may be compounded by prolonged exposure to flue gas . . .The sulfur that forms on the surface of carbon exposed to SO_2 is often in the form of SO_3 and hydrated forms such as sulfuric acid. . . Thus, the acid gases will poison the Hg-bonding sites after prolonged exposure, leading to desorption of oxidized mercury species."[12]

In addition to this operational concern, it is also clear that current methods to assess the relative accuracy and reliability of sorbent traps are not aligned with EPA's final Hg new source standard. Existing quality assurance criteria established for EPA Method 30B and sorbent trap monitoring systems are *above the level* of the final standard (0.03 *ug*/m^3 as compared with the required level of Hg in flue gas of 0.023 *ug*/m^3). Further, relative accuracy test audits (RATA) for sorbent traps provide that results are acceptable if measurements taken by two different traps simultaneously align by no more than $\leq$ 0.2 *ug*/m^3. But this level is close to 10 times the level of the final standard.

When compared to EPA's Method 30B measurements used for RATA, the comparison only worsens. When comparing a Method 30B measurement against a sorbent trap monitoring system, results from the two different measurements are considered to be acceptable if the absolute difference between the two methods is $\leq$ 1.0 *ug*/m^3. But this is a level that is over 50 times the level of the final standard.[13] Again, given the need of facility operators for assurance of compliance, such levels of relative precision cannot be sustained under the 2.0E-4 lb/GWh standard.

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[11] *Mercury Measurement Method Limitations at Low Levels*, ADA Environmental Solutions, Highlands Ranch, Colorado. (Attachment B).

[12] *Id*. at 2.

[13] *Id.* at 5.

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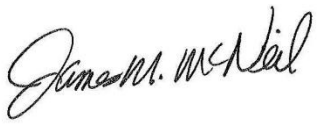
II. Conclusion

EPA has authority under Clean Air Act ("CAA") to reconsider the final Hg standards. Here, there is substantial evidence that one of the Hg limits for new sources is not practicably measurable and thus compliance cannot be reasonably assured. Compliance of new sources with the Hg emission limits in the MATS Rule is obviously of central relevance to the operation of the rule and intrinsic to both the rational implementation of the CAA and compliance with Executive Orders for significant rulemakings.[14] EPA should therefore promptly grant partial reconsideration of the MATS Rule and undertake expedited procedures to finalize a substantially higher level for Hg for new sources of 3.0E-3lb/GWh when utilizing non-low rank virgin coal.

ICAC would welcome any opportunity to discuss this petition and your response.

Sincerely,



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[14] For example, Executive Order 13563 provides that our regulatory system "must promote predictability and reduce uncertainty." It also states that the regulatory system should identify and use the "least burdensome tools for achieving regulatory ends" that are consistent with applicable law.

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cc: Mr. Bill Maxwell, Office of Air Quality Standards and Planning
Mr. Kevin McLean, Office of General Counsel