

FACT SHEET

Existing Medical Waste Incinerators--
Proposed Subpart Cc Emission Guidelines

APPLICABILITY

The proposed subpart Cc emission guidelines would apply to existing MWI's¹ that commence construction or modification on or before the date of proposal of these guidelines.

The intent of the proposed guidelines is to initiate State action to develop State regulations controlling emissions from existing MWI's. The State regulations developed in response to these emission guidelines would apply to about 5,000 existing MWI's.

BACKGROUND

This proposal would add subpart Cc to 40 CFR part 60. Subpart Cc would propose emission guidelines and compliance schedules for use by States in developing State regulations to control emissions from existing MWI's. The proposed guidelines would implement sections 111(d) and 129 of the Act. Section 129 requires the Administrator to establish emission guidelines pursuant to section 111 for MWI's. Section 129 and the proposed guidelines require existing MWI's to control emissions of air pollutants to levels that reflect the degree of emission reduction based on MACT. In addition, the proposed guidelines include requirements for fugitive fly ash/bottom ash emissions and MWI operator training and qualification requirements.

POLLUTANTS TO BE REGULATED

Consistent with section 129 of the Act, the proposed subpart Cc emission guidelines would establish numerical emission limits for PM, opacity, CO, CDD/CDF, HCl, SO₂, NO_x, Pb, Cd, and Hg. The proposed guidelines would also establish fugitive fly ash/bottom ash emission guidelines.

PROPOSED EMISSION GUIDELINES

The proposed emission guidelines would reduce emissions from MWI's by requiring States to develop regulations limiting emissions from existing MWI's. The proposed numerical emission limits are summarized in the attached emission guidelines summary table.

¹Note: abbreviations are defined at the end of this fact sheet.

The proposed guidelines would require training and qualification of the MWI operator. A qualified operator would be required to be onsite during operation of the MWI. Also, the proposed guidelines would require that a site-specific training manual be developed for each MWI. Each employee involved with the operation of the MWI would be required to review the training manual developed for the MWI. The site-specific manual would be required to be updated annually.

COMPLIANCE AND TESTING

The proposed guidelines include testing and monitoring requirements to demonstrate compliance with the emission limits for CDD/CDF, PM, Cd, Pb, Hg, CO, opacity and HCl. Opacity and CO emissions would be determined using a CEMS. The proposed guidelines would also require monthly opacity testing to determine compliance with fly ash/bottom ash fugitive emissions requirements. Emissions of other pollutants would be determined by an annual stack test. However, if an MWI passed all three annual compliance tests in a 3-year period, then the MWI could forgo testing for that particular pollutant for the following 2 years. If any subsequent test indicated noncompliance, then annual testing would again be needed until three annual tests in a row indicate compliance. In addition to annual testing, the proposed guidelines require that an affected facility demonstrate continuous compliance with the emission limits for HCl, CDD/CDF, and Hg by monitoring MWI and APCD operating parameters. These parameters are hourly charge rate and Hg sorbent flow rate (typically carbon) for Hg, particulate matter control device inlet temperature and CDD/CDF sorbent flow rate (typically carbon) for CDD/CDF, and HCl sorbent flow rate (typically lime) and hourly charge rate for HCl. The proposed emission guidelines also require that a facility perform an annual inspection until the time the source demonstrates compliance with the emission limits.

PROPOSED COMPLIANCE SCHEDULE

The proposed guidelines require MWI facilities to meet one of the following two compliance schedules: (1) full compliance with an EPA approved State plan within 1 year after approval of the plan, or (2) full compliance with the State plan within 3 years after EPA approval of the State plan, provided the owner or operator submits information on measurable and enforceable incremental steps of progress that will be taken to comply with the State plan (the State plan must include provisions for what information should be included in this submittal). Additionally, the proposal requires compliance with the operator training and

qualification and inspection requirements within 1 year after the date of EPA approval of a State plan.

