

FACT SHEET

Existing Municipal Waste Combustors -- Subpart Cb Emission Guidelines (1995)

APPLICABILITY

The subpart Cb emission guidelines apply to existing MWC's¹ with aggregate plant capacities to combust greater than 35 Mg/day of MSW, that commence construction, modification, or reconstruction on or before September 20, 1994. Municipal waste combustors that commenced construction between December 20, 1989 and September 20, 1994 are also subject to the requirements of the subpart Ea standards of performance for new sources.

The intent of the guidelines is to initiate State action to develop State regulations controlling MWC emissions from existing MWC's. Modification of an existing MWC to comply with State regulations that result from these guidelines would not bring an existing MWC unit under the standards for new MWC's. Plants with Federally-enforceable permits limiting the amount of MSW that may be combusted to less than 10 Mg/day are not subject to the guidelines. The State regulations developed in response to these guidelines would apply to about 370 existing MWC units located at about 180 existing MWC plants.

BACKGROUND

On February 11, 1991, subpart Ca guidelines were promulgated for MWC's with unit combustion capacities above 225 Mg/day (56 FR 5514). The subpart Ca guidelines were developed under section 111(d) of the Act. These subpart Cb guidelines are developed under both section 111(d) and section 129 of the Act as amended in 1990. Section 129 of the Act required that the 1991 guidelines be revised to: (1) reflect MACT; (2) specify guideline emission levels for additional pollutants not covered under subpart Ca; and (3) apply to MWC's with capacities to combust less than 225 Mg/day of MSW. Thus, the subpart Cb guidelines are more stringent and cover more MWC's than the subpart Ca guidelines. The subpart Ca guideline have been withdrawn and are replaced with the subpart Cb guidelines.

MUNICIPAL WASTE COMBUSTOR SIZE CATEGORIES

¹Abbreviations are defined at the end of this fact sheet.

Existing MWC's located at plants with aggregate plant capacities to combust 35 Mg/day or less of MSW are not subject to State regulations required by the guidelines. Existing MWC's located at plants with aggregate capacities to combust more than 35 Mg/day are subject to State plans containing both GCP and air emission limits required by the guidelines.

The guidelines divide the population of existing MWC's into two size categories: (1) existing MWC's located at MWC plants with aggregate plant capacities to combust more than 35 Mg/day but less than or equal to 225 Mg/day of MSW (referred to as small MWC plants); and (2) existing MWC's located at MWC plants with aggregate plant capacities to combust more than 225 Mg/day of MSW (referred to as large MWC plants).

POLLUTANTS TO BE REGULATED

Consistent with section 129 of the Act, the subpart Cb guidelines establish emission limits for MWC acid gases (SO₂ and HCl), MWC metals (PM, opacity, Cd, Pb, and Hg), MWC organics (dioxins/furans), MWC operating practices (CO, flue gas temperature, and load level), and NO_x. Guideline emission levels are also included for fugitive ash emissions.

EMISSION LIMITS

The guidelines reduce emissions from MWC's by requiring States to develop regulations that would limit MWC emissions from existing MWC's at MWC plants with aggregate plant capacities greater than 35 Mg/day. The subpart Cb emission limits are equal to or more stringent than the subpart Ca limits adopted in 1991 for dioxins/furans, opacity, PM, SO₂ and HCl. Emission limits have also been added for Cd, Pb, Hg, and NO_x. For NO_x, provisions have been added allowing States to include emissions averaging between MWC units at large plants and emissions trading between plants. In addition, the guidelines require visible emissions from ash handling to be limited to no more than 5 percent of the time. The guidelines have minor changes in the MWC operating practice guidelines as compared to the subpart Ca guidelines. Numerical emission levels and operating guidelines are summarized in the attached table -- Summary of Guidelines for Existing MWC's.

