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STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR PARTICULATE MATTER: FUEL COMBUSTION

Strategies and Air Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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SCOPE

This report summarizes State Implementation Plan regulations on the emission of particulate matter from fuel combustion equipment. The definition of fuel combustion equipment varies slightly from state to state but, in all states, these regulations apply to steam-electric generating plants (power plants) and industrial boilers which burn fuel to generate power. In many cases, the regulations apply to all fuel users. The regulations generally do not apply to particulate emissions from incineration or industrial processes such as steel production or coking.

State Implementation Plans (SIP) are designed to prevent local ambient air concentrations from exceeding the National Ambient Air Quality Standards. In addition to SIP regulations, which are Federally approved and legally enforceable, some states, counties, or cities have adopted local particulate regulations which may be more stringent than SIP emission requirements. While fuel burning sources may be required to comply with these regulations, in most cases, local regulations are not included in this summary. Where local regulations do appear, they are clearly identified as such.

STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR PARTICULATE MATTER: FUEL COMBUSTION

INTRODUCTION

This report contains a summary of each state's implementation plan regulations for particulate matter; a background section explaining the relationship between these regulations, the Federal ambient air standards, and Federal new source regulations; and four appendices. Appendix A presents the National Ambient Air Quality Standards, Appendix B summarizes the Federal new source regulations for particulate matter and Appendix C explains how to convert units of measure of particulate regulations to a common basis, and Appendix D contains a graph which is used to determine the emission limit in several states.

This document is not an official EPA listing of SIP emission regulations for particulates but reflects an interpretation of these regulations which was prepared by EPA's Strategies and Air Standards Division for strategy analysis. Since the primary responsibility for interpreting and enforcing these regulations lies with each state or local air pollution control office, these data should not be used to make assumptions regarding the legal compliance status of any particular facility.

The summary initially was compiled from state regulations published in the Environment Reporter and the Code of Federal Regulations. To verify details of how these regulations are being enforced, a team of engineers visited the Office of Enforcement or the Office of Air Programs at each

EPA regional office. In some instances, the state air pollution control offices were contacted. Following these visits, the regulations have been updated by tracking revisions to State Implementation Plans which have been published in the Federal Register. This summary incorporates revisions that have been approved through July 1, 1976 and, in a few cases, identifies revisions which are in progress.

This summary provides a data base of particulate regulations for use by EPA and other organizations in analyzing the issues of pollution control and National fuels policies. Since these data were not collected directly from the individual state air pollution control agencies, there exists a possibility of errors in some of these summaries. To assist in correcting these errors and maintaining an accurate data base, the Strategies and Air Standards Division invites comments on this summary, especially from state air pollution control agencies and from EPA regional offices. Comments will be incorporated into revisions of this document which will be published periodically. The revisions will reflect changes to State Implementation Plans which have been approved by EPA since the publication of this document and will correct inaccuracies which may appear in this report. Please address comments to:

U. S. Environmental Protection Agency
Strategies and Air Standards Division
Energy Information Section (MD-12)
Research Triangle Park, North Carolina 27711

BACKGROUND: RELATIONSHIP OF NATIONAL AMBIENT AIR QUALITY STANDARDS, STATE EMISSION REGULATIONS, AND FEDERAL NEW SOURCE STANDARDS

The Clean Air Act of 1970 gave the Environmental Protection Agency (EPA) the responsibility and authority to control air pollution in the United States and its territories. Among other responsibilities, the Clean Air Act required the Administrator of EPA to promulgate National Ambient Air Quality Standards* for pollutants which he determines adversely affect public health and welfare. In 1971, EPA promulgated National Ambient Air Quality Standards (NAAQS) for six pollutants--sulfur dioxide, nitrogen dioxide, particulate matter, carbon monoxide, hydrocarbons, and photochemical oxidants (Appendix A). For each pollutant, two standards were issued. Primary standards were set at levels necessary to protect the public health and were to be met no later than three years from the date of promulgation (subject to limited extensions of up to three years). Secondary standards were designed to protect the public from adverse effects to their welfare, such as crop damage, reduction in atmospheric visibility, and corrosion of materials and were to be met in a time frame considered reasonable by the Administrator.

