



Representing the Interests of America's Industrial Energy Users since 1978

Industrial and Institutional Boilers after Boiler MACT

for

The National Board
2011 General Meeting
May 9, 2011

What do I Want to Do?

- Ask a few questions
- Set a frame for common understanding
- Provide a short boiler owner summary of the rule
- Offer some thoughts about compliance and the future industrial and institutional boilers
- Talk a little about uncertainty and litigation
- And end with an old Greek saying and a question



A Few Questions

- How many of you would sell a product if it cost more to make than that for which it can be sold?
- Should you make a Profit? Yes? No?
- Do shareholders, investors and banks deserve a return on their investments?
- Should you have to buy something if there is no guarantee it will do what you need it to do?


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A Common Understanding

- You have to make a profit to grow a product or business in the long term or at least cover your costs to survive in the short term.
- If that cannot be accomplished, the product line or business will die.


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Short MACT Summary

- The Final Rules are better than the Proposed Rules – However, major items have been left unchanged or made worse.
- There is good and bad news relative to compliance and achievability.
- The Good
 - EPA kept the Gas I Work Practice Standards,
 - Allowed a test to move Gas II to Gas I and
 - Included a Limited Use Subcategory


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Short MACT Summary

- The Bad (some)
 - New Unit standards, other than Gas I, are not achievable.
 - Standards For Dioxin are not achievable.
 - The Contained Gaseous Materials definition will shift units to CISWI or increase Flaring of the gases.
 - PM Standard for solid fuel was reduced by almost 80%.
 - Definitions of Energy Assessment and Energy Use Systems and Energy Audit requirements are questionable.
 - CO limits for select biomass boilers are not achievable.
 - PM and O2 requirements including CEMS are impractical.
 - There was no Health Based Emission Limit


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Compliance

- **Boiler owners' must comply with all aspects of the rule.**
- **Simultaneously!**

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Boilers and Process Heaters at Major Sources (i.e., Boiler MACT)

- A major source is a facility that emits or has the potential to emit 10 or more tons per year (tpy) of any single HAP or 25 tpy or more of any HAP combination.
- Expected to apply to about 13,800 boilers located at 1,600 facilities, primarily larger industrial sources such as refineries, chemical and manufacturing plants, pulp and paper mills
 - Also includes boilers at some larger institutional facilities, such as military bases, municipal boilers, and universities
- More than 80% of large boilers are gas-fired.
- Standards vary for existing units vs. new units

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Boiler MACT – 15 Final Subcategories

- Solid fuel
- Pulverized coal
- Coal-fired stokers
- Coal-fired FBC
- Biomass-fired stokers
- Biomass-fired FBC
- Biomass-fired DO/SB
- Biomass-fired fuel cells
- Biomass-fired hybrid
- Liquid fuel-fired units
- Liquid fuel-fired non-continental
- Gas 1 (Natural/refinery)
- Gas 2 (other gases)
- Natural Gas Metal proc.
- Limited Use

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Boiler MACT: Compliance Requirements

- **Existing large boilers** (≥ 10 mm/BTU)
 - **Clean gas** (*natural gas, refinery gas, or process gas like natural gas*)
 - Annual tune-up
 - No numeric emission limits
 - 1-time energy assessment
 - **Solid fuel (coal or biomass), Oil, Process gas that is not "clean" gas**
 - Numeric emission limits for 5 pollutants
mercury, dioxin, particulate matter (PM), hydrogen chloride (HCl), carbon monoxide (CO)
 - 1-time energy assessment
 - **Limited Use**
 - Tune-up every other year
 - 1-time energy assessment
 - No numeric emission limits

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Boiler MACT: Compliance Requirements

- **New large boilers** (≥ 10 mm/BTU)
 - **Clean gas** (*natural gas, refinery gas, or process gas as clean as natural gas*)
 - Annual tune-up
 - No numeric emission limits
 - **Solid fuel** (coal or biomass), **Oil**, **Process gas that is not "clean" gas**
 - Numeric emission limits for 5 pollutants
mercury, dioxin, particulate matter (PM), hydrogen chloride (HCl), carbon monoxide (CO)
 - **Limited Use**
 - Tune-up every other year
 - No numeric emission limits

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Boiler MACT: Compliance Requirements

