Gas-Fired Boilers under EPA’s Boiler MACT

What Do I Need to Know About the Rules for Gas-Fired Units Now that Reconsideration Is Complete?

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Darrin Gambelin
Katten Muchin Rosenman LLP
Timeline

- March 2011 – Final Boiler MACT.
- December 2011 – Proposed action on reconsideration.
- February 2012 – Comments due on proposed reconsideration.
- January 2013 – Final action on reconsideration.
Area Source Requirements

Gas-fired boilers at area sources remain excluded from the rule. 40 C.F.R. 63.11195.

- How much liquid back-up fuel is allowed to remain a “gas-fired boiler”?
  - Use of liquid fuels must be limited to periods of:
    - Testing, not to exceed 48hrs per year;
    - Gas supply curtailment and interruption (unlimited);
    - Startups.

40 C.F.R. 63.11237.
Major Sources – Compliance Dates

Revised Compliance Dates for New and Existing Units:

• New or reconstructed boiler or process heater, January 31, 2013, or upon startup of your boiler or process heater, whichever is later.

• Existing boiler or process heater, January 31, 2016, unless you get an extension.

40 C.F.R. 63.7495.
Gas-Fired Units at Major Sources

- Although Gas 1 Boilers are not subject to numerical emission limits, they must meet work practice standards. 40 C.F.R. 63.7500.

- What is Gas 1?
  - Natural gas,
  - Refinery gas,
  - “Other” similar gases, i.e. landfill gas.

- Gas 2 boilers must meet numerical emission limits and work practice standards. 40 C.F.R. 63.7500.
Gas-Fired Units at Major Sources

- Other gases can be Gas 1 if they do not exceed 40 µg/m³ mercury 40 C.F.R. 63.7575 (definition of “other gas 1 fuel”).

- Operator performs initial fuel analyses to demonstrate mercury fuel specification met. 40 C.F.R. 63.7530(g).
  - Initial concentration < 50% of spec → no further testing.
  - Initial concentration ≥ 50% and < 75% of spec → semi-annual testing.
    - 6 consecutive semi-annual samples < 50% → no further testing.
  - Initial concentration ≥ 75% and < 100% of spec → monthly testing.
    - 12 monthly samples < 75%, step down to semi-annual sampling.
  - Initial concentration > spec, must collect 12 monthly samples < spec to be eligible for sampling.
  - 40 C.F.R. 63.7540(c).
Other Major Source Exclusions

• Certain hot water heaters not subject to the rule. 40 C.F.R. 63.7491.
  – 120 gallon capacity, or
  – Less than 1.6 Mmbtu/hr.

• Liquid back-up fuels for gas-fired boilers allowed. 40 C.F.R. 63.7575.
  – Testing not to exceed 48 hours,
  – Unlimited use for startup and gas curtailment or interruption.
Major Sources – Work Practice Standards

• **Tune-ups** 40 C.F.R. 63.7540
  - Include a burner, flame pattern, and air-to-fuel ratio inspections, measurement of O₂ and CO, optimization of CO emissions, and report preparation.
  - **Frequency**
    - ≤ 5 MMBtu/hr – Every five years
    - > 5 MMBtu/hr but < 10 MMBtu/hr – Biennial
    - ≥ 10 MMBtu/hr – Annual
  - **Initial Tune-up**
    - Existing Units by January 31, 2016
    - New Units – one, two, or five years after start-up.
Energy Assessment Table 3 to Subpart DDDDD

- Existing units must complete a one-time Energy Assessment by January 31, 2016. Not required for new units.

- Elements of the Energy Assessment Include:
  - a visual inspection and evaluation of operating characteristics of the boilers,
  - an inventory of the major energy use systems,
  - a review of the energy management practices,
  - a list of cost-effective energy conservation measures,
  - Comprehensive report detailing ways to improve energy efficiency.