To implement these standards, the Act required each state to adopt and submit to EPA a plan for attaining, maintaining, and enforcing the National Ambient Air Quality Standards in all regions of the state. Each state, therefore, decided (for each pollutant) the total emission reduction needed to maintain local ambient air levels below the standards and decided which emission sources to control and to what extent. The State Implementation Plans (SIPs) prescribed emission limiting regulations, timetables for compliance with the limitation, and any other measures, such as land-use and transportation controls, which were necessary to insure attainment and maintenance of the standards. The plans were reviewed by EPA and approved if they demonstrated that at a minimum the primary standards would be attained within three years (subject to

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* National Ambient Air Quality Standards (usually expressed in micrograms per cubic meter) establish a maximum level of pollution permitted in the ambient air.

the compliance date extension provisions of the Act) and that secondary standards would be attained within a reasonable period of time. Disapproved plans (or parts thereof) were returned to the states for revisions, or in some cases, substitute regulations were promulgated by EPA.

While the primary responsibility for enforcing SIP regulations rests with the individual states, the Administrator of EPA is responsible for assuring that all implementation plan requirements are fulfilled. As a result, EPA provides technical and legal assistance to the states in enforcing SIP regulations. If any state fails to enforce its implementation plan regulations, the Federal Government may commence a number of administrative or legal actions directed toward non-complying sources.

Most of the state implementation plans were approved in 1972. Following initial approval of the SIPs, many states began submitting to EPA revisions to their implementation plans, many of which alter the emission limitations. Usually, these revisions are based on additional air quality measurement data or on a more detailed technical analysis of air pollution control strategies. When approved by EPA, these revisions become a part of the implementation plan.

In addition to the SIP limitations, emissions from certain sources are restricted further by Federal Standards of Performance for New Stationary Sources (commonly referred to as new source performance standards). A new emission source is one which is designed and constructed after the formal proposal of new source regulations. New sources include newly constructed facilities, new equipment which is added to existing facilities, and existing equipment which is modified in such a way that results in an increase of pollutant emissions. New source standards limit specific pollutant emissions from categories of sources (such as fossil-fuel fired steam generators, municipal incinerators) which the Administrator determines may contribute signficantly to the endangerment of public health and welfare. For these sources, the Act requires the Administrator to promulgate emission limitations which will require installation of the best systems of emission reduction

which he determines have been adequately demonstrated. Cost factors are considered in making this determination. Federal new source standards help prevent the occurrence of new air pollution problems, encourage improvements in emission control technology, and provide a mechanism for controlling pollutants which EPA suspects are hazardous, but for which insufficient information is available to regulate such pollutants under other provisions of the Act.

PARTICULATE MATTER EMISSION REGULATIONS

In the following summary of State Implementation Plan regulations for particulates, one page has been devoted to each state regulation (two pages for some regulations where the summary was lengthy). The states and U. S. territories appear alphabetically with the state name on the top of each page. Under the name is a checklist for identifying the units of measure in which the emission limit is expressed and the equipment on which the regulation is enforced. For regulations in which the allowable emission limit is a function of heat input, the checklist also identifies the method prescribed by the state for computing the heat input value. Below this information, the emission regulation is summarized. Where possible, the summaries were formatted similarly, but in each case a format was selected which was believed to be best suited for a lucid explanation of the regulation. Where needed for clarity, further explanatory information is presented at the end of each summary in a paragraph entitled "NOTES".

In the past, other reports have presented SIP regulations in a tabular format, enabling easy comparison. In many cases, however, presenting regulations in this manner sacrifices some accuracy and detail. In contrast, this summary has been written in a freely-formatted style, thus portraying the reguations in greater detail than in other published summaries. As a result, this summary is lengthy, but is easily understood and will be easy to update.

This summary sometimes refers to state regulations. These regulations are emission regulations that have been adopted by a state legislative body, but which either have not been submitted to EPA for inclusion into the SIP or have been submitted to EPA but have not been approved formally in the Federal Register.

The abbreviations listed below are used on the following pages in explaining particulate emission regulations.

ACFM - Actual cubic feet per minute
AQCR - Air Quality Control Region
ASME - American Society of Mechanical Engineers
cm - Centimeter
E - Allowable emission limit
EPA - U. S. Environmental Protection Agency
ft - Foot
lb - Pound
MMBtu - Million British thermal units
Q - Heat input rate (MMBtu/hr)
R - Rated capacity (10^3 lb steam/hr)
SCF - Standard cubic feet
SCFD - Standard cubic feet, dry basis
SCFM - Standard cubic feet per minute
SIP - State Implementation Plan
Y - Potential emission rate (lb particulate/hr)
$\mu g/m^3$ - Micrograms per cubic meter

Alabama

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx)1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Class I Counties:
Fuel Burning Equipment:

$Q \leq 10$ MMBtu/hr	0.50 lb/MMBtu
$10 < Q < 250$MMBtu/hr	$E=1.38Q^{-0.44}$ lb/MMBtu
$Q \geq 250$MMBtu/hr	0.12 lb/MMBtu