- **Existing small boilers** (< 10 mm/BTU)
 - **Gas, solid fuel, oil, or limited use**
 - Tune-up every other year
 - 1-time energy assessment
 - No numeric emission limits
 - **New small boilers** (< 10 mm/BTU)
 - **Gas, solid fuel, oil, or limited use**
 - Tune-up every other year
 - No numeric emission limits

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Existing Unit Compliance with Final Standards

Existing Solid or Liquid Units Of 1594 total units, 31 units comply without incurring costs.			
Category	Of 31 Units, Number that Comply without Incurring Costs	Total Units	Percentage of Total Units that Comply without Incurring Costs
Biomass	26	466	5.58%
Coal	2	544	0.37%
Process Gas	2	71	4.93%
Liquid	1	513	0.19%

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Compliance

- Time line for decision making
 - 3/11 – 7/11 Data Collection & Alternatives Consideration
 - 6/11 – 1/12 Alternatives Evaluations
 - 12/11 – 5/12 Compliance Option Selection
 - 3/12 – 8/12 Detailed Engineering / Go-No Go decision
 - 8/12 – 1/13 Permitting & Regulatory Negotiations
 - 8/12 – 6/13 Equipment Purchase & Final Engineering
 - 4/13 – 1/14 Construction & Installation
 - 1/14 – 3/14 Start-up
 - 3/14 – 9/14 Compliance Testing

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Boilers at Area Sources (i.e., Area Source Rule)


- An area source facility emits or has potential to emit less than 10 tons per year (tpy) of any single HAP and less than 25 tpy of any HAP combination.
- Expected to apply to about 183,000 boilers located primarily at commercial facilities (e.g., hotels, office buildings, restaurants) and institutional facilities (e.g., schools, hospitals, prisons)
- Rule does NOT apply to boilers that are gas-fired (approximately 1.3 million units).
- About 3,700 (or 2%) of area source boilers are coal-fired.
- About 11,000 (or 6%) of area source boilers are biomass-fired.
- About 168,000 (or 92%) of area source boilers are oil-fired.
- Standards vary slightly for existing units vs. new units

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Boiler Area Source Rule: Compliance Requirements

- **Existing large boilers** (≥ 10 mm/BTU)
 - **Coal**
 - Numeric emission limits for 2 pollutants
mercury, carbon monoxide (CO)
 - 1-time energy assessment
 - **Biomass, Oil**
 - Tune-up every other year
 - 1-time energy assessment
- **Existing small boilers** (< 10 mm/BTU)
 - **Coal, Biomass, Oil**
 - Tune-up every other year


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Boiler Area Source Rule: Compliance Requirements

- **New large boilers** (≥ 10 mm/BTU)
 - **Coal**
 - Numeric emission limits for 3 pollutants
mercury, carbon monoxide (CO), particulate matter (PM)
 - **Biomass, Oil**
 - Numeric emission limit for 1 pollutant
particulate matter (PM)
 - Tune-up every other year
- **New small boilers** (< 10 mm/BTU)
 - **Coal, Biomass, Oil**
 - Tune-up every other year

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Boiler MACT – Rule Requirements

- **WORK PRACTICE STANDARDS**

If your unit is . . .	You must meet the following . . .
1. A new or existing boiler or process heater with heat input capacity of less than 10 million Btu per hour or a limited use boiler or process heater.	Conduct a tune-up of the boiler or process heater biennially as specified in § 63.7540.
2. A new or existing boiler or process heater in either the Gas 1 or Metal Process Furnace subcategory with heat input capacity of 10 million Btu per hour or greater.	Conduct a tune-up of the boiler or process heater annually as specified in § 63.7540.
3. An existing boiler or process heater located at a major source facility	Must have a one-time energy assessment performed on the major source facility by qualified energy assessor . An energy assessment completed on or after January 1, 2008, that meets or is amended to meet the energy assessment requirements in this table, satisfies the energy assessment requirement. The energy assessment must include: a. Visual inspection; b. Evaluation of operating characteristics; c. Inventory of major energy consuming systems ; d. Review facility operations; e. Review energy management practices ; f. List major energy conservation measures; g. List energy savings conservation measures; and, h. Provide a comprehensive report detailing efficiency and cost improvements, benefits, and payback.