In addition, the guidelines require provisional ASME or State operator certification of the MWC chief facility operator and shift supervisors by 18 months after State plan

approval for small plants and by 1 year after State plan approval for large plants or by 6 months after startup (small and large plants), whichever is later. The guidelines also require full ASME or State operator certification of the MWC chief facility operator and shift supervisors by 18 months after State plan approval for small plants and 1 year after State plan approval for large plants or by 6 months after startup (small or large plants), whichever is later. Alternatively, State plans may require that chief facility operators and shift supervisors be scheduled to take the full certification exam within the same timeframe. The State plans may also allow control room operators who have obtained provisional certification from the ASME or a State program to "stand in" during times the chief facility operator or shift supervisor is offsite. A certified individual is required to be onsite at all times during operation of the MWC. The guidelines require that State plans require all MWC chief facility operators, MWC shift supervisors, and control room operators to complete the EPA or a State MWC training program. Also, the guidelines require that State plans require a site-specific training manual be developed for each MWC. Each employee involved with the operation of the MWC is required to review the training manual developed for the MWC. The site-specific manual and training are required to be updated annually.

COMPLIANCE, TESTING, AND REPORTING

The guidelines require that State regulations include testing and monitoring requirements for MWC organic emissions (dioxins/furans), MWC metal emissions (PM, opacity, Cd, Pb, and Hg), MWC acid gas emissions (SO₂ and HCl), MWC operating parameters (CO, load level, and flue gas temperature), and NO_x (the NO_x monitoring requirements apply only to large plants). Sulfur dioxide, NO_x, and CO emissions are required to be determined using a CEMS. Opacity is required to be monitored using a COMS and measured annually by a visible emissions test. The guidelines also require that State regulations require annual visible emissions testing to determine compliance with fugitive ash emissions requirements. Emissions of other pollutants are to be determined by an annual stack test. However, if an MWC at a small MWC plant passes all three annual performance tests in a 3-year period, then the MWC can elect not to conduct the annual test for that particular pollutant for the next two years. If any subsequent test indicates noncompliance, then annual testing is again required until three annual tests in a row indicate compliance. In addition to this 3-year testing option for

small plants, less frequent dioxin/furan testing is possible for small and large plants if all MWC units at a plant consistently achieve emission levels lower than 15 ng/dscm for large plants and 30 ng/dscm for small plants. Other than this provision, all MWC units at large plants are to be tested annually. Reporting requirements are annual; however, if any emission limits are exceeded, then semiannual reports are required.

COMPLIANCE SCHEDULE

The guidelines require that State plans for large MWC plants include one of the following three retrofit schedules for compliance with the guideline requirements: (1) Full compliance or closure within 1 year following EPA approval of the State plan; (2) full compliance in 1 to 3 years following issuance of a revised construction or operation permit if a permit modification is required or in 1 to 3 years following EPA approval of the State plan if a permit modification is not required, provided the State plan includes measurable and enforceable incremental steps of progress toward compliance; or (3) closure in 1 to 3 years following approval of the State plan, provided the State plan includes a closure agreement. If a State plan allows the second or third scheduling options (i.e., more than 1 year), the State plan submittal to the EPA must contain post-1990 dioxins/furans test data for all MWC units at large plants under the extended schedule. (See § 60.21(h) of subpart B of 40 CFR 60 for additional information relating to measurable and enforceable incremental steps of progress toward compliance).

State plans for small MWC plants must require full compliance or closure with regulatory requirements in 3 years or less following issuance of a revised construction or operation permit if a permit modification is required, or within 3 years following EPA approval of the State plan if a permit modification is not required.

Due to recent concern about dioxin/furan and Hg emissions, the guidelines require that State plans include an accelerated compliance schedule for large plants for these two pollutants. Under the accelerated schedule, existing MWC units for which construction commenced after June 26, 1987 (i.e., those facilities equipped with spray dryer/fabric filters or spray dryer/electrostatic precipitators as required by the New Source Review program) and that are located at large MWC plants would be required to be in compliance with the dioxin/furan and Hg guidelines within 1 year following issuance of a revised construction

or operation permit, if a permit modification is required, or within 1 year following approval of the State plan, whichever is later.

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a

Applicability

The final guidelines apply to existing MWC's located at plants with capacities to combust greater than 35 Mg/day of residential, commercial, and/or institutional discards.^b Industrial manufacturing discards are not covered by the guidelines. Any medical, industrial manufacturing, municipal, or other type of waste combustor plant with capacity to combust greater than 35 Mg/day of MSW and with a federally enforceable permit to combust less than 10 Mg/day of MSW is not covered.