B. Class II Counties:
Fuel Burning Equipment:

$Q \leq 10$ MMBtu/hr	0.80 lb/MMBtu
$10 < Q < 250$MMBtu/hr	$E=3.109Q^{-0.589}$ lb/MMBtu
$Q \geq 250$MMBtu/hr	0.12 lb/MMBtu

Alaska

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- (xx)4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Industrial Processes or Fuel Burning Equipment:

A. Prior to 7-1-72:	0.10 grains/SCF
B. After 7-1-72:	
1. Coal or Municipal Waste Firing	0.10 grains/SCF
2. Wood Waste Firing	0.15 grains/SCF
3. Other Fuel Firing	0.05 grains/SCF
C. New Sources (8-17-71):	
Fossil Fuels	0.10 lb/MMBtu

American Samoa

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Emission limit — 0.3 lb/MMBtu

Arizona

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:

$10 < Q < 4000$ MMBtu/hr	$E=1.02Q^{-0.231}$ lb/MMBtu
$Q \geq 4000$ MMBtu/hr	$E=17.0Q^{-0.568}$ lb/MMBtu

Arkansas

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- (xx)2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. The suspended particulate matter contribution from any premises shall not exceed 75 $\mu g/m^3$ above the background level for any 24-hour period, or 150 $\mu g/m^3$ above background for any 30 minute average.

B. The particulate fallout contributed from such premises shall not exceed 15 tons/$mile^2$/month above the background level.

C. The number of particles > 60 micrometers in diameter downwind of the premises shall not exceed 120 particles/cm^2 for 24 consecutive hours.

NOTE: The State has established the following emission limits for new or modified sources (proposed for approval by EPA on 4-12-76).

Potential emission rate without control, Y (lb/hr)	Allowable emission rate* (lb/hr)
$Y < 1000$	$0.4167\ Y^{0.7782}$
$Y \geq 1000$	$4.3574\ Y^{0.4383}$

* Derived from figure in the state regulations.

California

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- (xx)2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- (xx)4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:	
Great Basin Valleys Air Basin (AQCR 23)	0.3 grains/SCF
South Coast Air Basin (Metropolitan Los Angeles AQCR 24):	
Existing Sources:	
Southwestern Los Angeles, Orange, and southern Santa Barbara counties	0.3 grains/SCF
Western Riverside, southwestern San Bernardino, and Ventura counties	0.1 grains/SCF
New Sources (constructed after 5-30-72):	
Southern Santa Barbara county	0.3 grains/SCF
Other counties	10 lb/hr
North Central Coast Air Basin (AQCR 25):	
Monterey and Santa Cruz counties	0.15 grains/SCF
San Benito county	0.3 grains/SCF
North Coast Air Basin (AQCR 26):	
Northern Sonoma County	0.1 grains/SCF
Other counties[a]	0.2 grains/SCF
Northeast Plateau Air Basin (AQCR 27)	0.3 grains/SCF
Sacramento Valley Air Basin (AQCR 28):	
Plumas county	0.01944 grains/SCF
Shasta county	
Stack height < 1000 feet	0.15 grains/SCF
Stack height > 1000 feet	0.3 grains/SCF
Glenn county	No emission limit
Other counties	0.3 grains/SCF
San Diego Air Basin (AQCR 29)	0.3 grains/SCF

Continued

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- (xx)2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- (xx)4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

San Francisco Bay Area Air Basin (AQCR 30)	0.3 grains/SCF
San Joaquin Valley Air Basin (AQCR 31)	
Existing Sources:	
Madera county	0.3 grains/SCF
Other counties	0.1 grains/SCF
New Sources (constructed after 5-30-72):	
Western Kern county	0.1 grains/SCF[a]
Madera county	0.1 grains/SCF[b]
Other counties	10 lb/hr
South Central Coast Air Basin (AQCR 32)	0.3 grains/SCF
Southeast Desert Air Basin (AQCR 33):	
Existing Sources:	
Eastern Kern county	0.2 grains/SCF
San Bernardino county	0.1 grains/SCF
Other counties	0.3 grains/SCF
New Sources:	
Eastern Kern and San Diego counties	0.1 grains/SCF
Other counties	10 lb/hr

NOTES: Emission limits expressed in units of grains/SCF are corrected to 50% excess air.
[a] Lake county (in North Coast Air Basin) limits emissions from sources constructed after 5-30-72 to 0.1 grains/SCF.
[b] In addition, emissions from new sources in Madera County are limited to 10 lb/hour.

