

## CIBO-OMB Meeting

December 18, 2012

2:30 PM EST

### Boiler MACT – Coal and Related Issues

#### COAL ISSUES:

1. HCl standard is too strict and costly. Emission limit for existing sources can be raised (doubled) by applying fuel variability factors (FVF) differently, i.e., do not remove incorrectly considered “outliers” which are real data points for one of the top performers, and use 3 sigma to determine the limit. The resulting higher HCl limit could reduce compliance costs by \$1 Billion due to the ability of existing sources to utilize more cost-effective dry sorbent injection (DSI) control technology.

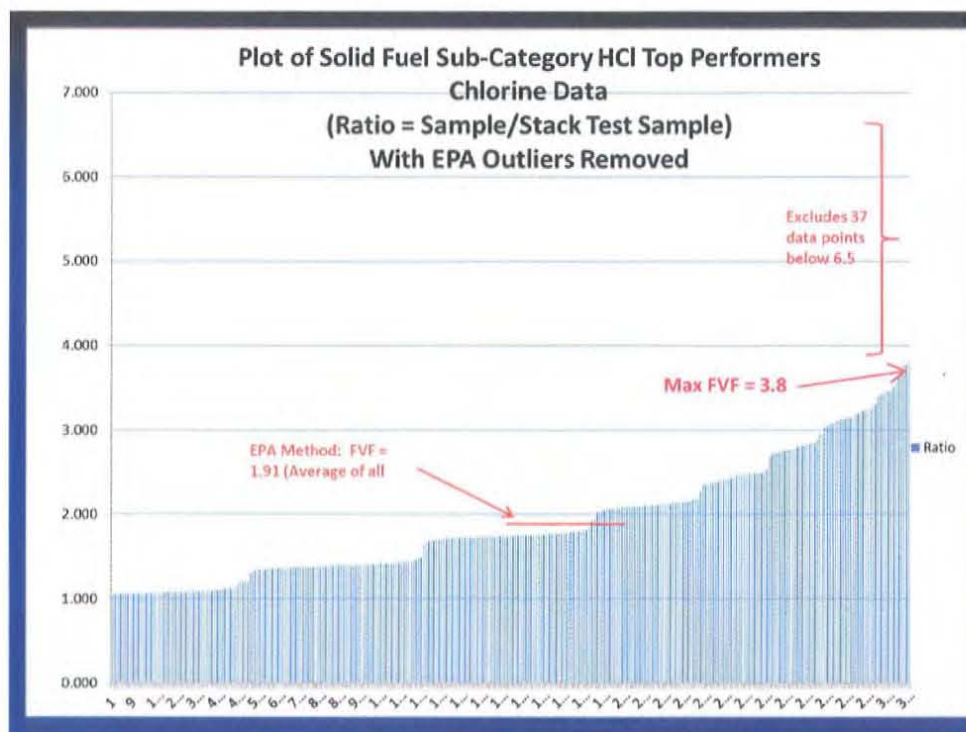
#### Illustrations of the problem:

#### Alternative HCl Control Cost Estimates

HCl Limit	HCl Upgrade Cost	Alternate* HCl Upgrade Cost	Alternate HCl Upgrade Cost with Coal Chloride Cap of 0.12%**
0.022	\$3.1B	\$2.8B	\$2.2B
0.04	\$2.9B	\$1.9B	\$1.9B
0.05	\$2.8B	\$1.8B	\$748M
0.06	\$2.7B	\$912M	\$704M