NATIONAL COSTS

It is expected that many facilities that currently operate onsite incinerators will switch to less expensive methods of treatment and disposal when faced with the compliance costs associated with stringent regulations, thereby substantially reducing the total national annual costs. The total annual cost increase to implement the proposed emission guidelines would be about \$351 million/yr over the baseline cost of \$265 million/yr. The overall nationwide cost increase per unit of medical waste treated would be about \$245/Mg of medical waste treated over the baseline cost of \$185/Mg of medical waste treated. These costs represent the total cost increase for the proposed guidelines over current baseline conditions.

NATIONAL EMISSION REDUCTIONS

The proposed guidelines would reduce emissions from existing MWI's as follows:

Pollutant	Baseline emissions	Nationwide emission reduction	Nationwide emission reduction (percent) ^a
PM	11,300 Mg/yr	11,000 Mg/yr	98
CO	13,100 Mg/yr	12,900 Mg/yr	98
CDD/CDF	284.9 kg/yr	284.8 kg/yr	>99
HCl	41,200 Mg/yr	40,400 Mg/yr	98
SO ₂	766 Mg/yr	287 Mg/yr	37
NO _x	5,040 Mg/yr	1,880 Mg/yr	37
Pb	77.5 Mg/yr	76.6 Mg/yr	99
Cd	5.62 Mg/yr	5.48 Mg/yr	97
Hg	58.6 Mg/yr	54.9 Mg/yr	94

^aThese reductions represent reductions from the regulatory baseline.

 EMISSION GUIDELINES SUMMARY TABLE (subpart Cc)

Applicability

- The proposed guidelines would apply to existing MWI units. Sources combusting only pathological waste are only subject to certain provisions of the reporting and recordkeeping requirements.

Numerical Emission Limits:

- Pollutant emission limits would be established as follows (Corrected to 7 percent O₂):

<u>Pollutant</u>	<u>Emission limit</u>	<u>Basis</u>
○ PM	30 mg/dscm	DI/FF ^a
○ Opacity	5 percent	DI/FF ^a
○ CO	50 ppm _{dv}	2-sec combustion
○ CDD/CDF ^b	1.9 ng/dscm TEQ or 80 ng/dscm total CDD/CDF ^b	DI/FF with CI ^a
○ HCl	42 ppm _{dv} or 97- percent reduction	DI/FF ^a
○ SO ₂	45 ppm _{dv}	no control
○ NO _x	210 ppm _{dv}	no control
○ Pb	0.10 mg/dscm	DI/FF ^a
○ Cd	0.05 mg/dscm	DI/FF ^a
○ Hg	0.47 mg/dscm or 85- percent reduction	DI/FF with CI ^a

- The proposed guidelines would establish a limit of zero percent opacity of fugitive fly ash or bottom ash emissions from any fly ash or bottom ash storage or handling area within the facility's property boundary.

Operator Training/Qualification Requirements

- The proposed training/qualification requirements would require training and qualification of the MWI operator. A qualified operator would be required to be onsite during operation of the MWI. Also, the proposed guidelines would require that a site-specific training manual be developed
-

EMISSION GUIDELINES SUMMARY TABLE (subpart Cc)
(continued)

for each MWI. Each employee involved with the operation of the MWI would review the training manual developed for the MWI.

EMISSION GUIDELINES SUMMARY TABLE (subpart Cc)
(continued)

Compliance Testing/Monitoring Requirements

- PM, Pb, and Cd
(Compliance test by EPA Reference Method 5 [PM] and 29 [Pb and Cd]) Annual or third year^c stack test
- CO
(Compliance test by CEMS) CEMS, 12-hour arithmetic average
- CDD/CDF^b
(Compliance test by EPA Reference Method 23) Annual or third year^c stack test and continuous monitoring of sorbent (carbon) injection rate and PM control device inlet temperature
- HCl
(Compliance test by EPA Reference Method 26) Annual or third year^c stack test and continuous monitoring of charge rate and sorbent (lime) flow rate
- Hg
(Compliance test by EPA Reference Method 29) Annual or third year^c stack test and continuous monitoring of charge rate and sorbent (carbon) injection rate
- Opacity
(Compliance test by CEMS) CEMS, 6-minute block average
- Compliance with the fugitive emission limit is determined by conducting a performance test using Method 9 at least once per month when ash is removed from the incinerator and when ash is removed from the air pollution control device.
- The proposed emission guidelines require that a facility perform an annual MWI inspection until the time the source comes into compliance with the testing requirements.

