

**EPA's Air Toxics Standards
Major and Area Source Boilers and Certain Incinerators
Technical Overview
Adjustments from March 2011 Final Standards**

ACTION

On December 20, 2012, the U.S. Environmental Protection Agency (EPA) finalized a specific set of adjustments to Clean Air Act standards, originally finalized in March 2011, for boilers and certain solid waste incinerators.

- These adjustments maintain extensive public health protections achieved by the March 2011 standards by reducing toxic air pollution, including mercury and particle pollution.
- At the same time, these adjustments increase the rules' flexibility and address concerns raised by stakeholders.
- The specific set of adjustments address new data provided to the agency and additional information about real-world performance and conditions under which affected boilers and incinerators operate.
- These adjustments maintain the dramatic cuts in the cost of implementation that were achieved in the final standards issued in March 2011.

The final set of adjustments to the standards are based on an extensive analysis of additional data and input from states, environmental groups, industry, lawmakers and the public. As a result of information gathered through the reconsideration process, the final adjustments cut the implementation costs below those projected in the 2010 proposal. At the same time, however, these rules will continue to deliver significant public health benefits. EPA estimates that for every dollar spent to reduce these pollutants, the public will see \$13 to \$29 in health benefits, including fewer premature deaths.

Using a wide variety of fuels, including coal, oil, natural gas and biomass, boilers power heavy machinery, provide heat for industrial and manufacturing processes and provide power and heat for a number of other uses. EPA's final boiler standards recognize the diverse and complex range of uses and fuels, and tailor standards to reflect the real world operating conditions of specific types of boilers. The commercial and industrial solid waste incinerator (CISWI) final rule recognizes the important relationship to the Non-Hazardous Secondary Materials (NHSM) rule. Using a wide variety of fuels, including coal, oil, natural gas and biomass, boilers power heavy machinery, provide heat for industrial and manufacturing processes and provide power and heat for a number of other uses. EPA's boiler final rules recognize the diverse and complex range of uses and fuels, and tailor standards to reflect the real world operating conditions of specific types of boilers. The CISWI final rule recognizes the important relationship to the Non-Hazardous Secondary Materials (NHSM) rule. The NHSM rule identifies which non-hazardous secondary materials are, or are not, solid wastes when burned in combustion units.

This fact sheet summarizes the key adjustments made to the March 2011 final rule as a result of this reconsideration.

SUMMARY

- The boiler and CISWI standards are developed under sections 112 and 129 of the Clean Air Act respectively, two provisions that target toxic air pollution.
- Under these sections, EPA is required to set technology-based standards for toxic air pollutants reflective of levels achieved by the best performing existing sources.
- **In 2011, EPA issued final rules for these sources.**
- There are more than 1.5 million boilers and 106 CISWI units in the United States.
- For 86 percent of all boilers in the United States, these standards will not apply because these boilers burn clean natural gas at area source facilities and emit little toxic air pollution.
- For almost 13 percent of all boilers in the United States, EPA's standards will continue to rely on practical, cost-effective work practice standards to reduce emissions.
- For the highest emitting 0.4 percent of all boilers in the United States, including boilers located at refineries, chemical plants, and other industrial facilities, EPA is finalizing more focused, revised numeric emission limits that provide industry practical, cost-effective options to meet the health-protective standards.
- For CISWI units, EPA is finalizing revised emission limits based on units that reflect the best performing commercial and industrial waste incineration units.
- The existing major source boilers that are subject to numerical emission limits will have until early 2016 to comply with the standards and, if needed, they may request an additional year.
- Existing area source boilers will have until March 21, 2014 to comply with these standards, if needed they may request an additional year. For CISWI units, existing incinerators have to comply no later than early 2018. New incinerators will need to meet the standards 180 days following publication in the Federal Register.