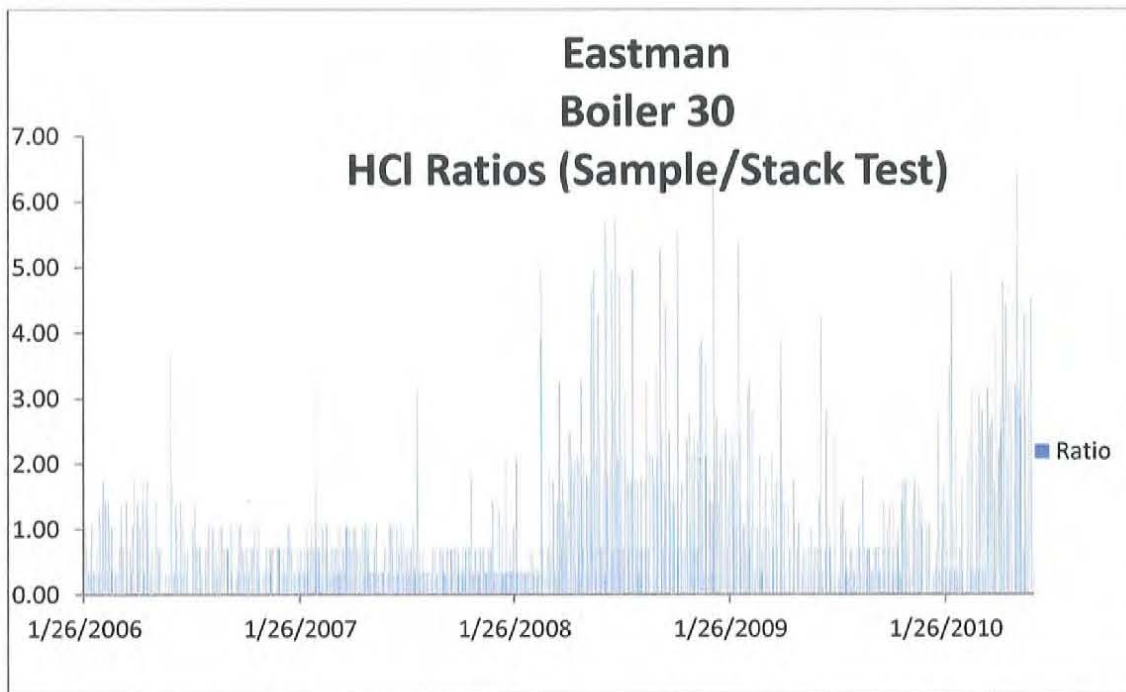
\*Assume sorbent injection if have ESP and need 50% control or have FF and need 80% control.

\*\*0.095 lb/MMBtu HCl

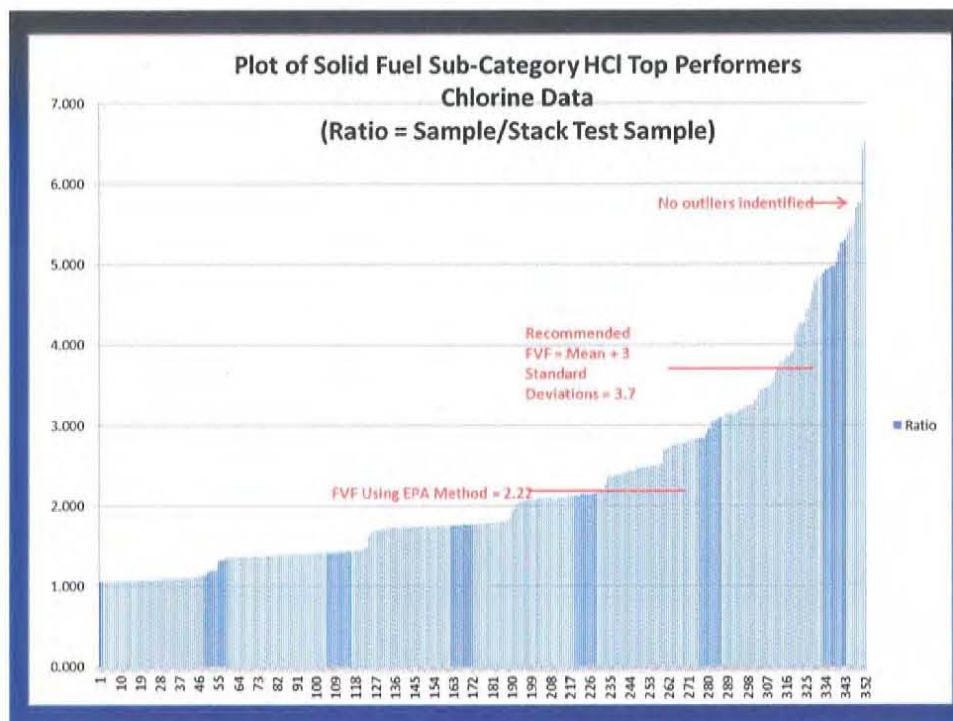


#### Top Performer Maximum Fuel Variability Factors and Number of Analyses

	Count	Max
ARAnthonyForestProductsSN-12	9	2.34
EastmanBoiler 30	1322	3.80
GAGPMadisonPly800 Wood Waste Boiler	12	0.95
IAArchersDanielsMidlandDesMoinesAsea Boiler #1	12	1.03
IARoquetteAmericaCirculating Fluidized Bed Boiler (121)	11	2.03
INAlcoaWarrickUnit #3	21	1.19
MSWeyerhaeuserBruceAA-002 No. 2 Boiler	15	1.41
NDCargillWestFargoFoster Wheeler Boiler (EU43)	9	1.00
SCCogenSouthB001 - Main Boiler	9	1.12
SCMarlboroPaperHogged Fuel Boiler	12	0.92
VASmurfitStoneWestptPB08	25	1.04
VAUniversityofVirginia7103-1-01R	9	0.91
WINewPageBironB24	9	2.14



