

INDUSTRIAL BOILER MACT GUIDELINES

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Discussion Topics

- ICI Boiler MACT:
 - What is it?
 - What units are affected?
 - What units are not affected?
 - Definitions
 - Emission limits
 - Implementation schedule
- Implications for the Forest Industry
- What's next?
- Comments and Questions

What is MACT?

- National Emission Standard for Hazardous Air Pollutants (HAPs) for Industrial, Commercial and Institutional Boilers and Process Heaters (ICI Boiler MACT)
- For existing sources, represents the average emission limitation achieved by the best performing 12 percent
- For new sources, the limit represents that achieved by the best-controlled similar source

Achieved by:

- Reducing value, or eliminating emissions of HAPs
- Enclosing systems or processes to eliminate emissions of HAPs
- Collecting, capturing, or treating emissions of HAPs
- Work practice standards
- A combination of the above



Industrial Boiler MACT

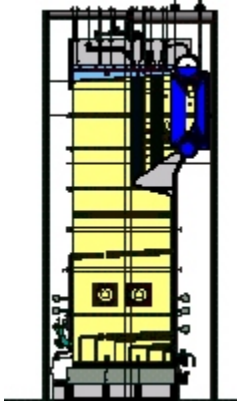
- Category standard required by §112(d) of the Clean Air Act
- Proposed in January 2003
- Signed by EPA Administrator in February 2004
- Published as final rule in Federal Register on September 13, 2004.
- The effective date of the regulation was November 12, 2004.
- An existing boiler or process heater to be in compliance with ICI Boiler MACT, except for compliance demonstration by September 13, 2007. Existing boilers to be in compliance demonstration 180 days after that date.

Applicability includes all industrial boilers and furnaces, regardless of fuel(s) fired.

- University of affected units: ~42,000 boilers and ~15,000 process heaters.
- EPA has developed categories and subcategories by size, utilization and fuel combusted, so NOT all boilers are required to achieve emissions reductions.
- Applies to sources with the potential to emit >10 tons/yr of a single HAP or 25 tons/yr of aggregate HAPS.

MACT Applicability

- Existing boilers
 - Solid fuel fired
 - Liquid fuel fired
 - Gaseous fuel fired
- Each category is broken down into:
 - Large boilers (heat input >10 MMBtu/hr)
 - Small boilers (heat input <10 MMBtu/hr, and all firetube boilers)
 - Limited use boilers (large units with federally enforceable capacity factor limitation of less than 10%)
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Which Boilers are Affected?

When MACT was proposed, it was clear that the US-EPA was focusing on solid-fuel fired boilers

Existing gas and oil fired boilers have notification requirements, but no emission fits under ICI MACT

Definitions

- New Units: Commenced construction or reconstruction (relocated unit) on or after January 13, 2003.
- Existing Units: Commenced construction before January 13, 2003.
- Small Units: Any firetube boiler (regardless of size) and any other boiler or process heater <10 MMBtu/hr heat input
- Large Units: Any watertube boiler or process heater >10 MMBtu/hr heat input

Regulated Pollutants

- Particulate Matter (PM) (as a surrogate for "HAP" metals - arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium)
- Hydrogen Chloride (HCl) (as a surrogate for inorganic HAPs)
- Mercury (Hg)
- Carbon Monoxide (CO) (for new or reconstructed boilers/furnaces only)

Emission Limits

| Fuel Type | Existing Units | New Units |
|-----------|-----------------------------|-----------------------------|
| Solid | | |
| -PM | 0.07 lb/MMBtu | 0.025 lb/MMBtu |
| -HCL | 0.09 lb/MMBtu | 0.020 lb/MMBtu |
| -Hg | 9x10 ⁻⁶ lb/MMBtu | 3x10 ⁻⁶ lb/MMBtu |
| -CO | None | 400 ppm - 7% O ₂ |
| Liquid | | |
| -PM | None | 0.03 lb/MMBtu |
| -HCL | None | 0.0005 lb/MMBtu |
| -CO | None | 400 ppm - 3% O ₂ |
| Gas | None | 400 ppm - 3% O ₂ |

Compliance Flexibility

ICI Boiler MACT is flexible relative to how a facility may choose to comply. Compliance can be demonstrated by using any of the following for existing boilers and process heaters:

- Fuel analysis (every 5 years)
- Performance testing
- Emissions averaging
- Health-based alternatives for Hcl and/or TSM
- Fuel switching
- Air pollution control equipment upgrades
- Any combination of the above



