

US EPA ARCHIVE DOCUMENT

# **Adjustments to the Air Toxics Standards for Major and Area Source Boilers and Certain Incinerators**

**Webinar: Summary of 2012 Rules and Adjustments to  
Requirements**

January 8<sup>th</sup>, 2013

# Overview



On December 20, 2012, EPA finalized a specific set of adjustments to March 2011 Clean Air Act standards, for boilers and certain solid waste incinerators.

These adjustments:

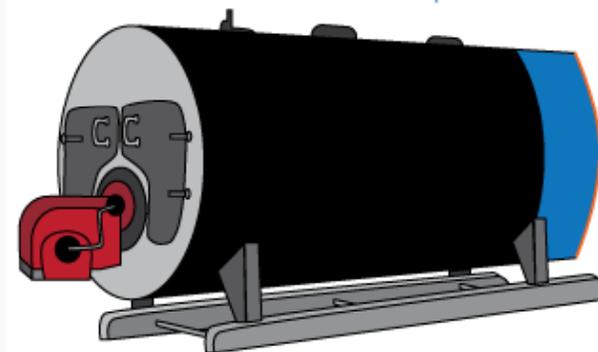
- maintain extensive public health protections achieved by the March 2011 standards by reducing toxic air pollution, including mercury and particle pollution.
- increase the rules' flexibility and address concerns raised by stakeholders.
- maintain the dramatic cuts in the cost of implementation that were achieved in the final standards issued in March 2011.
- provide clarity in identifying which non-hazardous secondary materials are, or are not, solid wastes when burned in combustion units.

Overall, these final standards address new data provided to the agency and additional information about real-world performance and conditions under which affected boilers and incinerators operate.

## Less than 1% of boilers need to meet limits

About **1.3 million** are clean and do nothing under these rules

About **197,000** will only need to do annual tune ups to reduce toxics



About **2,300** may need to use controls to reduce toxics and meet emission limits

