

The Latest on the CISWI Rules

Presented by

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- New Source Performance Standards
- Emissions Guidelines for required state plans





A Brief History of Time 1 of 2

- November 15, 1990 – Congress added Section 129 to the CAA to address emissions from solid waste combustion
- November 30, 1999 – proposed Commercial/Industrial Solid Waste Incineration (CISWI) NSPS and Emissions Guidelines (EG)
- December 1, 2000 – final CISWI NSPS and EG
- 2001 – EPA granted petition for reconsideration of the definitions of "commercial and industrial waste" and "commercial and industrial solid waste incineration unit."



A Brief History of Time 2 of 2

- 2001 – Voluntary remand of the 2000 rule
- 2005 – EPA proposed and finalized the CISWI definitions rule
- 2007 – D.C. Circuit vacated and remanded 2005 definitions rule
- April 29, 2010 – new CISWI rules (*and others*) proposed – In FR on June 4, 2010
 - ◆ Definition of “solid waste”
 - ◆ CISWI rule under CAA Sec. 129 (RCRA)
 - ◆ *Boilers and process heaters at major sources**
 - ◆ *Boilers at area sources**

* Not going into the boilers and process heaters rules in this presentation, but they are linked with the CISWI rules because of the regulatory and judicial history.



What New Rules Accomplish for EPA

- Response to the 2001 voluntary remand of the 2000 rule
- Response to the vacating and remand of the commercial and industrial solid waste incineration definition rule in 2007
- Five-year technology review of the new source performance standards and emission guidelines required under Section 129
- Proposes other amendments that EPA believes are necessary to adequately address air emissions from commercial and industrial solid waste incineration units.



Coverage of New Rules

- 176 CISWI units currently operating
- 172 of 176 units would require emissions reductions under proposed new rules

Figures are EPA estimates



Proposed Changes to 2000 Rule

- Proposing to regulate some categories of units excluded from regulation under the 2000 CISWI rule
- Removal of startup, shutdown and malfunction exemption
- Testing, monitoring and reporting requirements
- Electronic data submittal requirements
- Comments requested on requiring some air curtain incinerators to obtain Title V permit



Applicability

Under proposed rule, CISWI units include

- incinerators designed to discard waste materials*
- energy recovery units (e.g., units that would be boilers or process heaters if they did not burn solid waste) designed for heat recovery that combust solid waste materials
- kilns and other industrial units that combust solid waste materials in the manufacture of a product
- burn-off ovens that combust residual materials off racks, parts, drums, or hooks so that those items can be re-used in various production processes
- small, remote incinerators



Still Exempt from CISWI 1 of 2

Exemptions per CAA Sec. 129(g)(1)

- Qualifying small power producers
- Qualifying cogeneration units
- Metals recovery units
- Hazardous waste combustion units required to have a permit under Section 3005 of the Solid Waste Disposal Act
- Air curtain incinerators at commercial or industrial facilities combusting “clean wood” waste, except that such units must comply with opacity limits.



Still Exempt from CISWI 2 of 2

Excluded from CISWI due to regulation under other CAA Sec. 129 categories

- Municipal Waste Combustor (MWC) regulated under NSPS Ea, Eb, Cb, AAAAA, or BBBBB
- Pathological Waste Incinerator
 - EPA intends to regulate Pathological Waste Incinerators under other solid waste incineration (OSWI) standards
- Sewage Sludge Incinerator (SSI)
 - EPA currently intends to issue a regulation setting emission standards for SSIs by December 16, 2010
- NSPS O Sewage Treatment Plant incinerators
- Hospital/Medical/Infectious Waste Incinerator (HMIWI) regulated under NSPS Ec or Ce



Solid Waste Definition Change

- EPA is proposing to define the non-hazardous secondary materials that are solid waste in a parallel notice under RCRA, and the RCRA proposal also identifies an “alternative approach” for consideration and comment.
- Proposed RCRA definition is critical because proposed emission limits are based on subcategories established considering sources that are CISWI units under the “proposed approach” for defining when non-hazardous secondary materials are solid waste.



