

How Major Issues are Addressed in the Final Boiler MACT Rule

Boiler MACT

<u>Issue</u>	<u>Recommendation</u>	<u>Outcome</u>
Health based	Include for both HCl and Mn and allow facility specific assessment using look-up table	Rejected citing lack of data on co-located sources and need to set standard, specifically reject Mn limit
Source based	Look at boiler performance holistically and not HAP by HAP for PM, Hg, and HCl	Support HAP by HAP, criticize source based and toxicity weighting; acknowledge control conflicts but other changes improve achievability
Combination boilers (biomass and coal)	Apply biomass limits for combustion byproducts (CO/D/F) and coal limits for fuel contaminant HAPs (Hg, PM and HCl)	Biomass and coal merged for fuel based HAPs into a solid fuel subcategory; combustion based HAPs in biomass subcategories when burning >10 biomass no matter how much coal
Dioxin work practice	Replace limits set below limit of detection with good combustion practices; we don't know how to predict or control D/F	Had to set D/F limit because had some detects. Initial compliance test then set 90% of average oxygen concentration during initial test as ongoing limit (also for CO), must follow good combustion practices; non-detects from Method 23 treated as zero
Performance Variability	Raise various limits to account for greater variability in fuels, designs, processes and products based on new emission data. Use CO CEMS data to set limits to account for CO variability.	Not using other data sources, only stack test data; looked at fuel variability factor (no control efficiency adjustment and different outlier consideration); considered load for CO using 99.9 UPL; new data increasing limits; more use of fuel analysis (Hg oil); don't have CEM data for CO thus stack tests (CO CEMS requirement gone)
Subcategorization	Adopt additional subcategories for limited use, dry/wet biomass, coal types, liquid types.	15 now (12 before). Did not add subcategories by coal or liquid type. Combined biomass/coal into one solid fuel subcategory for fuel based HAPs. Added non-continental (for refineries), limited use (tune up only), and hybrid suspension grate (bagasse).
Biomass	Don't disadvantage biomass boilers	Helped by merger with coal for fuel based HAPs – scrubbers no longer needed for all biomass boilers.

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Gas work practices	Retain natural gas work practices and expand to Gas II units	Work practices for natural gas, refinery gas and other “equivalent” clean gases ($\text{Hg} < 4 \text{ ug/m}^3$ and $\text{H}_2\text{S} < 4 \text{ ppmv}$); Remaining Gas 2 has limits; all new and existing <10 MMBTU boilers have work practices
Energy Audits	Drop audits as unjustified	One time energy audit; set duration and requirements for energy saving opportunities 1. <0.3 trillion Btu/yr – look at 50% of output, 1 day max length 2. 0.3 to 1 trillion – look at 33% of output, 3 days max length 3. >1 trillion - examine 20% of energy output Cost effective energy conservation measure has 2 year payback. Can take credit for recent audits.
Limit of Detection	Adjust limits by three fold to account for practical quantitation limits of methods for Hg and D/F	Inappropriate to set floor below MDL; if floor is >3x representative MDL then limit OK, otherwise set at 3x representative MDL.
Biased Data Set	Use alternative statistical approaches that reflect biased HAP testing and data base. Augment with other available data.	99% UPL still except 99.9% for CO; using Bhaumik-Gibson approach; mix of confidence intervals; blame industry for not doing more testing, use available data; reject idea that always need at least 5 sources in floor
Data quality	Found many errors in data set.	EPA has developed memo cataloguing all changes made to database.
Realistic new source limits	Set achievable limits that do not discourage investment in new systems. Need to be able to get guarantees from vendors.	Some higher, a few lower – still set on a pollutant by pollutant basis from lowest emitting boilers in subcategories.
Surrogates	Retain existing PM, HCl and CO surrogates, but set more reasonable CO limits (ultra low CO doesn’t guarantee ultra low HAP)	Kept proposed surrogates, did not propose any others (e.g., THC, TSM), replaced CO CEMS and ongoing D/F testing with O ₂ CEMS. Considered measurement capabilities of Method 10, used 99.9 UPL to improve CO limits.
Set TSM limit	Set metals standard in addition to PM limit; also critical to Mn HBCA	No TSM limits, no Mn HBCA