**CIBO Suggested Method to Determine FVF for HCl, Solid Fuel Boilers:**

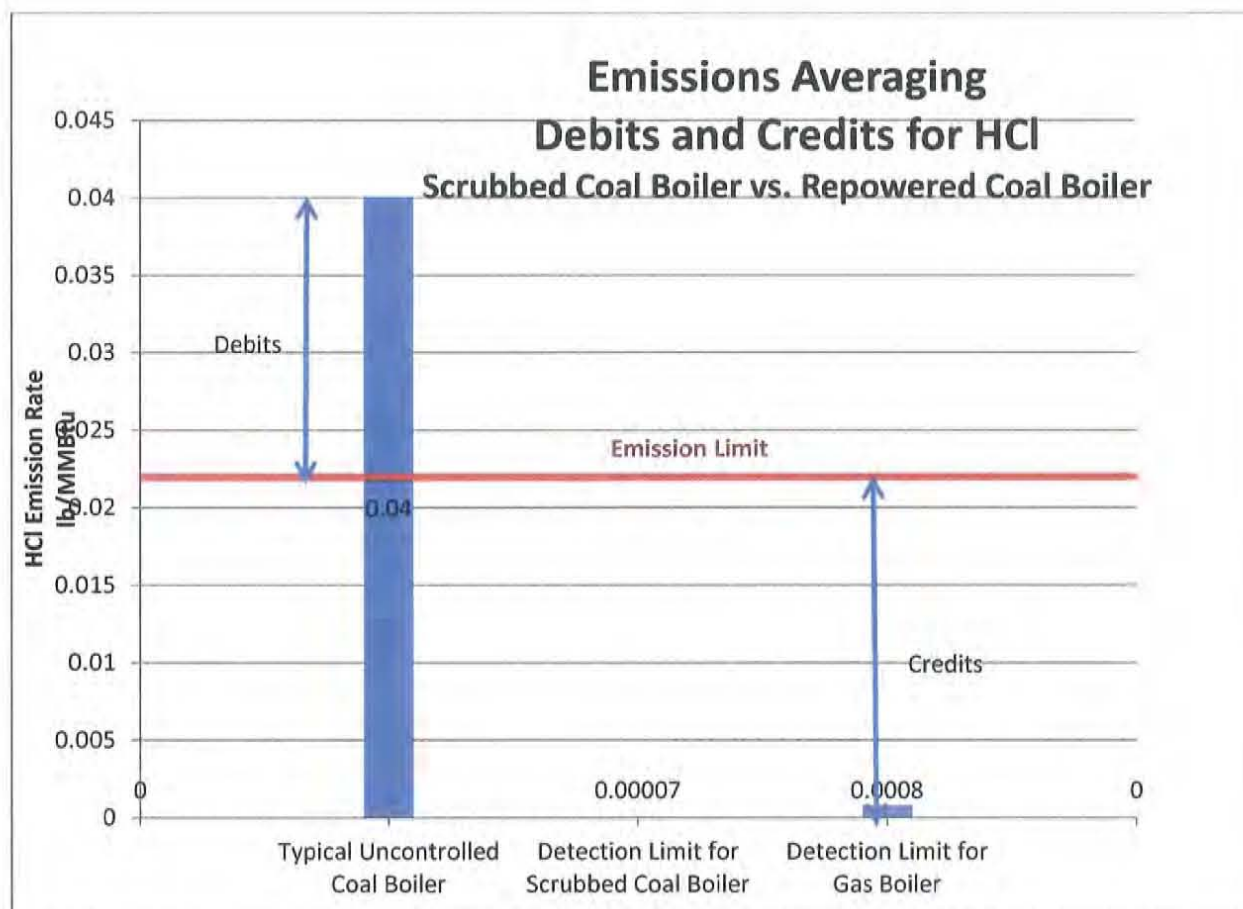


**Conclusion: Use of all legitimate fuel quality data for the top performers and use of 3 sigma to determine FVF (results in FVF similar to maximum FVF for top performers) instead of EPA method using average FVF with “outlier” omission would increase the HCl emission limit for existing solid fuel fired sources and thereby allow many sources to utilize DSI as a more cost effective control and reduce compliance cost by \$1 Billion in capital while still achieving a high percentage reduction of HCl emissions.**

