Industrial Boiler and Process Heater MACT

McIlvaine Hot Topic Hour
November 18, 2010

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Troutman Sanders LLP
What is a “MACT”? 

• “Maximum Achievable Control Technology”
• Describes the level of control adopted to implement a National Emissions Standard for Hazardous Air Pollutants (NESHAP)
• Section 112 of the Clean Air Act (Title III) establishes the MACT program, and includes:
  – a list of ~189 hazardous air pollutants (HAPs),
  – requirement that EPA prepare a list of HAP source categories and adopt a MACT for each source category
  – case-by-case MACT requirements
What is a MACT?

MACT is:
• “the maximum degree of reduction in [HAPs],” …
• “taking into consideration
  – the cost of achieving such emission reduction,
  – any non-air quality health and environmental impacts and energy requirements,”
• that the Administrator “determines is achievable …”

The MACT “floor” is deemed achievable:
EXISTING: “the average emission limitation achieved by the best performing 12 percent of existing sources”
NEW: the emission limit achieved by the best controlled “similar” source
Historical Perspective

- EPA adopted Subpart DDDDD in 2005, along with a rule to separate industrial boilers from waste incinerators (CISWI definitions rule)
- Divided industrial boilers from CISWIs based on energy recovery
- D.C. Circuit vacated both rules in June 2007
- The Court held that any facility combusting “any solid waste” at all must be regulated as an incinerator (under Section 129) instead of a HAP source (under Section 112)
## Historical Perspective

<table>
<thead>
<tr>
<th>Subpart DDDDD</th>
<th>New</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>400 ppm (~0.45)</td>
<td>None</td>
</tr>
<tr>
<td>Particulate Matter (PM)</td>
<td>0.025</td>
<td>0.07</td>
</tr>
<tr>
<td>Hydrogen Chloride (HCl)</td>
<td>0.02</td>
<td>0.09</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>3.0e-6</td>
<td>None</td>
</tr>
<tr>
<td>Dioxins/Furans (D/F)</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Limits in lb/mmBtu, unless noted otherwise

Biomass Emission limits only
Current Proposal

- Published June 4, 2010 (75 Fed. Reg. 32006)
- Applies to 13,500 units (~ 11,500 natural gas)
- Subcategorized stokers and fluidized beds
- Increased stringency and addition of new limits not found in the previous MACT rule
- Final rule promised by December 2010, but EPA has delayed release of the final rule until January 2011
- Requires compliance by all new sources upon startup and by all existing sources within 3 years of final rule
## Current Proposal

<table>
<thead>
<tr>
<th>Subpart DDDDD</th>
<th>New</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>560 / 40 ppm</td>
<td>560 / 250 ppm</td>
</tr>
<tr>
<td>Particulate Matter (PM)</td>
<td>0.008</td>
<td>0.02</td>
</tr>
<tr>
<td>Hydrogen Chloride (HCl)</td>
<td>0.004</td>
<td>0.006</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>9.0e-7</td>
<td>2.0e-7</td>
</tr>
<tr>
<td>Dioxins/Furans (D/F)</td>
<td>0.00005 / 0.007 ng/m³</td>
<td>0.004 / 0.02 ng/m³</td>
</tr>
</tbody>
</table>

Biomass emissions only, multiple limits listed for Stoker / Fluidized Bed

Limits in lb/mmBtu, unless noted otherwise
Increased Stringency for Biomass

**Carbon Monoxide:**
- *less* stringent for new stokers (400 → 560 ppm)
- *more* stringent for new FBs (400 → 40 ppm)
- *more* stringent – establishes new limit for existing units

**Particulate Matter:**
- *more* stringent for new units (0.025 → 0.008)
- *more* stringent for existing units (0.07 → 0.02)

**Hydrogen Chloride:**
- *more* stringent – order of magnitude lower for both new units (0.02 → 0.004) and existing units (0.09 → 0.006)

**Mercury:**
- *more* stringent – order of magnitude lower for new units (3.0e-6 → 9.0e-7) and establishes new limit for existing units

**Dioxins & Furans:**
- *more* stringent – establishes a new limit for new and existing sources
**Increased Stringency for Biomass**

Available Controls:

*Carbon Monoxide*: good combustion, CO catalyst, CO CEMS

*Particulate Matter*: baghouse, scrubber, wet ESP, PM CEMS

*Hydrogen Chloride*: scrubber, sorbent injection

*Mercury*: activated carbon injection, baghouse, scrubber

*Dioxins & Furans*: ?

Sources must do whatever necessary to comply, just installing additional controls will not suffice!
Potential Problems

• “best performing 12 percent [or] best performing 5 sources [in] categories with fewer than 30 sources”
• Appropriate surrogates? (e.g., CO for organic HAPs?)
• Startup, shutdown, malfunction emissions
• “Franken-plant” phenomenon
In addition to the MACT proposal, EPA issued three other related rules:

1. Area Source Industrial Boiler MACT
2. CISWI MACT Proposal
3. “Solid Waste” Definition
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