- No requirement to implement.
## Major Sources – Energy Assessment

<table>
<thead>
<tr>
<th>Boilers &amp; Process Heaters Combined Heat Input</th>
<th>On-Site Technical Labor Hours</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.3 TBtu/yr.</td>
<td>8 on-site technical labor hours.</td>
<td>Boiler system(s) and any on-site energy use system(s) accounting for at least 50% of affected boiler(s) energy (e.g., steam, hot water, process heat, or electricity) production evaluated to identify energy savings opportunities, within on-site labor time limit.</td>
</tr>
<tr>
<td>0.3 to 1.0 TBtu/yr.</td>
<td>24 on-site technical labor hours.</td>
<td>Same as above except account for at least 33%.</td>
</tr>
<tr>
<td>Greater than 1.0 TBtu/yr.</td>
<td>24 on-site technical labor hours for first TBtu/yr -- +8 on-site technical labor hours for each additional 1.0 TBtu/yr -- up to 160 hours.</td>
<td>Same as above except account for at least 20%.</td>
</tr>
</tbody>
</table>
Initial Notifications for Major Sources?

- **New and Reconstructed Boilers**
  - Submit an initial notification no later than 15 days after the date of startup. 40 C.F.R. 63.7545.

- **Existing Boilers**
  - Initial notification due no later than 120 days after publication of rule. 40 C.F.R. 63.9(b).
  - But which rule? March 21, 2011 Final Rule or January 31, 2013 Final Rule?
  - Sources that submitted notification under March 21, 2011 rule should not need to resubmit.
  - EPA’s final action does not speak to this issue.
SUMMARY OF EMISSION LIMITS

HIGHLIGHTING CHANGES FROM 2011 FINAL RULE
## Emission Limits for Existing Major Source Boilers

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>#Units</th>
<th>Limits in 2011 Final Rule, lb/MMBtu unless noted</th>
<th>Limits for Reconsideration Final Rule, lb/MMBtu, unless noted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hg, lb/TBtu</td>
<td>HCl</td>
</tr>
<tr>
<td>Coal stoker</td>
<td>391</td>
<td>4.6</td>
<td>0.035</td>
</tr>
<tr>
<td>Coal fluid. Bed</td>
<td>35</td>
<td>Solid fuel sub.</td>
<td>Solid fuel sub.</td>
</tr>
<tr>
<td>Coal PC</td>
<td>190</td>
<td>160</td>
<td>0.004</td>
</tr>
<tr>
<td>Biomass wet stoker—revised subcategory</td>
<td>304</td>
<td>490</td>
<td>0.005</td>
</tr>
<tr>
<td>Biomass fuel cell</td>
<td>14</td>
<td>690</td>
<td>4</td>
</tr>
<tr>
<td>Biomass fluid. Bed</td>
<td>24</td>
<td>430</td>
<td>0.02</td>
</tr>
<tr>
<td>Biomass dutch Oven/pile burner—revised subcategory</td>
<td>24</td>
<td>470</td>
<td>0.2</td>
</tr>
<tr>
<td>Biomass susp./grate</td>
<td>18</td>
<td>3,500</td>
<td>0.2</td>
</tr>
<tr>
<td>Biomass suspension—revised subcategory</td>
<td>47</td>
<td>470</td>
<td>0.2</td>
</tr>
<tr>
<td>Biomass dry stoker—new subcategory</td>
<td>74</td>
<td>490</td>
<td>0.005</td>
</tr>
<tr>
<td>Heavy liquid-revised subcategory</td>
<td>320</td>
<td>3.4</td>
<td>0.0033</td>
</tr>
<tr>
<td>Light liquid-revised subcategory</td>
<td>581</td>
<td>3.4</td>
<td>0.0033</td>
</tr>
<tr>
<td>Gas 2</td>
<td>129</td>
<td>13</td>
<td>0.0017</td>
</tr>
<tr>
<td>Non-cont. liquid</td>
<td>0.78</td>
<td>0.0033</td>
<td>0.0075</td>
</tr>
</tbody>
</table>

