

Boiler MACT Limits Update

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New Data

- Received draft MACT floor memo from EPA last week.
- Received new Boiler MACT database last week.
- More units and more test data added. Some units moved over from EGU MACT and some new data from reconsideration rule comments.
- Additional data quality review.

Anticipated Changes from Dec. 2011 Rule

- Additional units added that were either listed as area source, CISWI, or EGU previously. Other units reclassified to correct subcategory.
- Only a single limit for particulate matter for coal instead of design based subcategories for stoker, PC, FB.
- New CO subcategory for Coal Fluidized Bed w/ integrated FB heat exchanger.
- Add TSM limits for liquid units.

Fuel Variability Factor Incorporated for Solid Fuel Hg and HCl

- Same outlier approach used as before, therefore discarding data and lowering the FVFs. Average FVF, not max FVF, used.
 - Solid Hg FVF: 1.67
 - Liquid Hg FVF: 1.04
 - Solid HCl FVF: 1.91
 - Liquid HCl FVF: 2.46
 - Coal TSM FVF: 1.14
 - Heavy Liquid TSM FVF: 1.13

Hg and HCl Limits

| <u>HAP/Fuel</u> | <u>Re-proposal</u> | <u>Possible Final '12</u> | <u>Factor Better</u> | <u>Re-proposal</u> | <u>Possible Final '12</u> | <u>Factor Better</u> | <u>Units</u> |
|------------------------|--------------------|---------------------------|----------------------|--------------------|---------------------------|----------------------|--------------|
| | Existing Boilers | | | New Boilers | | | |
| Hg Solid Fuel | 3.1 | 5.7 | 1.8 | 0.86 | 0.8 | 0.9 | lb/TBtu |
| HCl Solid Fuel | 0.022 | 0.021 | 1.0 | 0.022 | 0.021 | 1.0 | lb/MMBtu |
| Hg Oil | 26 | 2.0 | 0.1 | 0.49 | 0.48 | 1.0 | lb/TBtu |
| Hg Oil non-continental | 26 | 2.0 | 0.1 | 0.49 | 0.48 | 1.0 | lb/TBtu |
| HCl Oil | 0.0012 | 0.0011 | 0.9 | 0.0012 | 0.00044 | 0.4 | lb/MMBtu |

Changes to Solid Hg Limit

- 3 New units made it into the floors, VACogentrixHopewell 2A, 2B and 2C
- These units were previously listed as EGUs and share a stack; therefore, each unit has the same run values.
- The 99UPL of the dataset is $3.4e-6$ and with a FVF of 1.67 the limit becomes $5.7e-6$ lb/MMBtu.
- The data from December 2011 and now are fairly similar, but there was no FVF used previously, therefore use of FVF results in a higher limit.

Changes to Solid HCl Limit

- 6 units were added to the floor, 3 of those sharing a common stack and another sharing a stack with another unit already in the floor.
- One unit was previously incorrectly ranked (WAGraysHarborPaper No. 6 Boiler (EU2)). It was listed at 20 in the floor previously and has been re-ranked at 180.
- These changes brought the variability and average down, the 99 UPL of the dataset is 0.011 lb/MMBtu.
- As with the Hg limit, the 99UPL is now multiplied by an FVF of 1.91 bringing the limit almost back to what it previously was at 0.021 lb/MMBtu.

Changes to Liquid Hg Limit

- The amount of units in the rankings changed from 71 to 79, bringing in more units.
- This change caused 10 units from HITesoro to come into the floor where each unit has 86 runs of Fuel Analysis that are the same for each unit.
- This drastically lowers the variability of the dataset and lowers the UPL to $1.89e-6$. This is then multiplied by a FVF of 1.04 to reach a limit of $2.0e-6$ lb/MMBtu.

Selected Fossil PM Limits

| <u>HAP/Fuel</u> | <u>Final</u> | <u>Re-proposal</u> | <u>Possible Final '12</u> | <u>Factor Better</u> | <u>Final</u> | <u>Re-proposal</u> | <u>Possible Final '12</u> | <u>Factor Better</u> | <u>Units</u> |
|--------------------|----------------|--------------------|---------------------------|----------------------|--------------|--------------------|---------------------------|----------------------|--------------|
| | Existing Units | | | | New Units | | | | |
| PM Coal pulverized | 0.039 | 0.044 | 0.039 | 0.9 | 0.001 | 0.0013 | 0.0017 | 1.3 | lb/MMBtu |
| PM Coal stoker | 0.039 | 0.028 | 0.039 | 1.4 | 0.001 | 0.028 | 0.0017 | 0.1 | lb/MMBtu |
| PM Coal FB | 0.039 | 0.088 | 0.039 | 0.4 | 0.001 | 0.0011 | 0.0017 | 1.5 | lb/MMBtu |
| PM Oil - heavy | 0.0075 | 0.062 | 0.062 | 1.0 | 0.0013 | 0.013 | 0.013 | 1.0 | lb/MMBtu |
| PM Oil - light | 0.0075 | 0.0034 | 0.0079 | 2.3 | 0.0013 | 0.0011 | 0.0011 | 1.0 | lb/MMBtu |

Changes to PM Limits

- Re-bundled coal units but kept biomass and liquid units separate.
- Small increase in wet biomass stoker PM because of changes to units in floor.
- Coal stoker limit goes up, PC and FB coal limits go down.
- Light oil PM limit will increase from 0.0034 to 0.0079 lb/MMBtu.

Selected Stack Test CO Limits

| <u>HAP/Fuel</u> | <u>Re-proposal</u> | <u>Possible Final '12</u> | <u>Factor Better</u> | <u>Re-proposal</u> | <u>Possible Final '12</u> | <u>Factor Better</u> | <u>Units</u> |
|--|-------------------------|---------------------------|----------------------|--------------------|---------------------------|----------------------|--------------|
| | Existing Boilers | | | New Boilers | | | |
| CO Biomass Wet Stoker/Sloped Grate/Other | 790 | 1500 | 1.9 | 590 | 620 | 1.1 | ppm at 3%O2 |
| CO Biomass FB | 370 | 470 | 1.3 | 230 | 230 | 1.0 | ppm at 3%O2 |
| CO Biomass Hybrid Suspension/ Grate | 3900 | 2800 | 0.7 | 1500 | 1100 | 0.7 | ppm at 3%O2 |
| CO Coal pulverized | 41 | 62 | 1.5 | 9 | 60 | 6.7 | ppm at 3%O2 |
| CO Coal stoker | 220 | 160 | 0.7 | 19 | 19 | 1.0 | ppm at 3%O2 |
| CO Coal FB | 56 | 49 | 0.9 | 17 | 25 | 1.5 | ppm at 3%O2 |
| CO Coal FBHE | NA | 140 | NA | NA | 140 | NA | ppm at 3%O2 |
| CO Oil - Heavy | 10 | 12 | 1.2 | 10 | 12 | 1.2 | ppm at 3%O2 |
| CO Oil - Light | 7 | 6 | 0.9 | 3 | 3 | 1.0 | ppm at 3%O2 |