Compliance Schedule

- State plans would be required to include one of the following two schedules for full compliance with the State plan: (1) full compliance with the emission guidelines within 1 year after EPA approval of the State plan; or (2) full compliance with the State plan within 3 years after EPA approval of the State plan, provided the owner or

EMISSION GUIDELINES SUMMARY TABLE (subpart Cc)
(continued)

operator submits information on measurable and enforceable incremental steps of progress that will be taken to comply with the State plan (the State plan must include provisions for what information should be included in this submittal).

- Independent of State plans, all existing MWI's would be required to comply with the emission guidelines within 5 years after promulgation of the emission guidelines.

Reporting and Recordkeeping

- The proposed emission guidelines would require owners of existing facilities to maintain thorough records documenting the results of the initial and annual performance tests, records demonstrating continuous monitoring of site-specific operating parameters, CEMS output data and quality assurance determinations, and records of the initial and annual inspections. These records must be kept on file for at least 5 years.
 - Additional records must be kept on file for the life of the designated facility. These records are required to document compliance with the operator training and qualification requirements and include records of the names of the persons who have completed the operator training requirements, the names of the persons who have been qualified as MWI operators, and the names of the persons who have completed review of the site-specific MWI operating manual.
 - Under the proposed emission guidelines owners or operators are required to submit the results of the initial and annual maintenance inspections and the results of the initial performance test and all subsequent performance tests. Additionally, reports on emission rates or operating parameters that have not been obtained or that exceed applicable limits must be submitted within 30 days after the end of the quarter of occurrence. If no exceedances occur during a quarter, the owner of the designated facility would be required to submit a letter stating so. All reports submitted to comply with the requirements of the proposed emission guidelines must be signed by the facilities manager.
-

EMISSION GUIDELINES SUMMARY TABLE (subpart Cc)
(continued)

- Pathological MWI's would only be required to submit quarterly reports of the amount and type of materials charged to the incinerator.
-

EMISSION GUIDELINES SUMMARY TABLE (subpart Cc)
(continued)

^aIncludes 2-sec combustion

^bDioxins/furans are measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans, and then TEQ is determined using international toxicity equivalency factors as specified in the guidelines.

^cThe proposed guidelines include provisions that would allow MWI facilities to conduct performance tests for CDD/CDF, PM, Cd, Pb, and Hg every third year if the MWI meets certain specified criteria.

Abbreviations used in this Fact Sheet and Summary Table

Act	=	Clean Air Act of 1990
Cd	=	cadmium
CDD/CDF	=	dioxins/furans
CEMS	=	continuous emission monitoring system
CI	=	activated carbon injection system
CO	=	carbon monoxide
DI/FF	=	dry injection/fabric filter
EPA	=	United States Environmental Protection Agency
HCl	=	hydrogen chloride
Hg	=	mercury
kg	=	kilogram
MACT	=	maximum achievable control technology
Mg	=	megagram
mg/dscm	=	milligrams per dry standard cubic meter
MWI	=	medical waste incinerator
ng/dscm	=	nanograms per dry standard cubic meter
NO _x	=	nitrogen oxides
NSPS	=	new source performance standards
O ₂	=	oxygen
Pb	=	lead
PM	=	particulate matter
ppmdv	=	parts per million by dry volume
SO ₂	=	sulfur dioxide
TEQ	=	toxic equivalency of 2,3,7,8-tetrachlorinated dibenzo-p-dioxin
yr	=	year

FACT SHEET

New Medical Waste Incinerators--Proposed Subpart Ec NSPS

APPLICABILITY

The proposed subpart Ec NSPS¹ would apply to all new MWI's that commence construction or modification after the date of proposal of the NSPS. In the first 5 years after promulgation, the proposed NSPS would be expected to apply to about 700 MWI's.