Exempt from Solid Waste Definition

- Under proposed 40 CFR 241.3, the following “non-hazardous secondary materials” are not solid waste when combusted and meeting legitimacy criteria
 - ◆ Used as fuel in a combustion unit that remains within the control of the generator
 - ◆ Ingredient in production/manufacturing process
 - ◆ Have undergone processing to transform into new fuel or ingredient product
 - ◆ Also, can achieve designation through case-by-case determination by EPA



Resetting what is a “new” CISWI

- CISWI units currently subject to 2000 NSPS become “existing” upon new emission guidelines compliance date – until then still comply with 2000 NSPS standards
- Revised NSPS would apply to
 - ◆ units constructed after June 4, 2010
 - ◆ units modified/reconstructed six months or more after June 4, 2010 (December 4, 2010)



CISWI Unit Definition 1 of 2

Commercial and industrial solid waste incineration (CISWI) unit:

- ◆ any distinct operating unit of any commercial or industrial facility that combusts any solid waste as that term is defined in 40 CFR Part 241
- ◆ includes, but not limited to, the solid waste feed system, grate system, flue gas system, waste heat recovery equipment, if any, and bottom ash system
- ◆ does not include air pollution control equipment or the stack



CISWI Unit Definition 2 of 2

Commercial and industrial solid waste incineration (CISWI) unit boundary starts at the solid waste hopper (if applicable) and extends through two areas:

- ◆ The combustion unit flue gas system, which ends immediately after the last combustion chamber or after the waste heat recovery equipment, if any;
- ◆ the combustion unit bottom ash system, which ends at the truck loading station or similar equipment that transfers the ash to final disposal. The CISWI unit includes all ash handling systems connected to the bottom ash handling system.



Other Definition Changes/Additions

1 of 3

- Incinerator means any furnace used in the process of combusting solid waste (as the term is defined by the Administrator pursuant to Subtitle D of RCRA) for the purpose of reducing the volume of the waste by removing combustible matter. Incinerator designs include single chamber, two-chamber, and cyclonic burn barrels.
- Burn-off oven means any rack reclamation unit, part reclamation unit, or drum reclamation unit.



Other Definition Changes/Additions

2 of 3

- Energy recovery unit means a combustion unit combusting solid waste (as that term is defined by the Administrator pursuant to Subtitle D of RCRA) for energy recovery. Energy recovery units include units that would be considered boilers and process heaters if they did not combust solid waste.
- Small, remote incinerator means an incinerator that combusts solid waste (as that term is defined by the Administrator pursuant to Subtitle D of RCRA) and has the capacity to combust 1 ton per day or less solid waste and is more than 50 miles driving distance to the nearest municipal solid waste landfill.



Other Definition Changes/Additions

3 of 3

- Kiln means an oven or furnace, including any associated preheater or precalciner devices, used for processing a substance by burning, firing, or drying. Kilns include cement kilns, that produce clinker by heating limestone and other materials for subsequent production of Portland cement and lime kilns, that produce quicklime by calcination of limestone.
- Waste-burning kiln means a kiln that is heated, in whole or in part, by combusting solid waste (as that term is defined by the Administrator pursuant to Subtitle D of RCRA).



Regulated Pollutants

- Particulate matter (PM)
- HAP metals, including lead (Pb), cadmium (Cd) and mercury (Hg)
- Toxic organics, including dioxin and furans
- Carbon monoxide (CO)
- Nitrogen oxides (NO_x)
- Acid gases, including hydrogen chloride (HCl)
- Sulfur dioxide (SO₂)
- Also, opacity/fugitive ash is regulated

*Initial performance tests required

TABLE 1—COMPARISON OF EXISTING SOURCE MACT FLOOR LIMITS FOR 2000 CISWI RULE AND THE PROPOSED MACT FLOOR LIMITS

[Based on the primary proposed definition of solid waste in the Solid Waste Definition Rule]

Pollutant (units) ¹	Incinerators (2000 CISWI limit)	Proposed CISWI subcategories				
		Incinerators	Energy recovery units	Waste-burning kilns	Burn-off ovens	Small, remote incinerators
HCl (ppmv)	62	29	1.5	1.5	130	150
CO (ppmv)	157	2.2	150	710	80	78
Pb (mg/dscm)	0.04	0.0026	0.002	0.0027	0.041	1.4
Cd (mg/dscm)	0.004	0.0013	0.00041	0.0003	0.0045	0.26
Hg (mg/dscm)	0.47	0.0028	0.00096	0.024	0.014	0.0029
PM, filterable (mg/dscm)	70	13	9.2	60	33	240
dioxin, furans, total (ng/dscm)	(no limit)	0.031	0.75	2.1	310	1,600
dioxin, furans, TEQ (ng/dscm)	0.41	0.0025	0.059	0.17	25	130
NO _x (ppmv)	388	34	130	1,100	120	210
SO ₂ (ppmv)	20	2.5	4.1	410	11	44
Opacity (%)	10	1	1	4	2	13

¹ All emission limits are measured at 7% oxygen.
 ppmv = parts per million by volume.
 mg/dscm = milligrams per dry standard cubic meter.
 ng/dscm = nanograms per dry standard cubic meter.