Colorado

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:

$Q \leq 1$ MMBtu/hr	0.5 lb/MMBtu
$1 < Q < 500$ MMBtu/hr	*$E = 0.5Q^{-0.26}$ lb/MMBtu
$Q \geq 500$ MMBtu/hr	0.1 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Connecticut

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources	0.20 lb/MMBtu
B. New Sources (constructed after 5-23-72)	0.10 lb/MMBtu

Delaware

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment: $Q \geq 1$ MMBtu/hr	0.3 lb/MMBtu

District of Columbia

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:	
$Q \leq 3.5$ MMBtu/hr	0.13 lb/MMBtu
$3.5 < Q < 10{,}000$ MMBtu/hr	*$E = 0.175Q^{-0.235}$ lb/MMBtu
$10{,}000 \leq Q$ MMBtu/hr	0.02 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Florida

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- (xx) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- (xx) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fossil Fuel Steam Generators:

Q $\leq$ 250 MMBtu/hr	"Latest Technology"
Q > 250 MMBtu/hr	0.1 lb/MMBtu

Georgia

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:

$Q < 10$ MMBtu/hr	0.70 lb/MMBtu
$10 \leq Q \leq 2{,}000$ MMBtu/hr	*$E = 1.115Q^{-0.202}$ lb/MMBtu
$Q > 2{,}000$ MMBtu/hr	0.24 lb/MMBtu

B. New Equipment (constructed after 1-1-72):

$Q < 10$ MMBtu/hr	0.50 lb/MMBtu
$10 \leq Q \leq 250$ MMBtu/hr	*$E = 1.581Q^{-0.5}$ lb/MMBtu
$Q > 250$ MMBtu/hr	0.10 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- (xx)6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment: No emission limit

Hawaii

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- (xx)5. no emission limit.
- (xx)6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Bagasse Burning Boilers	0.4 lb/100 lb bagasse burned
B. Other Fuel Burning Equipment	No emission limit

Idaho

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:	
$Q < 10$ MMBtu/hr	0.60 lb/MMBtu
$10 \leq Q \leq 10{,}000$ MMBtu/hr	$E = 1.206Q^{-0.233}$ lb/MMBtu
$Q > 10{,}000$ MMBtu/hr	0.12 lb/MMBtu

Illinois

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- (xx) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Solid Fuels:	
1. Existing Sources:	
a. Chicago Major Metropolitan Area[a] (in AQCR 67)	0.1 lb/MMBtu
b. Outside Chicago Major Metropolitan Area:	
$Q \leq 10$ MMBtu/hr	1.0 lb/MMBtu
$10 < Q < 250$ MMBtu/hr	$E=5.18Q^{-0.715}$ lb/MMBtu
$Q \geq 250$ MMBtu/hr	0.1 lb/MMBtu
c. "Controlled" Sources[b]	0.2 lb/MMBtu
2. New Sources (constructed after 4-14-72):	0.1 lb/MMBtu
B. Liquid Fuels: Any Source	0.1 lb/MMBtu
C. Combinations of Fuels: Any Source	$\Sigma E_f Q_f$ lb/hr[c]

NOTE: [a]Counties of Cook, Lake, Will, DuPage, McHenry, Kane, Grundy, Kendall, Kankakee, and Macon.

[b]The "controlled" sources regulation applies only if the emission rate based upon either the original equipment design or performance tests (whichever is stricter) is less than 0.20 lb/MMBtu (or a variance has been granted to achieve a rate < 0.20 lb/MMBtu and construction of such equipment or modification has commenced), and the emission control is not allowed to degrade more than 0.05 lb/MMBtu.

[c]The subscript, f, refers to fuel type.

Indiana

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:
1. Metropolitan Indianapolis AQCR (80) and the Indiana portion of Metropolitan Chicago Interstate AQCR (67) (Lake and Porter Counties): $E=0.87Q^{-0.16}$ lb/MMBtu
2. Other Areas: The allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of: 0.8 lb/MMBtu

B. New Equipment (constructed after 9-14-72):
1. Q < 250 MMBtu/hr: The allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of: 0.6 lb/MMBtu
2. Q $\geq$ 250 MMBtu/hr 0.1 lb/MMBtu

Iowa

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:
1. Within any Standard Metropolitan Statistical Area (SMSA) the allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of: 0.6 lb/MMBtu
2. In other areas the allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of: 0.8 lb/MMBtu

B. New Equipment (constructed or modified after 9-23-70): 0.6 lb/MMBtu

Kansas

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Indirect Heating Equipment:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	$E=1.026Q^{-0.233}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.12 lb/MMBtu

NOTE: With State approval, units operated less than 100 hours/year may emit up to 1.2 lb/MMBtu. (To date, no such variances have been approved.)