BACKGROUND

This proposal would add subpart Ec to 40 CFR part 60, regulating emissions from new MWI's. The proposed standards would implement sections 111(b) and 129 of the Act. Section 129 requires the Administrator to establish performance standards pursuant to section 111 for MWI's. Section 129 and the proposed NSPS require new MWI's to control emissions of air pollutants to levels that reflect the degree of emission reduction based on MACT. In addition, this proposed standard would include requirements for fugitive fly ash/bottom ash emissions, MWI operator training and qualification requirements, and siting requirements.

POLLUTANTS TO BE REGULATED

Consistent with section 129 of the Act, the proposed subpart Ec NSPS would establish numerical emission limits for PM, opacity, CO, CDD/CDF, HCl, SO₂, NO_x, Pb, Cd, and Hg. The proposed standards would also establish fugitive fly ash/bottom ash emission standards.

PROPOSED NEW SOURCE PERFORMANCE STANDARDS

The proposed NSPS would reduce emissions from MWI's by proposing standards limiting emissions from new MWI's. The proposed numerical emission limits and other requirements are summarized in the attached NSPS summary table.

The proposed NSPS would require training and qualification of the MWI operator. A qualified operator would be required to be onsite during operation of the MWI. Also, the proposed NSPS would require that a site-specific training manual be developed for each MWI. Each employee involved with the operation of the MWI would be required to review the training manual developed for

¹Note: abbreviations are defined at the end of this fact sheet.

the MWI. The site-specific manual would be required to be updated annually.

Section 129 of the Act also requires that performance standards for MWI's incorporate siting requirements that minimize, on a site-specific basis and to the maximum extent practicable, potential risks to public health or the environment. In accordance with section 129, site selection criteria are being proposed for MWI's that commence construction after the date of promulgation of this rule. The siting requirements would not apply to existing, modified, or reconstructed MWI's.

The proposed siting requirements are patterned after the Prevention of Significant Deterioration (PSD) requirements within the New Source Review (NSR) program. These requirements include a comprehensive air quality analyses in regard to National Ambient Air Quality Standards (NAAQS) and PSD increments. An impacts analysis, which studies the potential effect of air, ground, and water pollution on visibility, soils, and vegetation also would be required. A document presenting the results of the analyses would be prepared and submitted to EPA, State, and local officials and would be made available to the public. Provisions for a public meeting and the preparation of a comment and response document are also included in the proposed siting requirements.

COMPLIANCE AND TESTING

The proposed NSPS includes testing and monitoring requirements to demonstrate compliance with the emission limits for CDD/CDF, PM, Cd, Pb, Hg, CO, opacity, and HCl. Opacity and CO emissions would be determined using a CEMS. The proposed NSPS would also require monthly opacity testing to determine compliance with fugitive fly ash/bottom ash emissions requirements. Emissions of other pollutants would be determined by an annual stack test. However, if an MWI passed all three annual compliance tests in a 3-year period, then the MWI could forgo testing for that particular pollutant for the following 2 years. If any subsequent test indicated noncompliance, then annual testing would again be needed until three annual tests in a row indicate compliance. In addition to annual testing, the proposed standards require that an affected facility demonstrate continuous compliance with the emission limits for HCl, CDD/CDF, and Hg by monitoring MWI and APCD operating parameters. These parameters are hourly charge rate and Hg sorbent flow rate (typically carbon) for Hg, particulate matter control device inlet temperature and CDD/CDF sorbent flow rate (typically carbon) for CDD/CDF, and HCl sorbent flow rate (typically lime) and hourly charge rate for HCl.

