

FACT SHEET

New Municipal Waste Combustors -- Subpart Eb Standards of Performance (1995)

APPLICABILITY

Subpart Eb regulates emissions from all new MWC¹ units at MWC plants with aggregate plant capacities greater than 35 Mg/day of MSW that commence construction, modification, or reconstruction after September 20, 1994. 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 rule.

BACKGROUND

Initial standards of performance for new MWC's were promulgated under subpart Ea of 40 CFR part 60 on February 11, 1991 (56 FR 5488). The subpart Ea standards were developed under section 111(b) of the Act as amended in 1977, and applied only to MWC units with greater than 225 Mg/day combustion capacity for which construction, modification, or reconstruction commenced after December 20, 1989. The subpart Eb standards were developed under sections 111(b) and 129 of the Act as amended in 1990 and (1) reflect MACT; (2) regulate emissions of nine listed pollutants; (3) include siting requirements; and (4) apply to MWC's with capacities to combust greater than 35 Mg/day of MSW. The subpart Ea and Eb requirements do not overlap and apply to different MWC populations. Subpart Ea now applies to MWC's constructed, modified, or reconstructed between December 20, 1989 and September 20, 1994. Subpart Eb applies to those MWC's constructed, modified, or reconstructed after September 20, 1994. The subpart Eb standards are more stringent than the subpart Ea standards.

MUNICIPAL WASTE COMBUSTOR SIZE CATEGORIES

New MWC's located at plants with aggregate plant capacities to combust more than 35 Mg/day of MSW are subject to provisions for GCP, emission limits, and siting requirements under subpart Eb. The subpart Eb standards do not apply to new MWC's at MWC plants with aggregate plant capacities to combust 35 Mg/day or less of MSW.

The subpart Eb standards subcategorize the population of new MWC's into two size categories: (1) MWC's located at MWC plants with aggregate plant capacities to combust more than 35 Mg/day of MSW but less than or equal to 225 Mg/day of MSW (referred to as small MWC plants), and (2) MWC's

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

located at plants with aggregate capacities to combust more than 225 Mg/day of MSW (referred to as large MWC plants). Slightly different requirements apply to each source category.

REGULATED POLLUTANTS

The subpart Eb standards establish requirements for MWC metals (PM, Cd, Pb, Hg, opacity), MWC organics (dioxins/furans), MWC acid gases (SO₂, HCl), MWC operating practices (CO, flue gas temperature, load level), NO_x, and MWC facility siting requirements. The standards also require control of fugitive ash emissions.

EMISSION LIMITS

Subpart Eb numerical emission limits and operating standards are summarized in the attached table -- Summary of Standards for New MWC's. Additional discussions of the operator training and certification and siting requirements are presented below.

Operator Training and Certification

The operator training and certification requirements under subpart Eb are more stringent than the subpart Ea requirements. Under subpart Eb, all MWC chief facility operators and shift supervisors are required to obtain full operator certification from the ASME or an equivalent State program within 1 year after promulgation or 6 months after MWC startup, whichever is later, or, within the same timeframe, be provisionally certified and be scheduled to take the full certification exam. Additionally, the standards allow a control room operator who has obtained provisional certification from ASME or a State program to "stand in" during times the chief facility operator or shift supervisor is offsite. A certified individual must be onsite at all times while the MWC is operating. All MWC chief facility operators, shift supervisors, and control room operators are required to complete the EPA or a State MWC operator training course. Also, the standards require that a site-specific training manual be developed for each MWC. Each MWC 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. (The site-specific training requirements are unchanged from the subpart Ea standards.)

Siting Requirements

The siting requirements include preparation and submittal of a materials separation plan and siting analysis, as well as public meeting requirements. The

siting requirements require the owner or operator of a planned facility to prepare a materials separation plan, which must include a strategy for materials separation activities for the area served by the MWC. The materials separation plan is to be tailored to the area served by the MWC and does not have to be uniformly applied to the service area. Additionally, the standards do not include any prescriptive performance levels, program types, or materials specifications for collection. All of these factors can be considered in the public hearing process and incorporated into the design and sizing of the MWC. The public meetings are held early in the planning process.

In order to limit potential risks to public health and the environment, the standards require MWC owners or operators to conduct and prepare a siting analysis of the impact of the proposed facility on ambient air quality, visibility, soils and vegetation, and other factors that may be relevant in determining the benefits of the proposed facility and the environmental and social costs imposed by the facility.

