

## Background

In 1999, the Environmental Protection Agency (EPA) conducted an Information Collection Request (ICR) for mercury data from coal fueled electricity generating units. Subsequently, EPA used the ICR data as the basis for the mercury rule it proposed in December 2003.

In early 2003, the National Mining Association (NMA) presented concerns to EPA about serious deficiencies in the quality and scope of the ICR data, and its suitability for deriving valid mercury emission limits. However, these concerns were not adequately addressed in deriving the MACT (existing unit) and NSPS (new unit) limits included in the proposed rule.

NMA commissioned AEMS, LLC and RWCrawford Energy (collectively, "AEMS"), to review the quality of the ICR data in context to the proposed rule, determine if it was adequately representative of all power plant emissions, and review the methodology EPA used to derive the MACT and NSPS limits. AEMS also was asked to assess the probability that U. S. coals could continue to be used in compliance with EPA proposed MACT and NSPS limits.

## Results

The principal conclusion of this analysis is that EPA failed to consider the full range of uncertainty and variability existing in coals and mercury emissions, and as a result failed to provide a valid scientific basis for the limits included in the proposed rule. This is due largely to the failure of EPA to look beyond the narrow scope of the ICR data, much of which is inaccurate and incomplete, and to account for all sources of variability and uncertainty, of which it was, or reasonably should have been aware. When these factors are accounted for adequately, it is clear that the proposed MACT and NSPS limits are fundamentally flawed, and if implemented, would jeopardize the continued use of a large portion of the U. S. coal supply, even in the best-performing units. Specific conclusions are listed below.

1. The 80 units selected for emission sampling in the ICR program are highly unrepresentative of the 1140 units affected by the proposed rule. Units with relatively uncommon emission control technology are overrepresented. EPA did not account for this in extrapolating from the ICR database to the MACT and NSPS proposals.

2. There are statistical errors and systematic biases in the emission testing, and thus in the emission estimates. The units were tested only for a short period of time, only under high load and only near steady state operations, rather than over the full range of conditions that all units encounter. EPA did not account for this process variability (within a unit or among units) in its analysis.

3. EPA's did not account for fuel variability appropriately. It failed to recognize significant differences within coal ranks. EPA failed to account for the high degree of statistical uncertainty introduced by using mathematical correlations based on coal characteristics to estimate emissions.

4. Other problems with the data include experimental errors exceeding established limits of precision, and systematic errors, such as misidentification of the coal type used in particular ICR tests. Replicate tests done subsequently at some of the ICR units yielded widely divergent results, further illustrating the fragility of the ICR emissions data.

In the AEMS analysis, the MACT floor limits were re-determined following EPA's methodology and using the ICR data (corrected for obvious errors), but accounting for the well-known elements of variability and uncertainty that EPA ignored. The analysis was done for both existing units subject to the MACT limits, and for new units subject to the proposed NSPS limits. The analysis was then used to determine the emission characteristics of the best performing 12% of units, accounting for the bias in the ICR plant selection. The results show that, when uncertainty and variability are appropriately considered, the ICR data cannot be used to justify the MACT floor values proposed.

As a further test of the validity of the proposed rule, the expected emissions from the best-performing units were compared to the proposed MACT floor, to determine what percentage of U. S. coal currently in use would be in jeopardy of non-compliance even in

the best-performing plants (at the 97.5% confidence level that EPA used in its analysis). The results are tabulated below.

Coal Rank	Proposed Standards lb/TBtu	Potentially Non-Compliant Coal
<b>Existing Units (MACT)</b>		
Bituminous	2.0	49%
Subbituminous	5.8	41%
All Lignite	9.2	62%
Fort Union Lignite	9.2	37%
Gulf Coast Lignite	9.2	71%
<b>New Units (NSPS)</b>		
Bituminous	0.63	82%
Subbituminous	2.11	92%
All Lignite	6.5	77%
Fort Union Lignite	6.5	76%
Gulf Coast Lignite	6.5	78%

These results clearly show that the majority of the U. S. coal reserve is jeopardized for use in electricity generation under EPA’s proposed MACT and NSPS limits, even in units using the best performing control technology. By extension, the electricity supplied from U. S. coal-fueled units is similarly jeopardized.

### Impact

A profoundly important conclusion from the AEMS study, corroborating NMA’s early analysis of the ICR data quality, is that the ICR data and the methodology that EPA used are too limited and embody too much uncertainty to develop a legitimate MACT standard without jeopardizing a large percentage of existing and potential new U. S. electricity generation capacity. While it is possible, as was done here, to overcome at least the most significant flaws in EPA’s methodology, it is not possible to reduce the uncertainty in the underlying coal and emissions data to reasonable levels without correcting the lack of adequate, representative data.

### Summary and NMA Position

National Mining Association supports a well-structured national cap and trade program that reduces mercury emissions and that does not result in market advantage or disadvantage to any type of coal. Given the problems identified by the AEMS study, it is NMA’s position that adequate technical data do not exist at this time to provide a sound scientific basis for the allocation of allowances among coal types for the purposes of this rule. EPA should implement a phased approach to the determination of mercury emission allowance allocations with the following milestones:

- 2008-2009 – Require installation and initial testing and operation of mercury emission monitoring equipment on affected units;
- 2009-11 – Collect and analyze monitor data to determine mercury emissions co-benefits achieved by CAIR emission reductions in 2010;
- 2012 – Determine prospective emission allocations by coal type for an interim 2015 emissions cap, based on results of the 2009-11 co-benefits analysis, and an assessment of the commercial availability and performance characteristics of mercury control technologies for different coal types;
- 2015 – Affected plants meet an interim emissions cap determined by EPA in 2012; banking and trading of allowances commences;
- 2018 – Final emissions cap of 15 tons is imposed

### For further information

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