TABLE 2—COMPARISON OF NEW SOURCE MACT FLOOR LIMITS FOR 2000 CISWI RULE AND THE PROPOSED MACT FLOOR LIMITS

[Based on the primary definition of solid waste in the Solid Waste Definition Rule]

Pollutant (units) ¹	Incinerators (2000 limit)	Proposed CISWI subcategories				
		Incinerators	Energy recovery units	Waste-burning kilns	Burn-off ovens	Small, remote incinerators
HCl (ppmv)	62	0.074	0.17	1.5	18	150
CO (ppmv)	157	1.4	3.0	36	74	4.0
Pb (mg/dscm)	0.04	0.0013	0.0012	0.00078	0.029	1.4
Cd (mg/dscm)	0.004	0.00066	0.00012	0.00030	0.0032	0.057
Hg (mg/dscm)	0.47	0.00013	0.00013	0.024	0.0033	0.0013
PM, filterable (mg/dscm)	70	0.0077	4.4	1.8	28	240
dioxin, furans, total (ng/dscm)	(no limit)	0.0093	0.034	0.00035	0.011	1,200
dioxin, furans, TEQ (ng/dscm)	0.41	0.00073	0.0027	0.000028	0.00086	94
NO _x (ppmv)	388	19	75	140	16	210
SO ₂ (ppmv)	20	1.5	4.1	3.6	1.5	43
Opacity (%)	10	1	1	1	2	13

¹ All emission limits are measured at 7 percent oxygen.

Boiler MACT - Emissions Standards (Floors)

	PM	HCl	Hg	CO	D/F
Existing Coal	0.02	0.02	3e-6	30 – 90	0.002 – 0.004
Existing Biomass	0.02	0.006	9e-7	250 – 1010	0.004 – 0.03
Existing Liquid	0.004	9e-4	4e-6	1	0.002
Existing Gas 2 (Other)	0.05	3e-6	2e-7	1	0.009
New Coal	0.001	6e-5	2e-6	7 – 90	3e-5 – 0.003
New Biomass	0.008	0.004	2e-7	40 – 1010	5e-5 – 0.03
New Liquid	0.002	4e-4	3e-7	1	0.002
New Gas 2 (Other)	0.003	3e-6	2e-7	1	0.009

Note: Units are *lb/MMBtu* for PM, HCl, and Hg, *ppm at 3% O₂* for CO, and *ng/dscm* for D/F



Emission Control Options

- Wet scrubber
- Activated carbon injection
- Selective noncatalytic reduction
- Electrostatic precipitator
- If you (1) use an air pollution control device other than one listed above or (2) limit emissions in some other manner to comply with the emission limitations under §60.2105, you must petition the EPA Administrator for specific operating limits to be established during the initial performance test and continuously monitored thereafter. **Petition must be approved before initial performance test.**



Required Petition Content

- ID specific parameters to use as additional operating limits
- Discussion of relationship between parameters and emissions, identifying how emissions change with changes in these parameters and how limits on parameters will serve to limit emissions
- Discussion of how you will establish the upper and/or lower values (operating limits) for these parameters
- Methods to measure and instruments to monitor parameters, as well as the relative accuracy and precision of methods and instruments
- Frequency and methods for recalibrating instruments



Monitoring Requirements

- Continuously monitor operating parameters identified in rule (§60.2110) and in petition to EPA (if applicable)
- Annual performance test for
 - ◆ particulate matter
 - ◆ hydrogen chloride
 - ◆ fugitive ash
 - ◆ opacity
 - ◆ energy recovery units w/ PM CEMS exempt from opacity
 - ◆ kilns must also test for NO_x and SO₂ annually



Testing Requirements

- Tests to be conducted annually
 - ◆ Or triennially after 3 consecutive tests show emissions to be less than 75% of standard
- All test results to be submitted via EPA's Electronic Reporting Tool (ERT)*
 - ◆ Facilitate direct, public access to data via WebFire (available by 2012)
- Rule has options for continuous monitoring being used instead of annual testing



Monitoring Requirements

- Energy Recovery Units
 - ◆ COMS if not using a wet scrubber
 - ◆ CO CEMS
 - ◆ If design capacity > 250 MMBtu/hr, PM CEMS
- Waste burning kilns
 - ◆ Mercury CEMS
 - ◆ CO CEMS
- Incinerators – CO CEMS
- Burn-off Ovens – CO CEMS
- Small, remote incinerators – CO CEMS



Monitoring Requirements

For air pollution control device used to meet emission limitation

- ◆ Initial and annual inspection for proper operation
- ◆ Develop a site-specific monitoring plan for each continuous monitor and submit to EPA Administrator, which includes
 - Performance evaluation procedures and acceptance criteria (*e.g., calibrations*).
 - Ongoing operation and maintenance procedures in accordance with the general requirements of §60.11(d).
 - Ongoing data quality assurance procedures in accordance with the general requirements of §60.13.
 - Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §60.7(b),(c), (c)(1), (c)(4), (d), (e), (f) and (g).
 - Equipment specs and proposed measurement location