The adjustments from the March 2011 final standards to the 2012 final standards address new data provided to the agency and additional information about real-world performance and conditions under which boilers and incinerators operate

Toxic Pollutants	Emission Reductions from All Rules Combined (tons per year)	
	March 2011 Final Rule	2012 Final Standards
Mercury	1.6	2.0 – 3.0
Non-mercury metals	3,000	2,100
Hydrogen Chloride	30,500	40,500
Particulate Matter (PM _{2.5})	30,000	18,000
Sulfur Dioxide	450,000	580,000

Source: U.S. EPA Regulatory Impact Analysis

Health Benefits and Costs of the Boiler and CISWI Rules

- EPA has fully considered all of the information provided to the agency. Based on its review of this information, the agency is establishing standards that are achievable, protective and cost-effective.
- Overall, these adjustments have retained the significant health benefits of the March 2011 standards and are simpler to implement. The final adjustments also maintain the dramatic cuts in the cost of implementation that were achieved in the final standards issued in March 2011.
- The final adjustments will retain important emissions reductions of pollutants such as mercury, particle pollution, sulfur dioxide, dioxin, lead, and nitrogen dioxide.
 - These pollutants can cause a range of dangerous health effects - from developmental disabilities in children to cancer, heart disease and premature death.
- These adjustments will continue to maintain direct benefits to many communities where people live very close to these units.
- Together, the standards will avoid up to 8,100 premature deaths, 5,100 heart attacks, and 52,000 asthma attacks.
- EPA estimates that Americans will receive \$13 to \$29 in health benefits for every dollar spent to meet the final standards.
- These adjustments reflect the latest and best information provided during the standard development and reconsideration processes.

Major and Area Source Boiler Rules

Based on public comments and additional data provided after the standards were finalized in March 2011, EPA is finalizing some significant adjustments to the required air toxics standards for boilers.

- **Major Source Boilers:** There are approximately 14,000 major source boilers and process heaters in the United States. Eighty-eight percent of those burn clean fuels and will be required to conduct periodic tune-ups. Twelve percent will be required to take steps to meet numeric emission standards if they do not already meet the standards. Based on additional data provided after the agency issued final standards in March 2011, EPA is adjusting the standards by:
 - **Creating new subcategories for light and heavy industrial liquids** to reflect design differences in the boilers that burn these fuels. This change will improve the standards' achievability without decreasing public health protections.
 - **Creating a new subcategory for coal fluidized bed units** with a fluidized bed heat exchanger designed to burn coal. This change results in a more targeted, achievable standard.
 - **Setting new emission limits for PM** for each biomass subcategory to better reflect emissions during real-world operating conditions.
 - **Setting new emission limits for carbon monoxide** based on new data that show CO emissions from boilers vary greatly. EPA is setting new limits to more adequately capture that variability.

- **Allowing an alternative total selective metals emission limit** to regulate metallic air toxics instead of using PM as a surrogate, allowing more flexibility and decreasing compliance costs for units that emit low levels of HAP metals.
- **Replacing numeric dioxin emission limits with work practice standards** to reflect a more robust analysis that shows dioxin emissions are below levels that can be accurately measured.
- **Increasing flexibility in compliance monitoring** by adding alternative monitoring approaches for demonstrating continuous compliance with the PM limit.
- **Revising emission 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.
- **Continuing to allow units burning clean gases** to qualify for work practice standards instead of numeric emission limits, maintaining flexibility and achievability.
- **Area Source Boilers:** Due to how little these sources emit, EPA is continuing to require work practice / management practice standards, which include tune-ups for over 99 percent of area source boilers covered by the final standards. Less than 1 percent of area source boilers will need to meet numerical emission limits. The adjustments will not increase the costs of the standards but will result in a decrease in burden on small facilities. Key adjustments include:
 - **Seasonal Use and Limited Use Subcategories:** EPA is establishing subcategories for seasonal use boilers and limited use boilers that will reduce the compliance burden for these less frequently used boilers.
 - **Existing Dual-Fuel Fired Boilers:** EPA is revising provisions for existing dual-fuel fired units that fuel switch from gas to coal, biomass or oil such that they would still be considered existing sources, promoting flexibility for these existing sources that were designed to accommodate an alternate fuel.
 - **Initial Tune-ups:** To increase flexibility for existing sources, EPA is requiring initial compliance tune-ups within three years (by March 21, 2014) instead of one year, to give facilities ample time to comply with the standards.
 - **Initial Notification:** EPA is revising the deadline for initial notification to no later than January 20, 2014 to provide additional time for the many existing boilers that are just becoming aware, or are not yet aware, that they are subject to requirements under the rule.
 - **Periodic Tune-ups:** EPA is requiring tune-ups every five years instead of every two years for certain area source boilers: seasonal use units, limited use units, small oil-fired units and units with oxygen trim systems that would otherwise be required to perform tune-ups every two years. These units do not need to conduct tune-ups as frequently as other boilers.
 - **New Boilers Burning Low Sulfur Oil:** EPA is adding a provision specifying that combustion of low sulfur oil by new oil-fired units is considered an alternative method

of meeting the PM emission standard and that such units are not required to meet the PM emission limit, decreasing compliance costs for units that emit low levels of HAP metals.