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 New Major Source Boilers

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>Limits in 2011 Final Rule, lb/MMBtu unless noted</th>
<th>Limits for Reconsideration Final Rule, lb/MMBtu, unless noted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hg, lb/TBtu</td>
<td>HCl</td>
</tr>
<tr>
<td>Coal stoker</td>
<td>3.5</td>
<td>0.0022</td>
</tr>
<tr>
<td>Coal PC</td>
<td>12</td>
<td>0.003</td>
</tr>
<tr>
<td>Biomass wet stoker—revised subcategory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass fuel cell</td>
<td>470</td>
<td>0.003</td>
</tr>
<tr>
<td>Biomass fluid. Bed</td>
<td>260</td>
<td>0.02</td>
</tr>
<tr>
<td>Biomass dutch Oven/pile burner—revised subcategory</td>
<td>470</td>
<td>0.2</td>
</tr>
<tr>
<td>Biomass susp./grate</td>
<td>1,500</td>
<td>0.2</td>
</tr>
<tr>
<td>Biomass suspension-revised subcategory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass dry stoker—new subcategory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy liquid-revised subcategory</td>
<td>0.21</td>
<td>0.00033</td>
</tr>
<tr>
<td>Light liquid-revised subcategory</td>
<td>0.21</td>
<td>0.00033</td>
</tr>
<tr>
<td>Gas 2</td>
<td>7.9</td>
<td>0.0017</td>
</tr>
<tr>
<td>Non-cont. liquid</td>
<td>0.78</td>
<td>0.00033</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>2011 Final Rule Emission Limits</th>
<th>Reconsideration Final Rule Emission Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hg, lb/TBtu</td>
<td>CO, ppm</td>
</tr>
<tr>
<td>New Coal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 MMBtu/h</td>
<td>4.8</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 MMBtu/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Oil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 MMBtu/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Coal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 MMBtu/h</td>
<td>4.8</td>
<td>400</td>
</tr>
<tr>
<td>(600 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Coal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 MMBtu/h</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(3,100 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(168,000 units)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Existing Oil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(11,000 units)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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

New and existing seasonal boilers, limited-use boilers, oil-fired boilers with heat input capacity ≤ 5 MMBtu/h, and boilers with an oxygen trim system are subject to a 5-year tune-up requirement.

Existing coal-fired, biomass-fired, or oil-fired boilers with heat input capacity ≥ 10 MMBtu/h (not including limited-use boilers) are subject to a one-time energy assessment requirement.
Emission Limits for Existing CISWI Units

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HCl (ppmv)</td>
<td></td>
<td>29</td>
<td>14</td>
<td>14</td>
<td>0.45</td>
<td>0.20 (biomass units)/ 13 (coal units)</td>
<td>25</td>
</tr>
<tr>
<td>CO (ppmv)</td>
<td></td>
<td>36</td>
<td>17</td>
<td>35</td>
<td>0.0144 (biomass units)/ 0.14 (coal units)</td>
<td>0.0026</td>
<td>0.014</td>
</tr>
<tr>
<td>Pb (mg/dscm)</td>
<td>0.0036</td>
<td>0.015</td>
<td>0.096</td>
<td>0.096</td>
<td>0.0036</td>
<td>0.014 (biomass units)/ 0.14 (coal units)</td>
<td>0.0026</td>
</tr>
<tr>
<td>Cd (mg/dscm)</td>
<td>0.0026</td>
<td>0.0026</td>
<td>0.023</td>
<td>0.023</td>
<td>0.00011</td>
<td>0.0014 (biomass units)/ 0.0095 (coal units)</td>
<td>0.00048</td>
</tr>
<tr>
<td>Hg (mg/dscm)</td>
<td>0.0054</td>
<td>0.0048</td>
<td>0.0013</td>
<td>0.0024</td>
<td>0.00033</td>
<td>0.0022 (biomass units)/ 0.016 (coal units)</td>
<td>0.0079</td>
</tr>
<tr>
<td>PM, filterable (mg/dscm)</td>
<td>34</td>
<td>34</td>
<td>110</td>
<td>110</td>
<td>250</td>
<td>11 (biomass units)/ 160 (coal units)</td>
<td>6.2</td>
</tr>
<tr>
<td>Dioxin, Furans, total (ng/dscm)</td>
<td>4.6</td>
<td>4.6</td>
<td>2.9</td>
<td>2.9</td>
<td>0.35</td>
<td>0.52 (biomass units)/ 5.1 (coal units)</td>
<td>0.2</td>
</tr>
<tr>
<td>Dioxin, Furans, TEQ (ng/dscm)</td>
<td>0.13</td>
<td>0.13</td>
<td>0.32</td>
<td>0.32</td>
<td>0.059</td>
<td>0.12 (biomass units)/ 0.075 (coal units)</td>
<td>0.007</td>
</tr>
<tr>
<td>NOx (ppmv)</td>
<td>53</td>
<td>53</td>
<td>76</td>
<td>76</td>
<td>290 (biomass units)/340 (coal units)</td>
<td>290 (biomass units)/ 340 (coal units)</td>
<td>540</td>
</tr>
<tr>
<td>SO₂ (ppmv)</td>
<td>11</td>
<td>11</td>
<td>720</td>
<td>720</td>
<td>6.2 (biomass units)/650 (coal units)</td>
<td>7.3 (biomass units)/ 650 (coal units)</td>
<td>38</td>
</tr>
</tbody>
</table>