Monitoring Requirements

- Wet scrubbers
 - ◆ Charge rate
 - ◆ Pressure drop or current (amperage)
 - ◆ Scrubber liquid flow rate
 - ◆ Scrubber liquid pH
- Activated carbon injection
 - ◆ Mercury sorbent injection rate
- Fabric filters
 - ◆ Bag leak detection system



Monitoring Requirements

- SNCR
 - ◆ Charge rate
 - ◆ Secondary chamber temperature, if applicable
 - ◆ Reagent flow rate
- ESP
 - ◆ Voltage and current (amperage)



Key Reporting Requirements

- Preconstruction report (if applicable)
- Initial startup notification (if applicable)
- Initial test report
- **Annual report**
- **Emission limitation or operating limit deviation report (semi-annual)**
- Qualified operator deviation notification, as needed
- Qualified operator deviation status report, as needed
- Qualified operator deviation notification of resumed operation, as needed



Proposed Implementation Schedule for Existing CISWI

- Revised state plans due one year after amendments promulgated
- Proposed amendments to the EG would require existing CISWI to demonstrate compliance no later than the earlier of
 - ◆ 3 years from the date of approval of a state plan
 - ◆ 5 years after promulgation of the revised standards
- EPA believes many CISWI will require retrofits or additional controls to meet new standards



EPA Is Requesting Comments

- Proposed definition of solid waste*
- Specific procedures for determining secondary waste*
- If existing units other than energy recovery units should also be required to use CO CEMs and PM CEMs. (Tables to CISWI NSPS have CO CEMS for each category.)
- Approach for establishing the dioxin/furan TEQ basis limits
- Approach to establishing opacity limits while accounting for data variability and if it is appropriate to set opacity limits for this source category.
- Procedures used in establishing the MACT floor
- Exemptions for affected sources under other subparts



EPA Is Requesting Comments

- Beyond the floor analysis including cost-effectiveness of reducing emissions.
- Appropriateness of the use of previously conducted performance tests
- Utility and practicality of requiring PM CEMS on energy recovery units of 100 MMBtu/hr design capacity or greater
- Appropriateness of using multi-metals CEMs instead of initial performance tests coupled with PM CEMS and other surrogates.
- plus other topics



Significant CIBO Issues

- Subcategories
 - ◆ Need more
 - ◆ Too few subcategories – forces fuel switching
 - ◆ Data – use of new 112 method of analysis. Must use for 129 units? Phase 1/Phase 2 ICR data comparability? Emissions variability issues. Should use of CEMS variability data.
- Burn-off Oven Subcategory
 - ◆ EPA underestimated number of sites in this subcategory.
 - ◆ How to measure emissions
- D/F issues
 - ◆ No need for both total mass and TEQ limits
 - ◆ EPA used a fixed value (ratio) to set the TEQ limit from the total mass limit (0.078 factor).



Significant CIBO Issues

- Opacity
 - ◆ No need for limit under Section 129
 - ◆ Can't read 5% opacity with Method 9
- Limits in general
 - ◆ No new units can meet – More landfilling? Discourages alternate fuels.
 - ◆ “Franken unit” issue
 - ◆ Zeros averaged into floors/Detection limit issues
- SSM
 - ◆ Must meet limits all of the time. Departure from 2000 standard. Averaging times not adequate to cover.
 - ◆ CO during start-up? 24-hour averaging not long enough.
 - ◆ Top performers can have malfunctions too
 - ◆ Work practices during SSM?



Significant CIBO Issues

- Affected Units
 - ◆ Need to be able to move between CISWI (Section 129) and Boiler MACT (Section 112)
 - ◆ Laboratory analysis units – Exempt?
 - ◆ Other exempt units?
- Monitoring
 - ◆ Need add that operating limits do not apply during performance tests
 - ◆ CEMS for Hg? CEMS for multi-metals? CEMS for HCl



Submitting Comments

- Deadline is August 3, 2010
- Email, Fax, Mail, Courier
- Include all relevant documentation, scientific reasoning, economic analyses...
...PROVE YOUR CASE



Summary of Activities Requiring Resource Allocations

- Providing Comments on Proposed Rules - now
- Petition to EPA/state agency for use of control device other than wet scrubber, activated carbon injection, SNCR, or ESP to comply with standards.
- Annual report and semi-annual deviation reports
- Waste management plans
- 40 CFR 60.7 (Subpart A) reports
- Stack testing data collection
- Preparing Compliance Calendar
- CEMS/COMS
- Permitting for retrofits/additional controls, if necessary