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Thoughts on the ICI Boiler Future

- Questions:
 - Why Steam??
 - How many new solid fuel ICI boilers will there be?
 - Is the existing unit population the end?

- The Existing Population::
 - 1594 total units minus 31 that can comply without doing anything equals 1563 units having to spend \$\$ to comply.
 - Will they, can they spend the dollars?

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Uncertainty and Litigation

- If it can happen it will happen.
- Will NRDC and NACAA or their Friends challenge the Work Practice Standards?
- Request for Administrative Reconsideration?
- Request for a Stay of the Rules Administrative and judicial?
- Petitions to the courts?
- Past experience with Boiler MACT I
- What will the Owners do – Newer and Older units?
- Where is the economy going?

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The Fox and The Hedgehog

Archilochus (c. 680 BC – c. 645 BC)

“The Fox knows many things; but the Hedgehog knows but one great thing.”

Who is Fox or Hedgehog?

We will know more on May 21, 2011 following the deadline for filing with EPA and the courts.

Emission limits for Major Source Boilers

Subcategory	Proposed limits, lb/MMBtu unless noted					Final limits, lb/MMBtu unless noted				
	Hg, lb/TBtu	HCl	PM	CO, ppm	D/F, ng/dscm	Hg, lb/TBtu	HCl	PM	CO, ppm	D/F, ng/dscm
New coal stoker	2.0	0.00006	0.001	7	0.003	3.5	0.0022	0.0011	6	0.003
New coal fluid. bed				30	0.00003	Solid fuel subcat.	Solid fuel subcat.	Solid fuel subcat.	18	0.002
New coal PC				90	0.002				12	0.003
New biomass stoker	0.2	0.004	0.008	560	0.00005				160	0.005
New biomass fuel cell				270	0.0005				470	0.003
New biomass fluid. bed				40	0.007				260	0.02
New biomass dutch oven				1,010	0.03				470	0.2
New biomass susp./grate	--	--	--	--	--				1,500	0.2
New liquid	0.3	0.0004	0.002	1	0.002				0.21	0.00033
New gas 2	0.2	0.000003	0.003	1	0.009	7.9	0.0017	0.0067	3	0.08
New non-cont. liquid	--	--	--	--	--	0.78	0.00033	0.0013	51	0.002
Exist. coal stoker	3.0	0.02	0.02	50	0.003	Solid fuel subcat.	Solid fuel subcat.	Solid fuel subcat.	270	0.003
Exist. coal fluid. Bed				30	0.002				82	0.002
Exist. coal PC				90	0.004				160	0.004
Exist. biomass stoker	0.9	0.006	0.02	560	0.004				490	0.005
Exist. biomass fuel cell				270	0.02				690	4
Exist. biomass fluid. bed				250	0.02				430	0.02
Exist. biomass dutch oven				1,010	0.03				470	0.2
Exist. biomass sus./grate	--	--	--	--	--				3,500	0.2
Exist. liquid	4.0	0.0009	0.004	1	0.002	3.4	0.00033	0.0075	10	4
Exist. gas 2	0.2	0.000003	0.05	1	0.009	13	0.0017	0.043	9.0	0.08
Exist. non-cont. liquid	--	--	--	--	--	0.78	0.00033	0.0075	160	4

New and existing small (<10 MMBtu/hr) units, natural gas-fired units, metal process furnaces, units combusting other clean gases, and limited use units will be subject to work practice standards.



Emission Limits for Area Source Boilers

Subcategory	Proposed Emission Limits			Final Emission Limits		
	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu
New Coal	3.0	310	0.03	4.8	400	0.03 (> 30 MMBtu/h) 0.42 (10 to 30 MMBtu/h)
New Biomass	-	100	0.03	-	-	0.03 (> 30 MMBtu/h) 0.07 (10 to 30 MMBtu/h)
New Oil	-	1	0.03	-	-	0.03
Existing Coal	3.0	310	-	4.8	400	-
Existing Biomass	-	160	-	-	-	-
Existing Oil	-	2	-	-	-	-

New and existing small (<10 MMBtu/hr) boiler, existing and new biomass-fired boilers, and new and existing oil-fired boilers are subject to a biennial tune-up requirement.