¹ All emission limits are measured at 7% oxygen.
² Number of units in each subcategory: 27 incinerators; 6 ERUs-liquid/gas; 22 ERUs-solids (18 biomass/4 coal); 23 waste-burning kilns; and, 28 small, remote incinerators.
³ Emission limits did not change from final to reconsideration proposal for this subcategory.
# Emission Limits for New CISWI Units

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>CISWI Subcategories</th>
<th>Incinerators&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Energy Recovery Units – Liquid/Gas&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Energy Recovery Units – Solids&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Waste-burning Kilns</th>
<th>Small, Remote Incinerators&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO&lt;sub&gt;x&lt;/sub&gt; (ppmv)</td>
<td>0.001</td>
<td>0.001</td>
<td>14</td>
<td>14</td>
<td>0.45</td>
<td>0.03 (biomass units)/10 (coal units)</td>
</tr>
<tr>
<td>SO&lt;sub&gt;x&lt;/sub&gt; (ppmv)</td>
<td>47</td>
<td>17</td>
<td>46</td>
<td>16</td>
<td>0.091</td>
<td>0.016 (biomass units)/0.14 (coal units)</td>
</tr>
<tr>
<td>Hg (mg/dscm)</td>
<td>0.0019</td>
<td>0.035</td>
<td>0.006</td>
<td>0.006</td>
<td>0.0001</td>
<td>0.0016 (biomass units)/0.014 (coal units)</td>
</tr>
<tr>
<td>Cd (mg/dscm)</td>
<td>0.0023</td>
<td>0.0023</td>
<td>0.023</td>
<td>0.023</td>
<td>0.00151</td>
<td>0.0025 (biomass units)/0.0055 (coal units)</td>
</tr>
<tr>
<td>Pb (mg/dscm)</td>
<td>0.0016</td>
<td>0.0044</td>
<td>0.00005</td>
<td>0.00005</td>
<td>0.00003</td>
<td>0.0016 (biomass units)/0.0016 (coal units)</td>
</tr>
<tr>
<td>PM, filterable (mg/dscm)</td>
<td>16</td>
<td>16</td>
<td>110</td>
<td>110</td>
<td>250</td>
<td>5.1 (biomass units)/360 (coal units)</td>
</tr>
<tr>
<td>Dioxin, Furans, total (ng/dscm)</td>
<td>0.0022</td>
<td>0.04</td>
<td>(no limit)</td>
<td>(no limit)</td>
<td>0.0065</td>
<td>0.02 (biomass units)/0.1 (coal units)</td>
</tr>
<tr>
<td>Dioxin, Furans, TEQ (ng/dscm)</td>
<td>0.13</td>
<td>0.13</td>
<td>0.002</td>
<td>0.002</td>
<td>0.001</td>
<td>0.0076 (biomass units)/0.0075 (coal units)</td>
</tr>
<tr>
<td>NO&lt;sub&gt;x&lt;/sub&gt; (ppmv)</td>
<td>21</td>
<td>21</td>
<td>76</td>
<td>76</td>
<td>2.0 (biomass units)/2.0 (coal units)</td>
<td>2.0 (biomass units)/2.0 (coal units)</td>
</tr>
<tr>
<td>SO&lt;sub&gt;x&lt;/sub&gt; (ppmv)</td>
<td>11</td>
<td>11</td>
<td>720</td>
<td>720</td>
<td>1.2 (biomass units)/0.2 (coal units)</td>
<td>1.2 (biomass units)/0.2 (coal units)</td>
</tr>
</tbody>
</table>

1. All emission limits are measured at 7% oxygen.
2. Emission limits did not change from final to reconsideration proposal for this subcategory.
Practice Areas

- Antitrust and Competition
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- Consumer Finance
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