NATIONAL COSTS

In the absence of regulation, an estimated 700 new MWI's are expected to be installed over the next 5 years. However, onsite incineration is only one of several medical waste treatment and disposal options and for some MWI's, the equipment necessary to comply with the proposed regulations will make onsite incineration more expensive than other treatment and disposal options. Consequently, many facilities that would have chosen onsite incineration may decide to use a less expensive method of treatment and disposal resulting in substantially lower national annual costs. Under this scenario, the total annual cost increase to implement the proposed standards would be about \$74.5 million/yr over the baseline cost of 63.3 million/yr. The overall nationwide cost increase per unit of medical waste treated would be about \$177/Mg of medical waste treated over the baseline cost of \$150/Mg of waste treated. These costs represent the total cost increase for the proposed standards over current baseline conditions.

NATIONAL EMISSION REDUCTIONS

The proposed NSPS would reduce emissions from new MWI's as follows:

Pollutant	Baseline emissions	Nationwide emission reduction	Nationwide emission reduction (percent) ^a
PM	1,670 Mg/yr	1,590 Mg/yr	95
CO	1,630 Mg/yr	1,570 Mg/yr	96
CDD/CDF	21.73 kg/yr	21.70 kg/yr	>99
HCl	10,000 Mg/yr	9,820 Mg/yr	98
SO ₂	192 Mg/yr	48.1 Mg/yr	25
NO _x	1,240 Mg/yr	300 Mg/yr	24
Pb	19.2 Mg/yr	18.9 Mg/yr	98
Cd	1.38 Mg/yr	1.34 Mg/yr	97
Hg	14.5 Mg/yr	13.4 Mg/yr	92

^aThese reductions represent reductions from the regulatory baseline.

NEW SOURCE PERFORMANCE STANDARDS SUMMARY TABLE
(subpart Ec)

Applicability

- The proposed NSPS would apply to new MWI units. Sources combusting only pathological waste are only subject to certain provisions of the reporting and recordkeeping requirements.

Numerical Emission Limits:

- Pollutant emission limits would be established as follows (Corrected to 7 percent O₂):

<u>Pollutant</u>	<u>Emission limit</u>	<u>Basis</u>
○ PM	30 mg/dscm	DI/FF ^a
○ Opacity	5 percent	DI/FF ^a
○ CO	50 ppm _{dv}	2-sec combustion
○ CDD/CDF ^b	1.9 ng/dscm TEQ or 80 ng/dscm total CDD/CDF ^b	DI/FF with CI ^a
○ HCl	42 ppm _{dv} or 97- percent reduction	DI/FF ^a
○ SO ₂	45 ppm _{dv}	no control
○ NO _x	210 ppm _{dv}	no control
○ Pb	0.10 mg/dscm	DI/FF ^a
○ Cd	0.05 mg/dscm	DI/FF ^a
○ Hg	0.47 mg/dscm or 85- percent reduction	DI/FF with CI ^a

- The proposed NSPS would establish a limit of zero percent opacity of fugitive fly ash or bottom ash emissions from any fly ash or bottom ash storage or handling area within the facility's property boundary.

Operator Training/Qualification Requirements

- The proposed training/qualification requirements would require training and qualification of the MWI operator. A qualified operator would be required to be onsite during operation of the MWI. Also, the NSPS would require that a
-

NEW SOURCE PERFORMANCE STANDARDS SUMMARY TABLE
(subpart Ec) (continued)

site-specific training manual be developed for each MWI. Each employee involved with the operation of the MWI would review the training manual developed for the MWI.