2. **CO numerical standards** are too tight and will cause unnecessary costs. EPA projects only \$65 M in capital costs; CIBO predicts ~\$1 B. A work practice approach similar to utility MATS is appropriate for coal fired units using the EPA pilot study report as technical justification. CO oxidation catalysts will not reduce organic HAPs (emissions are extremely low to begin with), but will increase NO<sub>2</sub> emissions (NO converts partly to NO<sub>2</sub> across the catalyst reactor). **Elimination of the CO limits and use of a work practice could reduce cost of compliance by another \$1 Billion.**

**Secondarily, if CO limits remain in the final rule, strong support for CO limits not lower than 100 ppmvd at 7% O<sub>2</sub>. There is no correlation of organic HAPs with CO at levels less than 100 ppmvd.**

3. Reinforce CIBO's prior arguments to allow converted coal-to-gas boilers to be included in emissions averaging. Scrubbed coal fired boilers will have ND HCl emissions just like a converted boiler. This does not detract from the EPA position to allow a work practice approach for Gas 1 units.
  - Emissions averaging for repowered boilers (e.g., coal units converted to 100% natural gas) could provide cost-effective compliance flexibility and additional emission reductions.
  - Subcategory of a boiler upon the proposed rule publication date (December 23, 2011) should determine its subcategory relative to emissions averaging. For example, a coal fired boiler as of that date that is converted to 100% natural gas firing after that date should be included within the emissions averaging methodology for solid fuel fired boilers.
  - Conversion of a coal fired boiler to natural gas should allow use of 3 x Reference Method detection limit (DL) emission rates to be used for that converted boiler in the emissions average if one-time actual HCl emissions are < DL.
  - A converted boiler would thereafter be treated as a Gas 1 boiler with work practices including required tune-ups, etc.
  - Emissions averaging should be allowed across subcategories-there is precedent in other MACT rules (e.g., Hazardous Organic NESHAP).



4. Compliance time is critical. There are many situations which will require as much time as possible for compliance:
- Many existing coal fired boilers will be converted to natural gas firing or replaced with gas fired boilers. One CIBO member has estimated that it is possible that up to half of the existing coal fired boilers could be converted to natural gas firing or replaced with gas fired boilers. This will put a major strain on equipment suppliers and all associated support entities.
  - Siting and permitting of new gas fired boilers to replace existing coal fired boilers is not as easy as it may seem- some facilities will need to add a gas pipeline hook-up or expand the capacity of an existing pipeline to the facility. Gas transportation/distribution pipeline installations or upgrades typically rely on local gas distribution companies or other entities and could require obtaining right-of-ways or be required to pass other regulatory hurdles.
  - More time will be needed for compliance. Three years could be sufficient in a world with no competition for skilled engineering, materials and construction labor resources.
  - The CAA mandates three years for compliance, but allows EPA the discretion to add a fourth year.
  - Industrial facilities and universities will be in direct competition with electric utilities for limited supply of engineering, fabrication and construction resources.
    - Supply and demand: Prices will rise
    - Some valuable engineering and fabrication work will be off-shored

- Congress never intended to force Industrial facilities and Universities to compete directly with regulated utilities for the same resources.
- **Strong encouragement to states should be provided by EPA to freely grant a one year extension for unavoidable delays. EPA should make it clear (e.g., with preamble language) that the fourth year for compliance should be essentially "automatic" for sources making boiler modifications, installing emissions controls, or switching fuels.**

4a. Effective date of rule should be 60 days after FR publication since it is a major rule (MATS uses the 60 day effective date).

5. Boiler MACT startup/shutdown definition.

- CIBO provided a recommended approach for management of startup and shutdown periods in comments on the Reconsideration Proposed Rule; these were discussed in detail with OAQPS.
- Comments addressed the problem with trying to apply a one-size-fits-all approach to regulated units that are extremely diverse in design and operation.
- Unit-specific startup and shutdown procedures are most appropriate and provide flexibility for sources to practically and safely operate units depending on the unique circumstances of the facility and unit.
  - Procedures are reviewable, approvable, and enforceable.
  - Furthermore, states have much experience in approving and enforcing site specific provisions for startup, shutdown, and malfunction. Most states have been doing this since the 1970's.
- Procedures should be used as a guide for operations to purposefully move through the startup and shutdown process.
  - Each startup and shutdown should be documented relative to elapsed time and timing of actions prescribed in the procedures so problems can be identified and corrected in a timely manner.
  - Deviations from procedures should be reported.
- The startup/shutdown comments and issues are applicable to both BMACT and Area Source units with applicable emission limits.