Plant Size (MSW combustion capacity)

Requirement

≤ 35 Mg/day	Not covered by guidelines
> 35 Mg/day but ≤ 225 Mg/day (referred to as small MWC plants)	Subject to provisions listed below
> 225 Mg/day (referred to as large MWC plants)	Subject to provisions listed below

Good Combustion Practices

- o Applies to large and small MWC plants.
 - o A site-specific operator training manual is required to be developed and made available to MWC personnel.
 - o The EPA or a State MWC operator training course would be required to be completed by the MWC chief facility operator, shift supervisors, and control room operators.
 - o The ASME (or State-equivalent) provisional and full operator certification must be obtained by the MWC chief facility operator (mandatory), shift supervisors (mandatory), and control room operators (optional).
 - o The MWC load level is required to be measured and not to exceed 110 percent of the maximum load level measured during the most recent dioxin/furan performance test.
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SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

- o The maximum PM control device inlet flue gas temperature is required to be measured and not to exceed the temperature 17°C above the maximum temperature measured during the most recent dioxin/furan performance test.
- o The CO level is required to be measured using a CEMS, and the concentration in the flue gas is required not to exceed the following:

<u>MWC Type</u>	<u>CO level</u>	<u>Averaging time</u>
Modular starved-air and excess-air	50 ppmv	4-hour
Mass burn waterwall and refractory	100 ppmv	4-hour
Mass burn rotary refractory	100 ppmv	24-hour
Fluidized-bed combustion	100 ppmv	4-hour
Pulverized coal/RDF mixed fuel-fired	150 ppmv	4-hour
Spreader stoker coal/RDF mixed fuel-fired	200 ppmv	24-hour
RDF stoker	200 ppmv	24-hour
Mass burn rotary waterwall	250 ppmv	24-hour

MWC Organic Emissions (measured as total mass dioxins/furans)

- o Dioxins/furans (performance test by EPA Reference Method 23) Large MWC plants

MWC units utilizing an ESP-based air pollution control system	60 ng/dscm total mass (mandatory) or 15 ng/dscm total mass (optional to qualify for less frequent testing) ^{c,d}
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SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

MWC units utilizing a nonESP-based air pollution control system	30 ng/dscm total mass (mandatory) or 15 ng/dscm total mass (optional to qualify for less frequent testing) ^{c,d}
Small MWC plants	125 ng/dscm total mass (mandatory) or 30 ng/dscm total mass (optional to qualify for less frequent testing) ^{c,d}
o Basis for dioxin/furan limits	
Large MWC plants	GCP and SD/ESP or GCP and SD/FF, as specified above
Small MWC plants	GCP and DSI/ESP
<u>MWC Metal Emissions</u>	
o PM (performance test by EPA Reference Method 5)	
Large MWC plants	27 mg/dscm (0.012 gr/dscf)
Small MWC plants	70 mg/dscm (0.030 gr/dscf)
o Opacity (performance test by EPA Reference Method 9)	
Large and small MWC plants	10 percent (6-minute average)
o Cd (performance test by EPA Reference Method 29) ^e	
Large MWC plants	0.040 mg/dscm (18 gr/million dscf)
Small MWC plants	0.10 mg/dscm (44 gr/million dscf)
o Pb (performance test by EPA Reference Method 29) ^e	Large MWC plants 0.49 mg/dscm (200 gr/million dscf)

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

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|---|---|
| Small MWC plants | 1.6 mg/dscm
(700 gr/million dscf) |
| o Hg (performance test by EPA Reference Method 29) ^e | |
| Large and small MWC plants | 0.080 mg/dscm
(35 gr/million dscf) or
85-percent reduction in
Hg emissions |
| o Basis for PM, opacity, Cd, Pb, and Hg limits | |
| Large MWC plants | GCP and SD/ESP/CI or GCP
and SD/FF/CI |
| Small MWC plants | GCP and DSI/ESP/CI |

