

Final Commercial and Industrial Solid Waste Incinerators (CISWI) Rules Requirements Summary

Federal Regulations:

- 40 CFR 60 Subpart CCCC – NSPS for new CISWI
- 40 CFR 60 Subpart DDDD – Emission Guidelines for existing CISWI
- Proposed rule published 6/4/2010; Final rule signed 2/21/2011
- Info at <http://epa.gov/airquality/combustion/actions.html>

Affected Sources:

- Solid waste incineration units at commercial and industrial facilities, including boilers and kilns burning non-hazardous solid waste. EPA is also promulgating a definition of non-hazardous secondary materials that are solid waste.
 - CISWI units burning agricultural materials that meet the definition of solid waste would be part of the appropriate standards under this proposed rule.
 - Energy Recovery Units that combust solid waste (these units would be boilers and process heaters if they did not combust solid waste).
 - If the unit does not recover energy, it would be included in either the incinerators subcategory or the small, remote incinerators subcategory.

Exemptions:

- Qualifying small power producers, qualifying cogeneration units and metals recovery units are expressly exempt from coverage pursuant to CAA exclusions from the definition of “solid waste incineration unit” set forth in Section 129(g)(1).
- Units that are required to have a permit under section 3005 or the Solid Waste Disposal Act (i.e., hazardous waste combustion units) are exempt from Section 129 rules per CAA Section 129(g)(1).
- Air curtain incinerators at commercial or industrial facilities combusting “clean wood” waste are also excluded from the definition of solid waste incineration unit set forth in CAA Section 129(g)(1), but that section provides that such units must comply with opacity limits.
- Solid waste incineration units that are included within the scope of other CAA Section 129 categories include municipal waste combustors, pathological waste incinerators (EPA intends to regulate these units under other solid waste incineration (OSWI) standards), sewage sludge incinerators, and hospital/medical/infectious waste incinerators, and these solid waste incineration units will remain exempt from the CISWI standards.
- Burn-off ovens (any rack reclamation unit, part reclamation unit, or drum reclamation unit) are exempted by definition.
- Cyclonic burn barrels (units consisting of a lid that fits onto and encloses an open-headed 55 gallon drum and that include a combustion air blower) are exempted by definition.
- Laboratory analysis units (units that burn samples of materials for the purpose of chemical or physical analyses) are exempted by definition.

Important Definitions:

- Commercial and industrial solid waste incineration (CISWI) unit means any distinct operating unit of any commercial or industrial facility that combusts, or has combusted in the preceding 6 months, any solid waste as that term is defined in 40 CFR part 241. If

the operating unit burns materials other than traditional fuels as defined in §241.2 that have been discarded, and you do not keep and produce records as required by §60.2740(u), the material is a solid waste and the operating unit is a CISWI unit. While not all CISWI units will include all of the following components, a CISWI unit includes, but is not limited to, the solid waste feed system, grate system, flue gas system, waste heat recovery equipment, if any, and bottom ash system. The CISWI unit does not include air pollution control equipment or the stack. The 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; and 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.

- Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:
 - Fails to meet any requirement or obligation established by this subpart, including but not limited to any emission limitation, operating limit, or operator qualification and accessibility requirements.
 - Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit.
- 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.
- Energy recovery unit designed to burn biomass (Biomass) means an energy recovery unit that burns solid waste and at least 10 percent biomass, but less than 10 percent coal, on a heat input basis on an annual average, either alone or in combination with liquid waste, liquid fuel or gaseous fuels.
- Energy recovery unit designed to burn coal (Coal) means an energy recovery unit that burns solid waste and at least 10 percent coal on a heat input basis on an annual average, either alone or in combination with liquid waste, liquid fuel or gaseous fuels.
- Energy recovery unit designed to burn liquid waste material and gas (Liquid/gas) means an energy recovery unit that burns a liquid waste with liquid or gaseous fuels not combined with any solid fuel or waste materials.
- Energy recovery unit designed to burn solid materials (Solids) includes energy recovery units designed to burn coal and energy recovery units designed to burn biomass
- Incinerator means any furnace used in the process of combusting solid waste (as that 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 and two-chamber.
- 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.