Implications of Utility MATS Proposed Rule of Nov. 30, 2012 Startup/Shutdown Provisions Relative to Boiler MACT: Startup definition and Table 3 to Part 63 Subpart UUUUU

Startup definition: Startup ends when EGU generates electricity that is sold or used for any other purpose (including on site use), or the EGU makes useful thermal energy (such as heat or steam) for industrial, commercial, heating, or cooling purposes, whichever is earlier.

Table 3: Once you start firing coal, residual oil, or solid oil-derived fuel, you must vent emissions to the main stack(s), and engage all of the applicable control devices except limestone injection in FBC EGUs, dry scrubber, SNCR, and SCR. You must start your limestone injection in FBC EGUs, dry scrubber, SNCR,

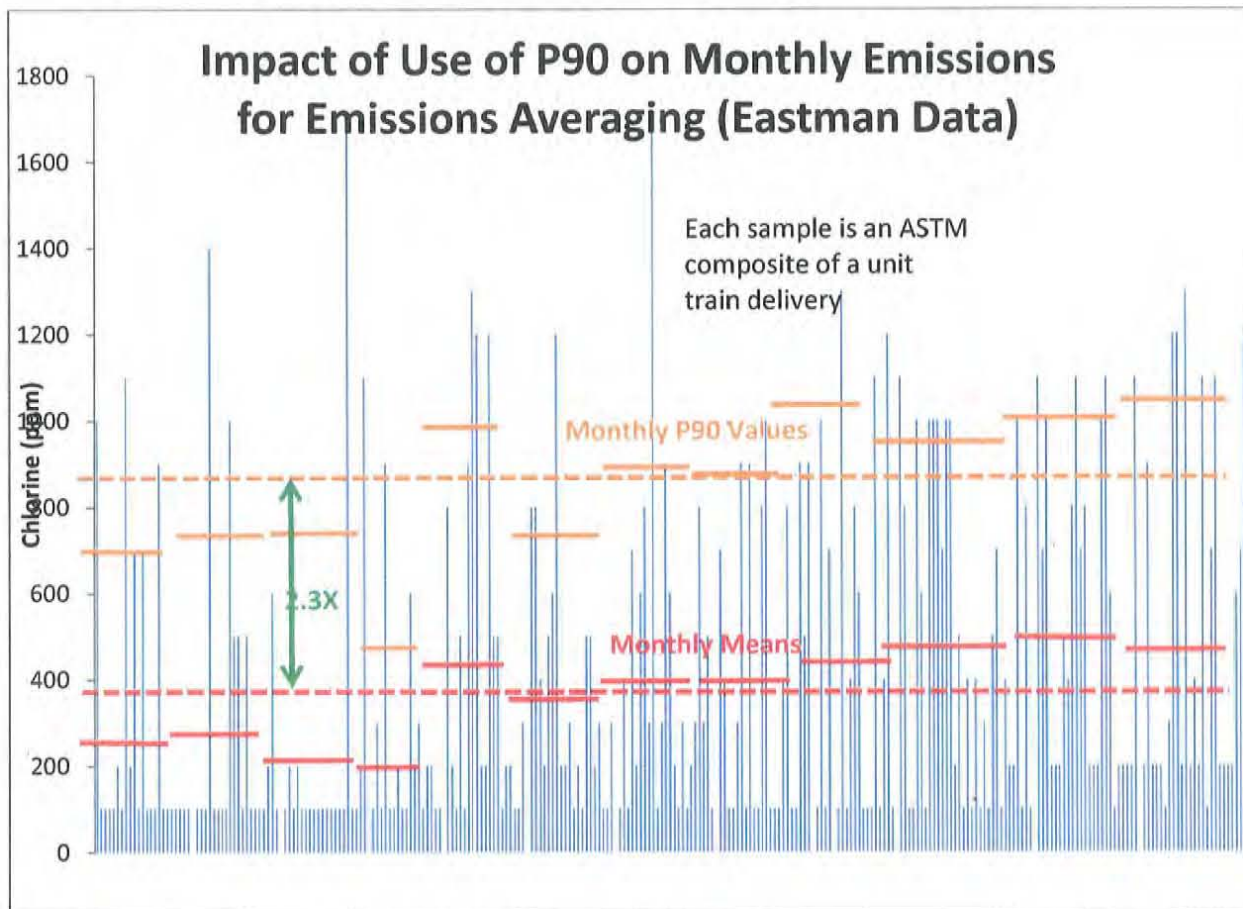
and SCR systems as expeditiously as possible, but in any case, when necessary to comply with other standards applicable to the source that require operation of the control devices.