# Compliance Timelines

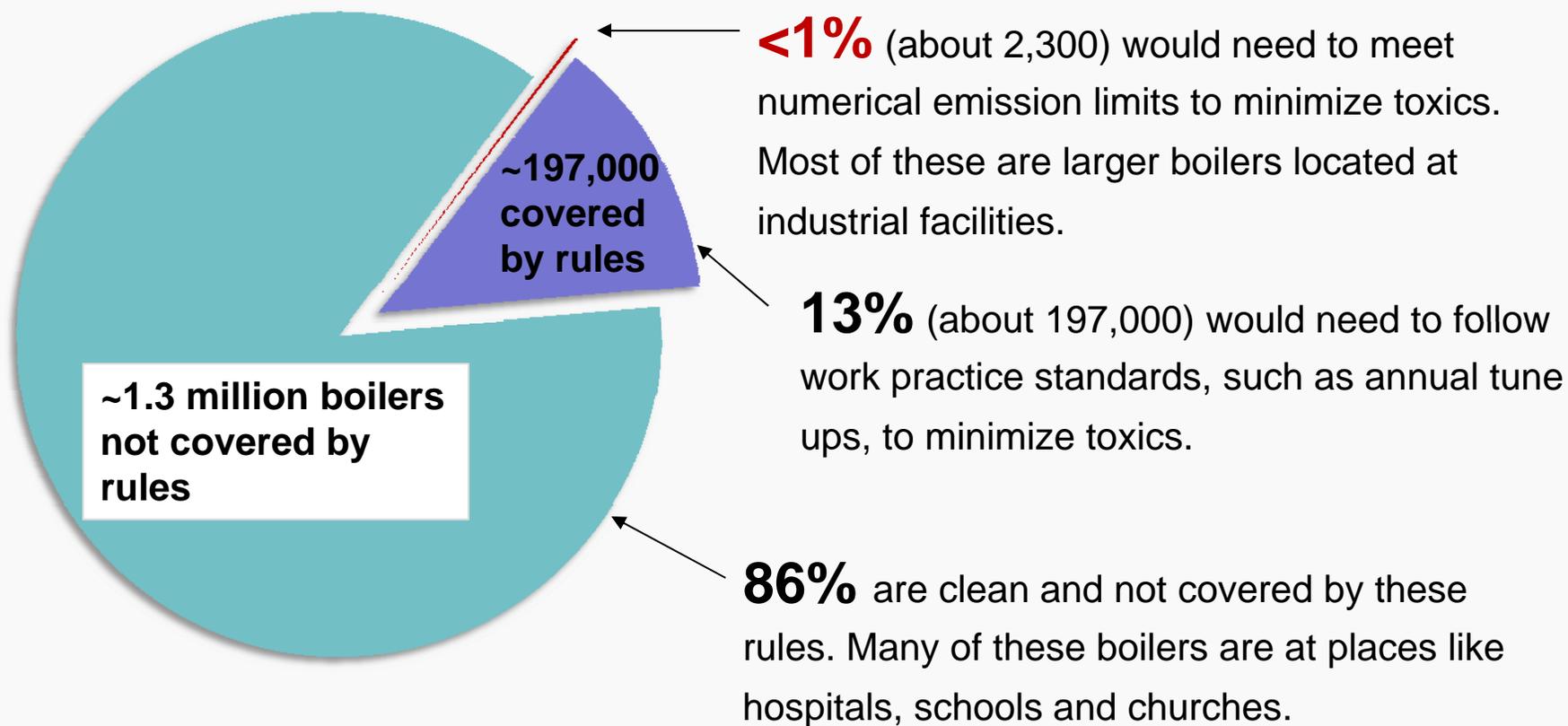


- The adjustments to numerical emission limits and to the various subcategories are significant enough to warrant allowing a full three years to allow sources the time necessary to comply.
- Compliance deadlines for major boilers and CISWI units will be in 2016 and 2018, respectively.
  - These units will have three to five years, respectively, to comply with these adjusted standards, and can do so with proven, currently available technologies.
  - Exact compliance date will depend on the date the rules are published in the Federal Register.
- For area sources:
  - The deadline for initial notification for existing area source boilers was adjusted to no later than January 20, 2014.
  - Existing area source boilers will have until March 21, 2014 to comply with these standards.
- If needed, sources may request an additional year to comply.
- EPA also has tools to address, on a case-by-case basis, additional concerns arising for individual sources.



## The Right Standards for the Right Boilers

Of 1.5 million boilers in the U.S.,  
less than 1% will need to meet numerical emission limits



# Health Benefits



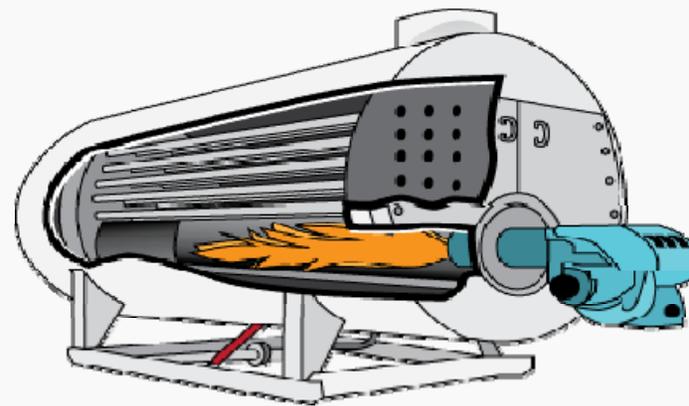
- Cuts emissions of pollutants such as mercury, particle pollution, sulfur dioxide, dioxin, lead, and nitrogen dioxide.
- Pollutants can cause a range of dangerous health effects - from developmental disabilities in children to cancer, heart attacks and premature death.
- Direct benefits to many communities 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 would receive \$13 to \$29 in health benefits for every dollar spent to meet the standards.

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 <sub>2.5</sub> )	30,000	18,000
Sulfur Dioxide	450,000	580,000

# What is a boiler?



- Boilers burn fuel, including natural gas, fuel oil, coal, biomass (e.g., wood), or other gas to produce steam or hot water. The steam is used to produce electricity, drive an industrial process, or provide heat.
- Most boilers are at smaller emitting sources, burn natural gas and have low emissions of air pollution. Many others burn other fuels, and emit toxic air pollutants like mercury, lead and particle pollution. EPA is putting in place standards that are more than 10 years overdue to cut those emissions and protect American families.
- From the outside, a boiler looks like a large, rounded tank. The pipes deliver fuel, air, and water to the boiler. Stacks vent emissions to air pollution control equipment or the atmosphere. Controls on the tank regulate fuel, oxygen and pressure. Inside the boiler, fuel is burned to produce steam that is piped away from the tank to produce electricity or provide heat elsewhere.
- There are more than 1.5 million boilers in the US.