- Small, remote incinerator means an incinerator that combusts solid waste (as that term is defined by the Administrator under RCRA in 40 CFR 240) and combusts 3 tons per day or less solid waste and is more than 25 miles driving distance to the nearest municipal solid waste landfill.
- Solid waste incineration unit means a distinct operating unit of any facility which combusts any solid (as that term is defined by the Administrator under the Resource Conservation and Recovery Act in 40 CFR part 240) waste material from commercial or industrial establishments or the general public (including single and multiple residences, hotels and motels). Such term does not include incinerators or other units required to have a permit under section 3005 of the Solid Waste Disposal Act. The term "solid waste incineration unit" does not include (A) materials recovery facilities (including primary or secondary smelters) which combust waste for the primary purpose of recovering metals, (B) qualifying small power production facilities, as defined in section 3(17)(C) of the Federal Power Act (16 U.S.C. 769(17)(C)), or qualifying cogeneration facilities, as defined in section 3(18)(B) of the Federal Power Act (16 U.S.C. 796(18)(B)), which burn homogeneous waste (such as units which burn tires or used oil, but not including refuse-derived fuel) for the production of electric energy or in the case of qualifying cogeneration facilities which burn homogeneous waste for the production of electric energy and steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating or cooling purposes, or (C) air curtain incinerators provided that such incinerators only burn wood wastes, yard wastes and clean lumber and that such air curtain incinerators comply with opacity limitations to be established by the Administrator by rule.
- 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 under the Resource Conservation and Recovery Act pursuant in 40 CFR part 240).

Emission Limits (New CISWI Units – NSPS Subpart CCCC):

A CISWI is subject to NSPS CCCC if it commenced construction 60 days after the date of publication of the final rule in the Federal Register (approximately 3/30/11) or commenced reconstruction or modification after the date 6 months after the date of publication of the final rule in the Federal Register. New CISWI units must conduct **an initial performance test** to show compliance with the emission limits **within 60 days** after the unit reaches the charge rate at which it will operate, **but no later than 180 days** after the unit's initial startup. Table 1 (attached) presents the emission limits for new sources and compares them against the limits proposed in June 2010. These emission limits apply at all times, including periods of startup, shutdown, or malfunction.

Emission Limits (Existing CISWI Units – Subpart DDDD):

Site-specific compliance schedules for existing CISWI can be used at the discretion of the state. The date can be no later than 3 years after the effective date of approval of a revised SIP or 5 years after publication of the final rule in the Federal Register. Table 2 (attached) presents the emission limits for existing sources and compares them against the limits proposed in June 2010. These emission limits apply at all times, including periods of startup, shutdown, or malfunction.

Operating Limits:

The rule requires the following operating limits, based on the type of air pollution control device installed.

Air Pollution Control Device	Required Operating Limits
Wet Scrubber	Maximum Charge Rate Minimum Differential Pressure or Fan amperage Minimum Scrubber Liquor Flow Rate Minimum Scrubber Liquor pH
ESP	Minimum secondary voltage and amperage
Activated carbon Injection	Minimum sorbent feed rate
Selective Non-Catalytic Reduction	Maximum charge Rate Secondary Chamber Temperature Reagent Feed Rate
Fabric Filter	Bag Leak Detection System must alarm <5% of time every six months
Other (not listed above)	Owner must petition EPA for limits and receive approval

Operating parameters / monitoring requirements are as follows:

Operating Parameter / Monitoring Requirement (by Control Device type)	Pollutants Influenced by Operating Parameter	Alternative Monitoring Options
Maximum charge (feed) rate	All	None
Minimum dioxin, furans sorbent flow rate (Activated carbon injection)	Dioxin/furans	Integrated sorbent trap dioxin monitoring system (ISTDMS) and multi-metals CEMS, Hg CEMS or integrated sorbent trap mercury monitoring system (ISTMMS)
Minimum Hg sorbent flow rate (Activated carbon injection)	Hg	
Minimum HCl sorbent flow rate (Dry scrubbers, spray dryers or duct sorbent injection)	HCl	HCl CEMS
Minimum scrubber pressure drop / horsepower amperage (Wet scrubber)	PM, Cd, Pb, Hg	PM CEMS
Minimum scrubber liquor flow rate (Wet scrubber)	HCl, PM, Cd, Pb, Hg, dioxin, furans	HCl CEMS, PM CEMS, multi-metals CEMS, ISTDMS and ISTMMS
Minimum scrubber liquor pH (Wet scrubber)	HCl	HCl CEMS
Secondary power of collection plates (ESP)	PM, Cd, Pb, Hg	PM CEMS
Reagent flow rate and secondary chamber temperature (SNCR)	NOx	NOx CEMS
Air pollution control device inspections	All	None
Time of visible emissions from ash handling operations	PM	None