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Size cutoffs	Raise cutoffs from 10 to 30 MM Btu	Stayed at 10, but added work practices for new units <10 MMBtu/hr (were subject to limits in proposal)
Emission Averaging	Encourage by eliminating discount factor and allowing averaging for all pollutants across all subcategories	Kept discount factor, no averaging with new units; averaging only within subcategory but solid fuel category will allow coal-biomass averaging for fuel based HAP
Averaging Periods	Averaging periods for CPMS should be longer, 30 day averaging for CEMS good	Retained 30 day averaging for CEMS, only 12-hour averaging for CPMS.
SSM	Include exemptions for SSM	For startup/shutdown – follow manufacturer's procedures for minimizing time during startup/shutdown, affirmative defense for malfunction.
CO load issue	If use CO CEMS, can't meet limits during SS due to high O2. Exclude data at <50% load from compliance.	Only using stack test data to set limits. Used 99.9UPL to increase variability. No more CO CEMS – only O2 monitoring as operating parameter limit.
CEMS	Drop or restrict	PM CEMS for >250 MMBtu/hr solid fuel and residual oil units maintained; no CO CEMS (O2 monitoring instead)
One MACT	No double coverage	Agreed – boilers that are affected sources in other MACTs are exempt, also specified that boilers burning streams as control devices for other MACTs are exempt as long as those streams make up 50% of heat input.
Flexibility	Provide other options for limits, like % reduction	Did not have enough data for % reduction option. Added output based option so facilities can take credit for efficiency improvements – pound per MMBtu of steam output.
Costs	Costs are understated by factor of two	Still understated by factor of two; EPA says \$5.1 billion, (\$1.8 billion annually, \$400M less with energy savings) and URS estimates \$11B (EPA refutes URS detailed points, with higher Hg limits activated carbon not likely, CO catalyst proprietary so could not include, still assuming packed bed scrubbers). Little cost assigned to new units

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Job Impacts	Argued significant jobs at risk due to potential mill closures due to higher costs	EPA claims job gains for pollutant controls and operation offset losses (2000 gained); using macro model based on old information and fails to disaggregate forest products industry
Benefits	Should not claim PM and SO2 benefits for MACT rule	\$22-55 billion in benefits (17-41 before); include SO2 and VOC/ozone benefits in addition to PM (SO2 still biggest value); 2,500 to 6,500 lives saved
Tune ups	Should not tune based on CO. May not shut down annually to accommodate tune up. Procedures specified may not apply to all units.	Requirement is to record beginning and ending CO, not minimize CO. Frequency still annual for units >10 MMBtu/hr.
Allowance for oil firing during curtailment	Should not limit the amount of oil that a gas-fired boiler can burn during curtailment.	Agreed – no limit to oil firing during natural gas curtailment, just keep records and report.
Boiler design	Boilers are not designed to burn one fuel.	Boilers can be considered single fuel if they have a different startup fuel than that fired during normal operations. Solid fuel boilers have been combined into one category for the fuel based HAP.
ERT	ERT should not be required	ERT is required
Compliance timeframe	A longer timeframe for compliance should be required.	No additional time is given.
Solid waste	Units should be able to switch back and forth between 112 and 129 depending on whether they are burning solid waste. Incidental burning of solid waste should be allowed.	Units can come back under 112 if they stop burning solid waste but can only go back and forth every 6 months. Incidental burning of solid waste is not allowed.
CPMS QA/QC	Requirements are too onerous, should be site specific	Requirements for QA/QC for CPMS are still specified, rather than left to site specific monitoring plans.
Definitions	Refinery gas and natural gas	Added definition of refinery gas, corrected definition of natural gas.

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Fuel analysis	Should not be required for each supplier, only for each fuel type. If not stack testing, monthly fuel analysis is too frequent.	Sampling is now required per fuel type, not per fuel supplier. Still monthly fuel analysis.
Stack Testing	Annual testing should not be required, not necessary when continuous monitoring is performed. Should be allowed to test one unit if representative of many. Four hour runs not necessary. Specify handling of non-detects.	Initial test only for D/F. Can test every 3 years if <75% of the limit for the first 2 years of testing. No allowance for similar units. Test run time not specified in final rule, but sample volume is. D/F non-detects can be zero.
Definition of EGU	Need to make clear what units are covered here and what units covered under Utility MACT	“Electric utility steam generating unit means a fossil fuel fired combustion unit of more than 25 megawatts that serves a generator that produces electricity for sale. A fossil fuel fired unit that cogenerates steam and electricity and supplies more than one-third of its potential electric output capacity and more than 25 megawatts electrical output to any utility power distribution system for sale is considered an electric utility steam generating unit.” They did not specify “net” output as requested. Biomass utility boilers will be under this rule.