The MWC owner or operator is required to make the siting analysis and materials separation plan available to the public and the EPA (or State) for review. Two public meetings are to be held for public review of the materials separation plan. The second public meeting may also address the siting analysis. The first public meeting will cover the preliminary draft materials separation plan. The final draft materials separation plan and the summary of responses to public comments about the plan are to be submitted to the EPA prior to submittal of the MWC's application for a construction permit under New Source Review (NSR) (40 CFR part 51, subpart I, or part 52, as applicable). The second public meeting is to be held after submission of the application for a construction permit under NSR, and is to cover both the siting analysis and final draft materials separation plan. The siting analysis, the final materials separation plan, and the summary of responses to public comments on the siting analysis and the final draft materials separation plan are to be submitted as part of the initial notification of construction.

The siting requirements (siting analysis, materials separation plan, and public meeting requirements) apply to all new MWC's located at plants with capacities above 35 Mg/day that apply for a permit for construction after the date of promulgation of the standards. The siting requirements do not apply to MWC's subject to subpart Ea.

COMPLIANCE, TESTING, AND REPORTING

The standards include testing and monitoring requirements for MWC acid gases (SO₂ and HCl), MWC metals (PM, opacity, Cd, Pb, and Hg), MWC organics (dioxins/furans), MWC operating parameters (CO, load level, flue gas temperature), and NO_x (the NO_x testing and monitoring requirements apply only to MWC's at large plants). Sulfur dioxide, NO_x, and CO are required to be measured using a CEMS. Opacity is required to be monitored using a COMS and measured by an annual visible emissions test. The standards also require annual visible emissions testing to determine compliance with the fugitive ash emissions requirements. Emissions of other pollutants are determined by an annual stack test. However, if an MWC at a small plant passes the annual performance test for PM, Cd, Pb, Hg, dioxins/furans, or HCl for three years in a row, it can elect not to conduct the annual test for that particular pollutant for the next two years. If any subsequent annual test indicates noncompliance for that particular pollutant, then annual testing will again be required until three annual tests in a row indicate compliance. In addition to this 3-year testing option, less frequent dioxin/furan testing is possible for small plants if all MWC units at a plant achieve emission levels lower than 7 ng/dscm total mass for two years in a row. If emissions are less than 7 ng/dscm total mass, only one unit must be tested per year. All MWC units at large plants are tested annually but, like small plants, reduced dioxin/furan testing would be allowed if all units at the plant demonstrated less than 7 ng/dscm total mass for 2 years in a row. Reporting requirements are annual; however, if any emission limits are exceeded, then semiannual reports are required.

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^aApplicability

The final standards apply to new MWC units 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 standards. 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)

<u>Plant Size (MSW combustion capacity)</u>	<u>Requirement</u>
≤ 35 Mg/day	Not covered by standards
> 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 State MWC operator training course must be completed by the MWC chief facility operator, shift supervisors, and control room operators.
- o The ASME (or State-equivalent) 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.

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^a
(CONTINUED)

- o The 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 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	4-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	150 ppmv	24-hour
RDF stoker	150 ppmv	24-hour
Mass burn rotary waterwall	100 ppmv	24-hour

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

- o Dioxins/furans (performance test by EPA Reference Method 23)
 - Large and small MWC plants
 - 13 ng/dscm total mass (mandatory)^d or
 - 7 ng/dscm total mass (optional to qualify for less frequent testing)^e
- o Basis for dioxin/furan limit
 - GCP and SD/FF/carbon injection

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^a
(CONTINUED)

MWC Metal Emissions

- | | | | |
|-------|---|--|--|
| o | PM (performance test by EPA Reference Method 5) | | |
| | Large and small MWC plants | 24 mg/dscm
(0.010 gr/dscf) | o Opacity (performance test by EPA Reference Method 9) |
| <hr/> | | | |
| | Large and small MWC plants | 10 percent (6-minute average) | |
| o | Cd (performance test by EPA Reference Method 29) ^f | | |
| | Large and small MWC plants | 0.020 mg/dscm
(8.7 gr/million dscf) | |
| o | Pb (performance test by EPA Reference Method 29) ^f | | |
| | Large and small MWC plants | 0.20 mg/dscm
(87 gr/million dscf) | |
| o | Hg (performance test by EPA Reference Method 29) ^f | | |
| | 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 and small MWC plants | See basis for dioxin/furan limit | |