Operating Parameter / Monitoring Requirement (by Control Device type)	Pollutants Influenced by Operating Parameter	Alternative Monitoring Options
Bag Leak detection System Alarm-Fabric Filters	PM	

The minimum operating limits are established at 90 percent of the lowest test run average for each operating parameter value during the most recent performance test. Three-hour averages are used for determining compliance with control device parameter operating limits.

General Requirements for Testing / Monitoring by Compound:

Compound	Incinerators	Energy Recovery Units ≤250 MMBtu/hr	Energy Recovery Units >250 MMBtu/hr	Waste-burning Kilns	Small, Remote Incinerators
Cd	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS
CO	Annual Testing or CEMS	CEMS	CEMS	Annual Testing or CEMS	Annual Testing or CEMS
D/F	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS
HCl	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS
Pb	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS
Hg	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	CEMS	Annual Testing or CEMS
Opacity	Annual Testing	Annual Testing or PM CEMS (if Wet Scrubber) or COMS	COMS	Annual Testing	Annual Testing
NOx	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS
PM	Annual Testing or CEMS	Annual Testing or CEMS	CEMS	CEMS	Annual Testing or CEMS
SO2	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS	Annual Testing or CEMS
Fug. Ash	Annual VE Testing	Annual VE Testing	Annual VE Testing	NA	Annual VE Testing

Monitoring / Continuous Compliance Requirements:

- If using a **fabric filter** to comply, you must install and operate a bag leak detection system with an alarm such that the bag leak detection system alarm **does not sound more than 5%** of the operating time during a 6-month period. Each bag leak detection

system must be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's specifications and recommendations and specifications of §60.2165(b).

- If using a **wet scrubber** to comply, continuously monitor the following operating parameters if not using CEMS: pressure drop across the wet scrubber (or amperage), scrubber liquid flow rate, and pH.
- If using an **ESP** to comply, continuously monitor the following operating parameters: voltage and secondary current (or total power input).
- If using an **SNCR** to comply, continuously monitor the following operating parameters: reagent injection rate (e.g., ammonia or urea) and secondary chamber temperature (if applicable to the unit).
- If using **carbon injection or dry sorbent injection** to comply, continuously monitor the following operating parameters: sorbent injection rate.
- If you use an air pollution control device **other than a wet scrubber, activated carbon injection, selective non-catalytic reduction, or an electrostatic precipitator or limit emissions in some other manner** to comply with the emission limitations under §60.2670, you must petition the Administrator for specific operating limits to be established during the initial performance test and continuously monitored thereafter. (For more details on the required components of the petition see §60.2115).
- Annual inspections of scrubbers, fabric filters and other air pollution control devices that may be used to meet the emission limits.
- Facilities using a CEMS to demonstrate continuous compliance with any of the emission limits of this subpart must complete the following:
 - Demonstrate compliance with the appropriate emission limit(s) using a 24-hour block average, calculated following the procedures in EPA Method 19 of appendix A-7 of this part.
 - Operate all continuous emissions monitoring systems in accordance with the applicable procedures under appendices B and F of part 60.
- Monitoring of bypass stack use if installed at an affected unit. Use of a bypass stack at any time is an emissions standards deviation for particulate matter, HCl, Pb, Cd, and Hg.
- Conduct annual performance tests (where appropriate) for PM and HCl emissions, fugitives from ash handling, and opacity. (If demonstrate that the unit is less than 75% of the limit for 3 consecutive years, performance testing frequency reduces to every 3 years.)
- Annual visual emissions observation (Method 22) for ash handling operations (for all subcategories except waste-burning kilns).
- Operate monitoring systems per a site specific monitoring plan.

