



EPA Releases Reconsideration Proposals for Air Toxic Standards for Industrial, Commercial, and Institutional (ICI) Boilers and Process Heaters

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On [December 2, 2011](#), the Environmental Protection Agency (EPA) released proposed amendments to previously released rules setting air toxic standards for boilers, process heaters and certain solid waste incinerators (CIWSI) incinerators. EPA initially issued final rules for these units in March 2011, setting standards intended to cut emissions of hazardous air pollutants (HAPs) such as mercury, dioxin and lead. These pollutants can cause a range of dangerous health effects -- from developmental disabilities in children, to cancer, heart attacks and premature death. At the same time it issued the final rules in March, EPA also announced that it intended to reconsider those standards under a Clean Air Act process that allows the agency to seek additional public review and comment to ensure full transparency in its rulemaking. The reconsideration process allowed EPA to address additional technical issues that arose from earlier public comment and provided the public additional opportunity to comment on measures in the final rules that were not in the original proposed rules. The reconsideration proposals include a number of proposed amendments and technical corrections to these final rules. There will be a 60-day public comment period on the reconsideration proposals. EPA plans on finalizing the reconsideration by spring 2012.

EPA estimates that less than one percent of the boilers in the United States would need to meet emissions limits under the reconsidered rules. Of the 1.5 million boilers located at small sources of air emissions such as hotels, hospitals and commercial buildings, about 187,000 would be covered by the **Area Source Boiler Rule (40 CFR subpart JJJJJ)**. Of these, 98 percent would need to follow work practice rules such as annual tune-ups. The remaining two percent (about 3,700 units) would have to meet specific emissions limits. EPA estimates that there are about 14,000 boilers at large sources of air emissions including refineries, chemical plants and some institutional facilities such as universities that would be covered by the **Major Source Boiler MACT (maximum achievable control technology) Rule (40 CFR subpart DDDDD)**. Eighty eight percent of these would need to follow work practice standards such as annual tune-ups. Twelve percent, about 1,750 boilers primarily fired by coal, oil and biomass, would need to meet specific emissions limits. See Table 1 for an overview of the new reconsidered proposals.

Changes in Proposed Reconsideration Emissions Standards for [Area Source](#) Industrial, Commercial, and Institutional Boilers

As shown in the table, EPA is continuing to require work practice standards for 98 percent of the affected units which include routine maintenance and tune-ups. In the reconsideration, EPA is proposing to create additional subcategories to increase flexibility, and require initial tune-ups after two years instead of one year as original set in the final rule. EPA is proposing that seasonal operators of boilers are required to conduct tune-ups every five years instead of every other year. The schedule for compliance for area sources remains unchanged for affected boilers subject to emission limits and/or the energy assessment requirement; existing units must comply within three years of the original publication of the area source rule in the Federal Register (March 21, 2011).

Table 1 - Key Requirements for the Reconsidered Area and Major Source Boilers MACT Rules

	Key Requirements	
Boiler	Area Source (about 187,000 covered sources)	Major Source (about 14,000 covered sources)
Existing and new natural gas/refinery gas units and metal process furnaces	N/A	Annual tune-up for all sizes (units using other gaseous fuels can qualify if they demonstrate contaminant levels similar to natural gas)
Limited-use units	N/A	Tune-up every 2 years for all new and existing limited use boilers (operated less than 10% each year - emergency/backup boilers)
<i>Existing</i>		
< 10 MMBtu	Boiler tune-up every 2 years	Tune-up every 2 years; for gas and light liquid units <5 MMBtu/hr, tune-up every 5 years
> 10 MMBtu	<ul style="list-style-type: none"> Emission limits: coal-fired - Hg and CO; biomass, oil-fired & small coal - no emission limits a boiler tune-up required every 2 years One time energy assessment (affected boiler & its energy use systems, not the entire facility) 	<ul style="list-style-type: none"> Emission limits: Hg, CO, PM (or total selected metals), HCl, alternate CO CEMS limit Work practice standard for dioxin/furan emissions One time energy assessment
<i>New</i>		
< 10 MMBtu	Boiler tune-up every 2 years	Tune-up every 2 years; for gas and light liquid units <5 MMBtu/hr, tune-up every 5 years
> 10 MMBtu	<ul style="list-style-type: none"> Emission limits: coal-fired - Hg, PM and CO; biomass & oil-fired – PM 	<ul style="list-style-type: none"> Emission limits: Hg, CO, PM (or total selected metals), HCl, alternate CO CEMS limit Work practice standard for dioxin/furan emissions
Compliance - existing	Emission limits & energy assessments: <ul style="list-style-type: none"> 3 years after publication of the Final Rule in the Federal Register (FR) Initial tune-up: 2 years after publication date of the Final rule 	3 years after publication of the Final Reconsideration Rule in the Federal Register
Compliance - new	Date of FR publication or boiler start-up, whichever is later	60 days after Date of FR publication or boiler start-up, whichever is later



Key Provisions of the Proposed Reconsideration Emissions Standards for [Major Source](#) Industrial, Commercial, and Institutional Boilers and Process Heaters

Major source facilities are those that have the potential to emit 10 or more tons per year (tpy) of any single air toxic or 25 tpy or more of any combination of air toxics. Like the final major source rule, the proposed reconsideration covers boilers and process heaters that use natural gas, fuel oil, coal and other fossil-based solids, biomass and other bio-based solids, refinery gas, or other gaseous fuels. Boilers and process heaters that burn solid waste are not included in these standards unless they are exempt under the Clean Air Act from standards for incinerators. The reconsideration includes specific requirements for 18 different subcategories of boilers and process heaters based on the design of various types of units. Key provisions of the reconsidered major source rule include:

- For all new and existing natural gas- and refinery gas-fired units (Gas 1 units) and for limited-use units and metal process furnaces, the reconsideration does not change the final rule requirement of a work practice standard (annual tune-ups for each unit), instead of numeric emission limits. Units combusting other gases can qualify for work practice standards by demonstrating that they burn with contaminant levels similar to natural gas. The EPA did propose changes to the fuel specification.
- For all new and existing units with a heat input capacity less than 10 million Btu per hour (MMBtu/hr), the reconsideration does not change the final rule requirement of a work practice standard (annual tune-up for each unit), instead of numeric emission limits.
- The reconsideration does not change the final rule requirement of a work practice standard (a biennial tune-up instead of numeric emission limits) for all new and existing “limited use” boilers. These are units that are operated less than 10 percent of the year for emergency or backup service.
- The reconsideration proposes to regulate dioxin/furan emissions with a work practice standard in lieu of numeric emission limits.
- The reconsideration establishes numeric emission limits for all other existing and new boilers and process heaters located at major sources for the following pollutants in order to limit the release of hazardous air toxics (HAPs):
 - Mercury (Hg),
 - Filterable particulate matter (PM) or Total selected metals (TSM¹) - as surrogates for non-mercury HAP metals.
 - Hydrogen chloride (HCl) - as a surrogate for acid gas HAP, and
 - Carbon monoxide (CO) - as a surrogate for non-dioxin/furan organic air toxics
- The reconsideration does not change the final rule requirement that existing major source facilities are required to conduct a one-time energy assessment to identify cost-effective energy conservation measures for their affected boilers and energy using systems. The reconsideration proposes several clarifications to the energy assessment requirement.

¹ TSM includes the following eight metals: arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium.



Changes to Major Source Boiler Rules

The major source reconsideration includes a number of proposed amendments and technical corrections to the final rule including the following:

- **Creates new subcategories for light and heavy industrial liquids** with specific emissions limits for PM and CO to reflect design differences in the boilers that burn these fuels.
- **Sets new emissions limits for filterable particulate matter (PM)** that are different for each solid fuel subcategory (e.g., biomass, coal) to better reflect real-world operating conditions.
- **Sets new emissions limits for carbon monoxide** based on newly submitted data that shows CO emissions from boilers vary greatly.
- **Allows alternative total selective metals (TSM) emission limits** to regulate metallic air toxics as an alternative to using PM as a surrogate for non-mercury HAPs.
- **Adds additional subcategories with specific emissions limits for stoker units designed to combust wet and dry biomass** as well as clarifying certain biomass subcategories such as pile burners, dutch ovens and suspension burners.
- **Replaces numeric dioxin emissions limits with work practice standards (annual tune-ups)** to reflect a more robust analysis that shows dioxin emission are below levels that can be accurately measured.
- **Increases flexibility in compliance monitoring** to remove continuous emissions monitoring (CEM) requirements for particle pollution for biomass units and to propose carbon monoxide limits that are based on either stack testing or continuous monitoring.
- **Revises emissions limits for units located outside the continental United States** to reflect new data and to better reflect the unique operating conditions associated with operating these units.
- **Continues to allow units burning clean gases** to qualify for work practice standards
- **Reassesses the calculation of boiler efficiency to determine the optional output-based standards** and allows for emissions averaging provisions to apply to output-based limits. Also clarifies the language to account for efficiency improvements from units that generate electricity only.

Estimated Compliance Cost Impacts of the Reconsidered Major Source Boiler MACT Rule

While the proposed changes to the Major Source Boiler MACT provide additional flexibility and expands the compliance options for many facilities with affected units, EPA is still estimating significant investment costs for affected coal and oil boilers. EPA estimates that the capital costs for compliance for the 616 coal boilers will be \$2.7 billion, an average cost of \$4.4 million per boiler. Annualized costs, including testing and monitoring, for the affected boilers are estimated at over \$950 million. Estimated capital costs for the 903 affected liquid fueled boilers are \$1.7 billion, an average cost of \$1.9 million per boiler. Annualized costs for the affected liquid units are estimated at \$541 million.



DOE Assistance for Major Source Industrial Boilers

DOE has joined EPA in an effort to help ensure that major sources burning coal and oil have information on cost-effective clean energy strategies for compliance. DOE currently provides technical information on clean energy options to industry through its regional Clean Energy Application Centers. DOE will supplement this effort to provide site-specific technical and cost information to the major source facilities that are currently burning coal or oil in their boilers when the reconsideration process is complete. These facilities may have opportunities to develop compliance strategies, such as combined heat and power, which are cleaner, more energy efficient, and that can have a positive economic return for the plant over time. These opportunities can be considered alongside investment in pollution controls to comply with the standards in the rule. This additional assistance effort will begin once the reconsideration process is complete this spring. DOE will visit these coal- and oil-fired facilities to provide information on clean energy options for compliance, as well as potential funding and financing opportunities. Facilities that make use of this outreach can potentially develop strategies to reduce their emissions to comply with the regulations while adding to their bottom line.

In addition, the boiler tune-up portion of the regulation can save facilities energy-related costs, and the energy assessment portion of the regulation will identify additional energy and cost savings. DOE will provide to all affected sources information on financial incentives available at the local, state, utility and federal level to assist them in undertaking a boiler tune-up and/or energy audit.