Compliance Testing/Monitoring Requirements

- PM, Pb, and Cd
(Compliance test by EPA Reference Method 5 [PM] and 29 [Pb and Cd]) Annual or third year^c stack test
- CO
(Compliance test by CEMS) CEMS, 12-hour arithmetic average
- CDD/CDF^b
(Compliance test by EPA Reference Method 23) Annual or third year^c stack test and continuous monitoring of sorbent (carbon) injection rate and PM control device inlet temperature
- HCl
(Compliance test by EPA Reference Method 26) Annual or third year^c stack test and continuous monitoring of charge rate and sorbent (lime) flow rate
- Hg
(Compliance test by EPA Reference Method 29) Annual or third year^c stack test and continuous monitoring of charge rate and sorbent (carbon) injection rate
- Opacity
(Compliance test by CEMS) CEMS, 6-minute block average
- Compliance with the fugitive emission limit is determined by conducting a performance test using Method 9 at least once per month when ash is removed from the incinerator and when ash is removed from the air pollution control device.

Siting Requirements

- The proposed siting requirements would address the impact of the facility on ambient air quality, visibility, soils, vegetation, and other factors that may be relevant in determining that the benefits of the proposed facility significantly outweigh the environmental and social costs imposed as a result of its location and construction. A
-

NEW SOURCE PERFORMANCE STANDARDS SUMMARY TABLE
(subpart Ec) (continued)

document presenting the results of the analyses would be prepared and submitted to EPA, State, and local officials and would be made available to the public. Provisions for a public meeting and the preparation of a comment and response document are also included in the proposed siting requirements.

Reporting and Recordkeeping

- The proposed standards would require owners of affected facilities to submit notifications concerning construction and initial startup of the affected facility. Owners and operators are also required to maintain thorough records documenting the results of the initial and annual performance tests, records demonstrating continuous monitoring of site-specific operating parameters, and CEMS output data and quality assurance determinations. These records must be kept on file for at least 5 years.
 - Additional records must be kept on file for the life of the affected facility. These records are required to document compliance with the siting requirements and the operator training and qualification requirements. The records to be maintained include all documentation produced as a result of the siting requirements and records of the names of the persons who have completed the operator training requirements, the names of the persons who have been qualified as MWI operators, and the names of the persons who have completed review of the site-specific MWI operating manual.
 - Under the proposed standards owners or operators of affected facilities are required to submit the results of the initial performance test and all subsequent performance tests. Also, reports on emission rates or operating parameters that have not been obtained or that exceed applicable limits must be submitted within thirty days after the end of the quarter of occurrence. If no exceedances occur during a quarter, the owner of the affected facility would be required to submit a letter stating so. All reports submitted to comply with the requirements of the proposed standards must be signed by the facilities manager.
-

NEW SOURCE PERFORMANCE STANDARDS SUMMARY TABLE
(subpart Ec) (continued)

- Pathological MWI's would only be required to submit quarterly reports of the amount and type of materials charged to the incinerator.
-
-

^aIncludes 2-sec combustion

^bDioxins/furans are measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans, and then TEQ is determined using international toxicity equivalency factors as specified in the standard.

^cThe proposed NSPS includes provisions that would allow MWI facilities to conduct performance tests for CDD/CDF, PM, Cd, Pb, and Hg every third year if the MWI meets certain specified criteria.

Abbreviations used in this Fact Sheet and Summary Table

Act	=	Clean Air Act of 1990
Cd	=	cadmium
CDD/CDF	=	dioxins/furans
CEMS	=	continuous emission monitoring system
CI	=	activated carbon injection system
CO	=	carbon monoxide
DI/FF	=	dry injection/fabric filter
EPA	=	United States Environmental Protection Agency
HCl	=	hydrogen chloride
Hg	=	mercury
kg	=	kilogram
MACT	=	maximum achievable control technology
Mg	=	megagram
mg/dscm	=	milligrams per dry standard cubic meter
MWI	=	medical waste incinerator
ng/dscm	=	nanograms per dry standard cubic meter
NO _x	=	nitrogen oxides
NSPS	=	new source performance standards
O ₂	=	oxygen
Pb	=	lead
PM	=	particulate matter
ppmdv	=	parts per million by dry volume
SO ₂	=	sulfur dioxide
TEQ	=	toxic equivalency of 2,3,7,8-tetrachlorinated dibenzo-p-dioxin
yr	=	year