Fuel Analysis

| Fuel Type | Wood |
|--------------------------------------|--------|
| Ultimate Analysis (% by weight): | |
| Carbon | 27.65 |
| Hydrogen | 2.75 |
| Oxygen | 18.65 |
| Nitrogen | 0.15 |
| Chlorine | 0.02 |
| Sulfur | 0.05 |
| Ash | 0.73 |
| Moisture | 50.00 |
| Total | 100.00 |
| Higher Heating Value - HHV (Btu/lb): | |
| | 4500 |

Compliance Monitoring

- New boilers and process heaters ≥ 100 MMBtu/hr input must continuously monitor CO and O₂ on a 30 day rolling average.
- New boiler <100 MMBtu/hr only have to demonstrate CO compliance during initial performance test.
- Existing boilers are not required to continuously monitor or test for CO emissions.
- New and existing units (without wet scrubbers) must comply with PM or TSM and mercury limits must continuously monitor opacity.
- New and existing units that have operating limits must monitor certain parameters including T/R voltage, water pH, liquid flow rate, urea flow rate, etc.

Record Keeping

The final rule requires that facilities keep certain records for 5 years, including at least 2 years on site following the date of each occurrence.

- Operating records
- Copies of site plans
- Copies of all performance tests results, fuel analyses and continuous compliance data
- Records of non-compliance
- All reports and notifications submitted to comply with the Final Rule.

Boiler MACT was Proposed—Now What?

Process began with a series of questions:

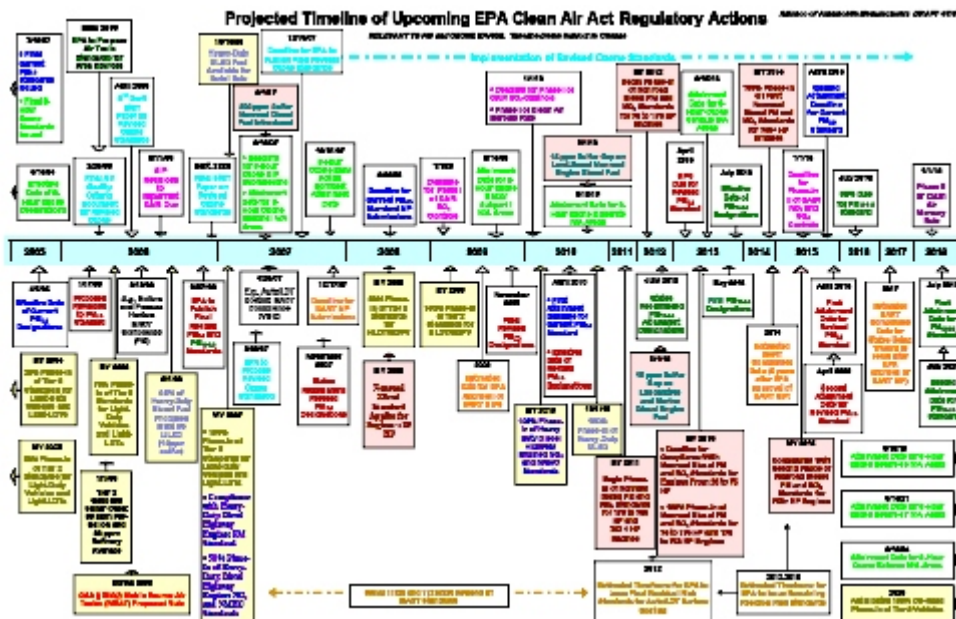
- Which boilers are affected?
- What pollutants are regulated?
- What monitoring/testing is required?
- Where do we stand right now?
- What comments must be made to ensure we have a voice in the process?

Hybrid Boiler Applicability?

- Seeking clarification of MACT
- Firetube boilers are classified as small units regardless of size
- Hybrid boilers are not covered by the rule
- Seeking to define existing hybrid boilers as firetube boilers

What's Next?

Is Boiler MACT the End? The EPA time table on the following page suggests not.



Recommendations

- Do a detailed analysis of your facility to determine the least cost option.
- Pay attention to the time requirements for compliance.
- If you need help, there are competent and experienced firms out there. Get it!

Closing Thoughts

- When budgeting for future fiscal years, don't forget to increase \$\$ allocated for emissions testing:
 - MACT requires initial annual testing for 3 years followed by one test every 3 years unless using fuel analysis as the compliance demonstration method.
- The clock is ticking!
 - September 13, 2007