Recordkeeping and Reporting Requirements:

Maintain for **5 years** records of the initial performance tests and all subsequent performance tests, operating parameters, quality and type of waste burned, any maintenance, the siting analysis, and operator training and qualification. (See §60.2175 or §60.2740 for specific details)

Summary of the **key reporting requirements:**

Report	Due date	Contents
Startup notification for new units	Prior to initial startup	<ul style="list-style-type: none"> Type of waste to be burned Max design waste burning capacity Anticipated maximum charge rate
Initial test report	No later than 60 days following the initial performance test	<ul style="list-style-type: none"> Complete test report for the initial performance test The values for the site-specific operating limits Installation of bag leak detection system for fabric filter
Annual report	No later than 12 months following the submission of the initial test report. Subsequent reports are to be submitted no more than 12 months following the previous report	<ul style="list-style-type: none"> Name and address Statement and signature by responsible official Date of report Values for the operating limits Highest recorded 3- hour average and the lowest 3- hour average, as applicable, for each operating parameter recorded for the calendar year being reported If a performance test was conducted during the reporting period, the results of the test If a performance test was not conducted during the reporting period, a statement that the requirements of §60.2155(a) (for new sources) or §60.2720(a) (for existing sources) were met Documentation of periods when all qualified CISWI unit operators were unavailable for more than 8 hours but less than 2 weeks If you are conducting performance tests once every 3 years consistent with §60.2155(a) (for new or , §60.2720(a) the date of the last 2 performance tests, a comparison of the emission level you achieved in the last 2 performance tests to the 75 percent emission limit threshold and a statement as to whether there have been any operational changes since the last performance test that could increase emissions.
Emission limitation or operating limit deviation report	By August 1 of that year for data collected during the first half of the calendar year. By February 1 of the following year for data collected during the second half of the calendar year	<ul style="list-style-type: none"> Dates and times of deviations Averaged and recorded data for those dates Duration and causes of each deviation and the corrective actions taken Copy of operating limit monitoring data and any test reports Dates, times, and causes for monitor downtime incidents

Requirements prior to construction of new CISWI unit:

You must submit a notification prior to commencing construction that includes the following:

- (a) A statement of intent to construct.
- (b) The anticipated date of commencement of construction.
- (c) All documentation produced as a result of the siting requirements of §60.2050 (see bullet below).
- (d) The waste management plan as specified in §§60.2055 through 60.2065 (see bullet below).
- (e) Anticipated date of initial startup.

Siting Analysis

Submit a report that evaluates site-specific air pollution control alternatives that minimize potential risks to public health or the environment, considering costs, energy impacts, non-air environmental impacts, or any other factors related to the practicability of the alternatives.

Waste Management Plan

Submit a plan that identifies both the feasibility and the methods used to reduce or separate certain components of solid waste from the waste stream to reduce or eliminate toxic emissions from incinerated waste. The plan must include consideration of the reduction or separation of waste-stream elements such as paper, cardboard, plastics, glass, batteries, or metals; or the use of recyclable materials.

Operator Training and Qualification Requirements:

- Qualify operators by ensuring that they complete an operator training course and annual refresher review course.
- The CISWI unit cannot be operated unless a fully trained and qualified CISWI unit operator is accessible, either at the facility or can be at the facility within 1 hour. The trained and qualified CISWI unit operator may operate the CISWI unit directly or be the direct supervisor of one or more other plant personnel who operate the unit.
- The operator training course must be completed within 6 months of the CISWI unit startup. (Further details on the CISWI operator training/qualification requirements are given in §60.2070 through 60.2100 or §60.2635 through 60.2665.)