MWC Acid Gas Emissions

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|---|--|
| o SO ₂ (performance test by CEMS) | |
| Large MWC plants | 31 ppmv or 75-percent
reduction in SO ₂
emissions |
| Small MWC plants | 80 ppmv or 50-percent
reduction in SO ₂
emissions |
| o HCl (performance test by EPA Reference Method 26) | |
| Large MWC plants | 31 ppmv or 95-percent
reduction in HCl
emissions |
| Small MWC plants | 250 ppmv or 50-percent
reduction in HCl
emissions |
| o Basis for SO ₂ and HCl limits | |
| Large and small
MWC plants | See basis for MWC
metals <u>Nitrogen Oxides</u>
<u>Emissions</u> |
-
- | | |
|--|-----------------------|
| o NO _x (performance test by CEMS) | |
| Large MWC plants | |
| Mass burn waterwall | 200 ppmv ^f |
| Mass burn rotary
waterwall | 250 ppmv ^f |

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

Refuse-derived fuel combustor	250 ppmv ^f
Fluidized bed combustor	240 ppmv ^f
Mass burn refractory	No NO _x control requirement ^f
Other	200 ppmv ^f
Small MWC plants	No NO _x control requirement
o Basis for NO _x limits	
Large MWC plants	SNCR
Refractory MWC plants	No NO _x control requirement
Small MWC plants	No NO _x control requirement
<u>Fugitive Ash Emissions</u>	
o Fugitive Emissions (performance test by EPA Reference Method 22)	
Large and small plants	Visible emissions less than 5 percent of the time from ash transfer systems except during maintenance and repair activities
o Basis for fugitive emission limit	Wet ash handling or enclosed ash handling <u>Performance Testing and Monitoring Requirements</u>
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o Reporting frequency	Annual (semiannual if violation)
o Load, flue gas temperature	Continuous monitoring, 4-hour block arithmetic average
o CO	CEMS, 4-hour block or 24-hour daily arithmetic average, as applicable

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

- o Dioxins/furans, PM, Cd, Pb, HCl, and Hg^{C,9}
 - Large MWC plants Annual stack test
 - Small MWC plants Annual or third year stack test^h
- o Opacity COMS (6-minute average) and annual stack test
- o SO₂ CEMS, 24-hour daily geometric mean
- o NO_x (large MWC plants only) CEMS, 24-hour daily arithmetic average
- o Fugitive ash emissions Annual test

Compliance Schedule

- o Large MWC plants

State plans for large MWC plants are required to include one of the following three retrofit schedules for compliance with the guideline requirements: (1) Full compliance or closure within 1 year following EPA approval of the State plan; (2) full compliance in 1 to 3 years following issuance of a revised construction or operation permit if a permit modification is required or in 1 to 3 years following EPA approval of the State plan if a permit modification is not required, provided the State plan includes measurable and enforceable incremental steps of progress toward compliance; or (3) closure in 1 to 3 years following approval of the State plan, provided

the State plan includes a closure agreement. If a State plan allows the second or third scheduling options (i.e., more than 1 year), the State plan submittal must include post-1990 dioxins/furans test data for all MWC units at large plants under the extended schedule. (See § 60.21(h) of subpart B of 40 CFR 60 for additional information relating to measurable and enforceable incremental steps of progress toward compliance).

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

State plans for large MWC plants are required to specify that all MWC's at large MWC plants for which construction was commenced after June 26, 1987 comply with the guidelines for Hg and dioxins/furans within 1 year following issuance of a revised construction or operation permit if a permit modification is required, or within 1 year following EPA approval of the State plan, whichever is later.

State plans for large MWC plants are required to specify that owners or operators of large MWC plants comply with the ASME (or State) operator training and certification requirements by 6 months after startup or 1 year after State plan approval by the EPA, whichever is later.

o Small MWC plants

State plans for small MWC plants must require full compliance or closure with regulatory requirements in 3 years or less following issuance of a revised construction or operation permit if a permit modification is required, or within 3 years following EPA approval of the State plan if a permit modification is not required.