# Breakdown of Major and Area Source Boilers

## Major Source Boilers

About 14,000 covered units



**12%** have numerical emission limits

**88%** follow work practices

**88%** (about 12,300) would need to follow work practice standards, such as annual tune ups, to minimize toxics.

**12%** (about 1,700) would need to meet numerical emission limits to minimize toxics.

## Area Source Boilers

About 183,000 covered units

No natural gas boilers are covered by this rule.



**Less than 1%** have emission limits

**99%** follow work practices

**99%** (about 182,400) would need to follow work practice standards, such as tunes ups on a biennial or 5-year basis, to minimize toxics.

**Less than 1%** (about 600) would need to meet emission limits to minimize toxics

# Key Adjustments



## Area Source Boilers

- Adjusting emission limits
  - Mercury and carbon monoxide
- Allowing the necessary time to implement the standards
  - Initial notification revised to January 20, 2014 for existing boilers
  - Initial tune-ups for existing boilers revised to March 21, 2014 and reduced frequency of tune-ups for certain boilers
- Adding to and refining the list of subcategories
- Energy assessment provisions
  - Better defining scope of assessment and allow more streamlining
- Reducing fuel sampling and performance testing requirements under certain circumstances

# Key Adjustments



## Major Source Boilers

- Adjusting emission limits
  - New particulate matter (PM) emission limits for biomass fueled boilers
  - New carbon monoxide limits to address variability
  - Allowing metals emission limits as an alternative to using PM limit as a surrogate for metallic air toxics
  - Replacing dioxin limit with work practice standards – data shows dioxin emissions are below levels that can be accurately measured.
- Adding to and refining the list of subcategories
- Compliance monitoring - increased flexibility
- Boilers outside of continental US - adjusted PM and CO emission limits
- Continue to allow units burning clean gases to qualify for work practice standards instead of numeric emission limits
  - Removing hydrogen sulfide (H<sub>2</sub>S) fuel specification from the rule

# Key Adjustments



## Commercial and Industrial Solid Waste Incinerators

- Adjusting emission limits
  - For all subcategories
  - Coal and biomass energy recovery units – separate standards for all nine pollutants
- Allowing the necessary time to implement the standards
  - Existing units must comply no later than 3 years after EPA approves a state plan or five years after the publication date of these final changes, whichever is earlier
- Monitoring provisions - adjusted, particularly for CO and PM
- Reinstating the definition of contained gaseous material
- Startup and shutdown - expanded authorization to use uncorrected continuous emissions monitoring system (CEMS) data
- Homogeneous waste - removed definition and requirement that certain facilities that combust solid waste obtain a determination from EPA that such waste is homogenous
- Waste-burning kilns
  - Revising the definition and clarifying that the threshold for determining if a unit is subject to the CISWI rule is whether it “combusts” solid waste material
  - Requiring continuous parameter monitoring systems, instead of PM CEMS

# Key Adjustments



## Non-Hazardous Secondary Materials (NHSMs)

- NHSM rule clarifies which secondary materials are, or are not, solid wastes when burned in combustion units.
- Why the rule is important:
  - Units that burn SOLID WASTE would be subject to requirements under CAA section 129 solid waste incinerator regulations.
  - Units that burn materials that are NOT A SOLID WASTE would be subject to requirements under CAA section 112 boiler regulations.
- As part of the new commercial and industrial solid waste incinerator rule, EPA revised its March 2011 NHSM rule.
  - The targeted revisions provide clarity to stakeholders in identifying the types of NHSMs that can be burned in boilers or solid waste incinerators.
- Specific revisions include the following:
  - Revises four definitions (1) “clean cellulosic biomass,” (2) contaminants, (3) “established tire collection programs,” and (4) “resinated wood.”
  - Clarifies that certain materials are already within the scope of clean cellulosic biomass and thus can be combusted in units meeting CAA 112 standards (e.g. hogged fuel, wood pallets, wood pellets).

# Key Adjustments



## NHSMs (continued)

- Revises contaminant legitimacy criterion, allowing “grouping” of contaminants for comparison to traditional fuels (e.g. VOCs), and clarifies the term “designed to burn.”
- Lists materials that are non-wastes by category based on information received and “balancing” of legitimacy criteria where appropriate (i.e. resinated wood, tires under oversight of established tire collection program, dewatered pulp and paper sludges generated onsite by mills that burn a significant portion of those materials, coal refuse recovered from legacy piles).
- Includes rulemaking petition process for individuals to list additional materials that are non-wastes under a categorical determination.
- Identifies other NHSMs that are good candidates for a categorical listing in a future rulemaking: (1) paper recycling residuals (including old corrugated cardboard (OCC) rejects); and (2) construction and demolition (C&D) wood processed pursuant to best practices and produced and managed under the oversight of a comprehensive collection system or contractual arrangement.
  - Agency also received information related to creosote-treated railroad ties and indicated areas where new information from the regulated community is needed - - - if such information provides support for a categorical listing, EPA would also address this NHSM in a future rulemaking.