Table 1: Comparison of Proposed and Final CISWI Limits for New Units

Pollutant (units) ¹	Incinerators	Incinerators		Energy recovery units			Waste-burning kilns		Burn-off ovens		Small, remote incinerators		
	(2000 CISWI limit)	Proposed	Final	Proposed	Final		Proposed	Final	Proposed	Final	Proposed	Final	
					Biomass	Coal	Liq/Gas						
HCl (ppmv)	62	0.074	0.091	0.17	0.45	0.45	14	1.5	3	18	no limit	150	200
CO (ppmv)	157	1.4	12	3	160	46	36	36	90	74	no limit	4	12
Pb (mg/dscm)	0 .04	0.0013	0.0019	0.0012	0.0031	0.0031	0.096	0.00078	0.0026	0.029	no limit	1.4	0.26
Cd (mg/dscm)	0 .004	0.00066	0.0023	0.00012	0.00051	0.00051	0.023	0.0003	0.00048	0.0032	no limit	0.057	0.61
Hg (mg/dscm)	0 .47	0.00013	0.00016	0.00013	0.00033	0.00033	0.00033	0.024	0.0062	0.0033	no limit	0.0013	0.0035
PM- filterable (mg/dscm)	70	0.0077	18	4.4	250	250	110	1.8	2.5	28	no limit	240	230
Dioxin/Furans Total (ng/dscm) OR	(no limit)	0.0093	0.052	0.034	0.068	0.068	no limit	0.00035	0.09	0.011	no limit	1200	1200
Dioxin/Furans TEQ (ng/dscm)	0 .41	0.00073	0.13	0.0027	0.011	0.011	0.002	0.000028	0.003	0.00086	no limit	94	31
NOX (ppmv)	388	19	23	75	290	340	76	140	200	16	no limit	210	78
SO2 (ppmv)	20	1.5	11	4.1	6.2	650	720	3.6	38	1.5	no limit	43	1.2
Opacity (%)	10	1	no limit	1	no limit	no limit	no limit	1	no limit	2	no limit	13	no limit

¹ All emission limits are measured at 7 percent oxygen.

ppmv = parts per million by volume.

mg/dscm = milligrams per dry standard cubic meter.

ng/dscm = nanograms per dry standard cubic meter.

Yellow shaded cells indicate that there is a discrepancy between the values presented in the rule tables and the value presented in the preamble tables in the pre-publication version. According to EPA the values in the preamble are correct.

Table 2: Comparison of Proposed and Final CISWI Limits for Existing Units

Pollutant (units) ¹	Incinerators	Incinerators		Energy recovery units			Waste-burning kilns		Burn-off ovens		Small, remote incinerators		
	(2000 CISWI limit)	Proposed	Final	Proposed	Final		Proposed	Final	Proposed	Final	Proposed	Final	
					Biomass	Coal	Liq/Gas						
HCl (ppmv)	62	29	29	1.5	0.45	0.45	14	1.5	25	130	no limit	150	220
CO (ppmv)	157	2.2	36	150	490	59	36	710	110	80	no limit	78	20
Pb (mg/dscm)	0.04	0.0026	0.0036	0.002	0.0036	0.0036	0.096	0.0027	0.0026	0.041	no limit	1.4	2.7
Cd (mg/dscm)	0.004	0.0013	0.0026	0.00041	0.00051	0.00051	0.023	0.0003	0.00048	0.0045	no limit	0.26	0.61
Hg (mg/dscm)	0.47	0.0028	0.0054	0.00096	0.00033	0.00033	0.0013	0.024	0.0079	0.014	no limit	0.0029	0.0057
PM filterable (mg/dscm)	70	13	34	9.2	250	250	110	60	6.2	33	no limit	240	230
Dioxin/Furans total (ng/dscm) OR	(no limit)	0.031	4.6	0.75	0.35	0.35	2.9	2.1	0.20	310	no limit	1600	1200
Dioxin/Furans TEQ (ng/dscm)	0.41	0.0025	0.13	0.059	0.059	0.059	0.32	0.17	0.0070	25	no limit	130	57
NO _x (ppmv)	388	34	53	130	290	340	76	1100	540	120	no limit	210	240
SO ₂ (ppmv)	20	2.5	11	4.1	6.2	650	720	410	38	11	no limit	44	420
Opacity (%)	10	1	no limit	1	no limit	no limit	no limit	4	no limit	2	no limit	13	no limit

¹ All emission limits are measured at 7% oxygen.

Yellow shaded cells indicate that there is a discrepancy between the values presented in the rule tables and the value presented in the preamble tables in the pre-publication version. According to EPA the values in the preamble are correct.