State plans for small MWC plants are required to specify that owners or operators of small MWC plants comply with the ASME or State operator training and certification requirements by 6 months after startup or 18 months after State plan approval by the EPA, whichever is later.

a All concentration levels in the table are converted to 7 percent O₂, dry basis.

b Air curtain incinerators that combust only yard waste are subject only to an opacity limit. Air curtain

incinerators that combust other MSW are subject to all requirements under the final emission guidelines (clean wood is not a MSW).

c The emission guidelines include provisions that allow large and small MWC plants to conduct performance tests for dioxins/furans on only one unit per year if all units at the MWC plant achieve an emission level of 15 ng/dscm total mass (large plants) or 30 ng/dscm total mass (small plants) for 2 consecutive years.

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

- d Although not part of the dioxin/furan limit, the dioxin/furan total mass limits of 30 ng/dscm, 60 ng/dscm, and 125 ng/dscm are equal to about 0.3 to 0.8 ng/dscm, about 0.7 to 1.4 ng/dscm, and about 1.7 to 2.9 ng/dscm in 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalents, respectively, based on the 1989 international toxic equivalency factors. The optional reduced testing limits of 15 ng/dscm and 30 ng/dscm total mass are equal to about 0.1 to 0.3 ng/dscm and about 0.3 to 0.8 ng/dscm in 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalents, respectively, based on the 1989 international toxic equivalency factors.
- e Method 29 is scheduled to be promulgated in a separate notice in the near future.
- f State plans may allow NO_x emissions averaging between existing MWC units at a large MWC plant. The daily weighted average NO_x emissions concentration from the MWC units included in the emissions averaging plan must comply with the following 24-hour limits: 180 ppmv for mass burn waterwall combustors; 220 ppmv for mass burn rotary waterwall combustors; 230 ppmv for refuse-derived fuel combustors; 220 ppmv for fluidized bed combustors; and 180 ppmv for other combustor types (excluding mass burn refractory combustors). Refer to the regulatory text of the emission guidelines for additional details and procedures. State plans may also establish a program to allow emissions trading between noncontiguous MWC plants. Such a program shall meet the requirements of the Open Market Trading Rule of Ozone Smog Precursors, proposed August 3, 1995 (60 FR 39668) as finally promulgated.

SUMMARY OF GUIDELINES FOR EXISTING MWC's (SUBPART Cb)^a
(CONTINUED)

- g For Hg and dioxins/furans, the hourly carbon injection rate must be calculated and compared to the hourly carbon injection rates established during the most recent performance tests for Hg and dioxins/furans. If the calculated hourly carbon feed rate falls below the carbon feed rate established during either the Hg or dioxin/furan performance test, then the MWC owner or operator is required to notify the regulatory agency, and may be required to retest.
- h The emission guidelines include provisions that would allow small MWC plants to conduct performance tests for dioxin furans, PM, Cd, Pb, Hg, or HCl every third year if the MWC passes the annual performance test for the pollutants for three years in a row. If any subsequent annual test indicates noncompliance, then annual testing will again be required until three annual tests in a row indicate compliance.

Abbreviations Used in this Fact Sheet and Summary Table

Act	=	Clean Air Act
ASME	=	American Society of Mechanical Engineers
Cd	=	cadmium
CEMS	=	continuous emission monitoring system
CO	=	carbon monoxide
COMS	=	continuous opacity monitoring system
DSI/ESP/CI	=	dry sorbent injection/electrostatic precipitator/activated carbon injection
GCP	=	good combustion practices
gr/dscf	=	grains per dry standard cubic foot
gr/million dscf	=	grains per million dry standard cubic feet
HCl	=	hydrogen chloride
Hg	=	mercury
mg/dscm	=	milligrams per dry standard cubic meter (100 mg/dscm = 0.044 gr/dscf)
Mg/day	=	megagrams per day (1 Mg/day = 1.1 short tons/day)
MSW	=	municipal solid waste
MWC	=	municipal waste combustor
ng/dscm	=	nanograms per dry standard cubic meter (1,000,000 ng = 1 mg)
NO _x	=	nitrogen oxides
Pb	=	lead
PM	=	particulate matter
ppmv	=	parts per million by volume
RDF	=	refuse-derived fuel
SD/ESP/CI	=	spray dryer/electrostatic precipitator/activated carbon injection system
SD/FF/CI	=	spray dryer/fabric filter/activated carbon injection system
SNCR	=	selective noncatalytic reduction
SO ₂	=	sulfur dioxide
Total mass	=	total mass of tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.