# Appendix

# Timeline



- March 2011: EPA issued rules
  - Boiler major source rule
  - Boiler area source rule
  - Commercial and industrial solid waste incineration (CISWI) rule
- Concurrently, EPA initiated a reconsideration process affecting all three rules:
  - Address technical issues that arose from public comments
  - Give the public ample opportunity to comment on changes in the rules that were not in the proposal
- May 16, 2011: EPA announced a stay of the Boiler major source and CISWI rules and solicited additional input, through July 15, 2011, on these rules
- December 2, 2011: EPA proposed reconsideration.
- December 20, 2012: Final rules signed.



## How many boilers are there and where are they used?

- **Boilers located at small sources of air toxics emissions are known as area source boilers.** There are about 1.3 million boilers located at small sources of air pollutants, including universities, hospitals, hotels and commercial buildings, that burn natural gas and are not covered by EPA's area source boiler rule.
  - About 183,000 boilers would be covered by EPA's area source boiler rule. Of these, approximately 182,400 (over 99%) need only to conduct periodic tune-ups, and some of these also need to perform a one-time energy assessment.
  - Approximately 600 coal-burning units (less than 1%) are required to meet numerical emission limits.
- **Boilers at large sources of air toxics emissions are known as major source boilers.** There are about 14,000 boilers located at large sources of air pollutants, including refineries, chemical plants, and other industrial facilities.
  - All of these will be required to conduct periodic tune-ups.
  - About 12% will be required to meet numerical emission limits
- The final adjusted standards will have direct benefits to many communities where people live, work, and play.



## Boilers and CISWI

- These standards were developed under sections 112 and 129 of the Clean Air Act, 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 sources.
- For CISWI units, EPA adjusted emission limits for certain units that reflect the best performing commercial and industrial waste incineration units.
- For CISWI units, existing incinerators will need to comply no later than three years after EPA approves a state plan or five years after the publication date of these final changes, whichever is earlier. New incinerators will need to meet the standards 180 days following publication in the Federal Register.



# Petitions and Data Submissions

- During the reconsideration process, EPA received more than 50 petitions for reconsideration from industries and industry groups, industrial energy efficiency groups, states, and Sierra Club
  - Boiler major source rule: 29 petitions
  - Boiler area source rule: 10 petitions
  - CISWI rule: 17 petitions
- Industry provided additional data for our analysis and consideration
  - Boiler major source rule:
    - Data on 150 emission tests from 108 units, including at least 8 tests each for mercury, particulate matter (PM), dioxins, carbon monoxide (CO), hydrogen chloride (HCl), and total selected metals
    - CO continuous emission monitoring system (CEMS) data
    - Data on mercury, chlorine, and metals fuel analyses from 2 facilities and a metals analysis from 1 facility
  - CISWI rule:
    - 17 • Approximately 20 data submissions, with majority pertaining to energy recovery units



## How Cost Estimates Have Been Updated

- Major source boilers and CISWI:
  - The costs to comply *per boiler* are expected to decrease because of data-driven adjustments to the emission limits, including less stringent requirements for particle pollution controls for biomass units. The cost to comply for individual CISWI units is expected to decrease as well.
  - However, based on new and updated data, the revised inventory includes 336 more boilers and 18 more CISWI units than the March 2011 final rule. Therefore, even though per unit costs are less, the additional sources increase overall costs slightly.
  - Because the per unit costs are less for major source boilers, when evaluating the same inventory of units as the March 2011 rule, the estimated annualized cost of the amended rule would be \$1.19 billion, a decrease of \$130 million
- Area source boilers:
  - The final adjustments do not change the coverage of the March 2011 final air toxics rule for area source boilers and will not affect the estimated emission reductions, control costs or benefits of the standards in substance.
  - The adjustments do not impose any additional regulatory requirements beyond those imposed by the March 2011 standards and, in fact, will afford relief to some boilers.
- The total cost to implement all these standards combined will be \$2.2 to \$2.4 billion in 2015.



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