- Stoker coal-fired boilers that are not equipped with gas or oil burners begin the startup process by distributing a layer of coal on the grate. Then oil-soaked (e.g., diesel/distillate/ULSD fuel oil) absorbent combustible materials, such as rags, mats, or pads, are put on the grate and lit off. As the materials ignite, more coal is spread over the grate. Therefore, if similar wording was used for stoker fired boilers, they would be required to have at least one baghouse module open to the flue gas, resulting in acid condensation, corrosion of the baghouse walls and ducts, and deterioration of the bags. This will result in longer term baghouse failure and loss of bag integrity, with associated PM emissions. The only logical option other than installing gas or oil burners would be to install a sacrificial baghouse module (one or more) that would only be used for startup purposes. This is impractical for many boilers.
  - Initial exit of thermal energy from a boiler or process heater is not a logical end of startup since in most cases combustion and unit operation has not stabilized and temperatures have not equilibrated. If a boiler had full capacity to vent steam up to stable operation, that might provide enough flexibility, but that provision is not always provided and it would result in a cost impact for vented steam. (Process heaters do not have venting capability).
  - If EPA intends to apply the MATS approach to Boiler MACT, that would not be a logical outgrowth of prior rule language for Boiler MACT (or Subpart JJJJJ).
  - **The CIBO recommended unit specific startup and shutdown procedure approach avoids these pitfalls.**
6. Need provision in emissions averaging to use something other than P90 for fuel concentrations when we have a comprehensive sampling program.
- Emissions averaging requires 12 moving totals and requires use of P90 (90<sup>th</sup> percentile) for chlorine and mercury concentrations (see 63.7522(f)). P90 was developed to determine compliance using 3 grab samples per month (see 63.7530(c)). For 12 moving averages, the mean should be used. Example below is where Eastman compositely samples every train-load of coal at the mine loading station. Current provisions increase emissions by 2.3X.
  - We suggest a provision (shown below) to allow the permitting authority to address alternative methods in the emissions averaging plan:

Er = Emission rate (as determined during the most recent compliance demonstration or from continuous emissions monitoring systems) of particulate matter, hydrogen chloride, or mercury from unit, i, in units of pounds per million Btu of heat input. Determine the emission rate for particulate matter, hydrogen chloride, or mercury by performance testing according to Table 5 to this subpart, or by fuel analysis for hydrogen chloride or mercury using the applicable equation in §63.7530(c). **Alternative equations and sampling and analytical plans for determining**



emission rate by fuel analysis may be proposed to and approved by the applicable delegated authority as part of the implementation plan for emissions averaging required in to §63.7522(i).



7. Need PM CEMS to be more like recent MATS proposal and PC MACT.
  - EPA proposal is to require PM CEMS on large coal fired and combination fired boilers burning more than 250 MMBtu/hr coal and use them as parametric monitoring setting the maximum milliamp from the stack test. Some form of certification is required without forcing PS-11. This will severely restrict boiler operation. Our belief is this technology should be field tested on swing loaded industrial boilers before mandating its use. Would like at least consideration of more flexible requirements as in PC MACT and current reconsideration proposal in MATS.

#### RELATED ISSUES:

1. The NHSM Fuel definition must allow for tire-derived fuel, processed construction debris, railroad ties, and other non-hazardous materials with recoverable energy content traditionally used as fuels to continue to be classified as fuels.



2. Need clarity that process gases being burned in combustion units (either for energy recovery or as a result of control requirements under other regulations) are not solid waste.
  - Return of the 2000 CISWI “contained gaseous material” definition would provide regulatory certainty and would be advanced further by including similar wording or references in the final NHSM preamble.
  - Not providing this level of certainty will exacerbate current confusion relative to use of gaseous fuels such as landfill gas. Without the 2000 wording in the final CISWI rule and clear exclusion from NHSM consideration, future increased beneficial use of LFG in boilers and process heaters will cease and continued use of LFG in existing boilers and process heaters will decrease, leading to loss of environmental and economic benefits.