- **Boilers Subject to Hg and PM Emission Limits:** EPA is encouraging units to perform well below the standards by adjusting the continuous compliance requirements. Under certain circumstances, after units demonstrate initial compliance, further fuel sampling for boilers subject to an Hg emission limit and further PM performance testing for boilers subject to a PM emission limit is not required. This approach decreases compliance costs for units that emit low levels of Hg or HAP metals.
- **Carbon Monoxide Monitoring Requirements:** EPA is increasing compliance flexibility by providing the option of continuous emissions monitoring to demonstrate continuous compliance with the CO emission limit.

CISWI and NHSM Rules

The agency is adjusting emission limits, including those for dioxin and mercury in each subcategory, based on receipt of public comments, additional data, updated unit inventories and adjustments to the methodology EPA used to develop the March 2011 standards. These adjustments result in better-defined, achievable standards. EPA is also further clarifying which units fall under the definition of CISWI. In addition, EPA is adjusting some monitoring requirements, which will provide facilities with more flexibility in achieving standards and lower compliance costs.

EPA is also finalizing adjustments to the NHSM rule, which provides the standards and procedures for identifying whether non-hazardous secondary materials (NHSMs) are solid waste under the Resource Conservation and Recovery Act (RCRA) when used as fuels or ingredients in combustion units such as boilers or solid waste incinerators. These adjustments clarify and provide direction to facilities about what types of secondary materials are considered non-waste fuels. The adjustments also provide greater flexibility in the criteria for making non-waste determinations. The final adjustments also list a number of secondary materials as non-wastes when used as a fuel and allow for a boiler or solid waste operator to request EPA to identify additional materials as non-waste fuels.

Background

In March 2011, EPA published a notice stating that the agency intended to reconsider certain aspects of the boiler and commercial and industrial solid waste incinerator rules. EPA also received more than 50 petitions for reconsideration from industry, states, and environmental groups. Based on these petitions, the agency's own reconsideration and the additional information industry provided, in December 2011, EPA proposed important adjustments to the March 2011 standards. Based on public comment and additional data provided, EPA is making final adjustments to the March 2011 standards, which will maintain public health protections through significant reductions in toxic air emissions, including mercury and particle pollution, while increasing the flexibility, consistency and achievability of these standards.

DOE and USDA Assistance and Outreach

In accordance with the August 30, Executive Order: Accelerating Investment In Industrial Energy Efficiency, the U.S. Department of Energy (DOE), through its regional Clean Energy Application Centers, will provide site-specific technical and cost information to the major source facilities that are currently burning coal or oil in their boilers.

- Clean Energy Application Center technical experts will visit these facilities and discuss opportunities to develop compliance strategies, such as combined heat and power that 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.
- DOE will provide the facilities identified above with information on potential funding and financing opportunities including financial incentives available at the local, state, utility and federal level as well as private financing. 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. Additional efficiencies can be achieved if a facility chooses to comply through the installation of more advanced energy saving measures identified in the energy assessment.
- DOE will provide to all effected sources information to assist them in undertaking a boiler tune-up and/or energy assessment. Additional information can found at http://www1.eere.energy.gov/manufacturing/states/pdfs/incentives_boiler_mact.pdf.
- DOE has been piloting this technical assistance effort in Ohio since March, 2012, working with the Public Utilities Commission of Ohio.

The U.S. Department of Agriculture (USDA) will be reaching out to facilities that have boilers that burn biomass to make sure that operators understand the regulation, its cost- and energy-saving features, and the benefits that can accrue as a result.

- This USDA outreach effort will focus on providing practical information such as what the work practice standards are, and advice on how to conduct an energy audit, and a tune-up.