MWC Acid Gas Emissions

- | | | |
|---|---|--|
| o | SO ₂ (performance test by CEMS) | |
| | Large and small MWC plants | 30 ppmv or 80-percent reduction in SO ₂ emissions |
| o | HCl (performance test by EPA Reference Method 26) | |

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^a
(CONTINUED)

Large and small MWC plants	25 ppmv or 95-percent reduction in HCl emissions	
o Basis for SO ₂ and HCl limits	See basis for dioxin/furan limit	
<u>Nitrogen Oxides Emissions</u>		
o NO _x (performance test by CEMS)		
Large MWC plants	150 ppmv, except 180 ppmv is allowed for the first year of operation.	
Small MWC plants	No NO _x control requirement o	Basis for NO _x limit
<hr/>		
Large MWC plants	SNCR	
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 MWC plants	Visible emissions less than 5 percent of the time from the ash transfer system except during maintenance and repair activities	
o Basis for fugitive emissions limit	Wet ash handling or enclosed ash handling	
<u>Siting Requirements</u>		
o Large and small MWC plants	(1) Siting analysis, (2) materials separation plan, and (3) public meetings (including response to comments) ⁹	
<u>Performance Testing and Monitoring Requirements</u>		

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^a
(CONTINUED)

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
o	Dioxins/furans, PM, Cd, Pb, HCl, and Hg ^{e,h}	
	Large MWC plants	Annual stack test (see reduced testing option for low emitters of dioxins/furans)
	Small MWC plants	Annual or third year stack test ⁱ
<hr/>		
o	Opacity	COMS (6-minute average) and annual stack test
o	SO ₂	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
<hr/>		

^a All concentration levels in the table are corrected 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 standards (clean wood is not a MSW).

^c Although not part of the dioxin/furan limit, the limit of 13 ng/dscm total mass is equal to about 0.1 to 0.3 ng/dscm in 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalents, based on the 1989 international toxic equivalency factors. The optional reduced testing limit of 7 ng/dscm total mass is equal to about 0.1 to 0.2 ng/dscm in 2,3,7,8-tetrachlorinated dibenzo-p-dioxin toxic equivalents, based on the 1989 international toxic

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^a
(CONTINUED)

equivalents.

- d For MWC's constructed after September 20, 1994, but on or before September 22, 1997, the standard is 30 ng/dscm total mass for the first 3 years of operation of the MWC. After the first 3 years, the standard is 13 ng/dscm total mass. For all MWC's constructed after September 22, 1997, the standard at startup is 13 ng/dscm total mass.
- e The standards include provisions that allow large and small plants to conduct performance tests for dioxins/furans on only one unit per year if all units at the plant achieve emission levels of 7 ng/dscm total mass for 2 consecutive years.
- f Method 29 is scheduled to be promulgated in a separate notice in the near future.

SUMMARY OF STANDARDS FOR NEW MWC's (SUBPART Eb)^a
(CONTINUED)

-
- g Two public meetings will be held for review of the materials separation plan. The first public meeting will focus on review of a draft materials separation plan. The draft materials separation plan and the summary of responses to public comments about the plan will be submitted to the EPA prior to application for a construction permit under New Source Review (NSR). A second public meeting will be held after submission of the application for a construction permit and will focus on both the final materials separation plan and the siting analysis. The siting analysis, the materials separation plan, and the summary of responses to public comments on the siting analysis and the materials separation plan will be submitted as part of the initial notification of construction.
- h For Hg and dioxins/furans, the hourly carbon injection rate must be determined and compared to the hourly carbon injection rates established during the most recent performance tests for Hg and dioxins/furans. If the primary parameter(s) (e.g., screw feeder speed) used to estimate the hourly carbon feed rate falls below the rate established during either the Hg or dioxin/furan performance test, then the MWC owner or operator is required to notify the regulatory authority, and may be required to retest for dioxins/furans and mercury.
- i The standards include provisions that allow small MWC plants to conduct performance tests for dioxins/furans, PM, Cd, Pb, Hg, or HCl every third year if the MWC passes the annual performance test for the pollutant 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
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/day	=	megagrams per day (1 Mg/day = 1.1 short tons/day (2,204 pounds/day))
mg/dscm	=	milligrams per dry standard cubic meter (100 mg/dscm = 0.044 gr/dscf)
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/FF/CI	=	spray dryer/fabric filter/activated carbon injection
SNCR	=	selective noncatalytic reduction
SO ₂	=	sulfur dioxide
Total mass	=	total mass of tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.