Kentucky

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:

1. Priority I AQCRs (72, 77, 78, 79)

$Q \leq 10$ MMBtu/hr	0.56 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	$*E=0.9634Q^{-0.236}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.11 lb/MMBtu

2. Priority II AQCRs (101, 102, 104):

$Q \leq 10$ MMBtu/hr	0.75 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	$*E=1.2825Q^{-0.233}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.15 lb/MMBtu

3. Priority III AQCR (105):

$Q \leq 10$ MMBtu/hr	0.8 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	$*E=1.3152Q^{-0.216}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.18 lb/MMBtu

B. New Installations (constructed after 4-9-72):

$Q \leq 10$ MMBtu/hr	0.56 lb/MMBtu
$10 < Q < 250$ MMBtu/hr	$*E=0.9634Q^{-0.236}$ lb/MMBtu
$Q \geq 250$ MMBtu/hr	0.10 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Louisiana

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:
Emission limit — 0.6 lb/MMBtu

Maine

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Fuel Burning Equipment:

$3 \leq Q \leq 150$ MMBtu/hr	$E=1.082Q^{-0.256}$ lb/MMBtu
$Q > 150$ MMBtu/hr	0.3 lb/MMBtu

Maryland

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- (xx)4. grains/SCF.
- (xx)5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Metropolitan Baltimore (AQCR 47) and National Capital (AQCR 115):

1. Solid Fuel-Burning Installations:	
$Q \leq 200$ MMBtu/hr	0.050 grains/SCFD
$Q > 200$ MMBtu/hr	0.030 grains/SCFD
2. Residual Oil-Burning Installations:	
$Q \leq 10$ MMBtu/hr	0.030 grains/SCFD
$10 < Q \leq 50$ MMBtu/hr	0.025 grains/SCFD
$50 < Q \leq 200$ MMBtu/hr	0.020 grains/SCFD
$Q > 200$ MMBtu/hr:	
Existing or Modified	0.020 grains/SCFD
New (constructed after 1-17-72)	0.010 grains/SCFD
3. Distillate Oil Burning Installations	No emission limit

B. Other AQCRs:

1. Existing Installations:	
$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 1.026Q^{-0.233}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.12 lb/MMBtu
2. New Installations (constructed after 1-17-72):	
Solid Fuel	0.03 grains/SCFD
Distillate Oil	Same as A.3 above
Residual Oil	Same as A.2 above

NOTES: Regulations expressed in grains/SCFD are corrected to 50% excess air.
*Indicates equations derived from figures or other information given in the SIP regulation.

Massachusetts

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- (xx) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Facilities:
1. Critical area of concern (Berkshire, Central Massachusetts, Merrimack Valley, Metropolitan Boston, Pioneer Valley, and Southeastern Massachusetts Air Pollution Control Districts):
   Q > 3 MMBtu/hr — 0.12 lb/MMBtu
2. Other areas
   Q > 3 MMBtu/hr — 0.15 lb/MMBtu

B. New Facilities (construction or modification initiated after 8-17-71):
   $3 \leq Q \leq 250$ MMBtu/hr — 0.10 lb/MMBtu
   Q > 250 MMBtu/hr — 0.05 lb/MMBtu
   Q > 250 MMBtu/hr (with SO_2 control equipment and State permission) — 0.10 lb/MMBtu

NOTE: Ash content greater than 9% is not permitted.

Michigan

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:[a]
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- (xx)3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Wayne County (in AQCR 132):

1. Facilities firing pulverized coal:[b]

$0 < R \leq 300$ 10^3 lb steam/hr	*$E=0.3-3.333\times10^{-4}R$ lb/10^3 lb stack gas
$300 < R < 3600$ 10^3 lb steam/hr	*$E=0.205-1.515\times10^{-5}R$ lb/10^3 lb stack gas
$R = 3600$ 10^3 lb steam/hr	0.15 lb/10^3 lb stack gas

2. Other facilities:

$0 < R \leq 100$ 10^3 lb steam/hr	0.65 lb/10^3 lb stack gas
$100 < R \leq 300$ 10^3 lb steam/hr	*$E=0.75-1.0\times10^{-3}R$ lb/10^3 lb stack gas
$300 < R \leq 800$ 10^3 lb steam/hr	*$E=0.54-3.0\times10^{-4}R$ lb/10^3 lb stack gas
$R > 800$ 10^3 lb steam/hr	0.30 lb/10^3 lb stack gas

B. Other Areas:

1. Facilities firing pulverized coal:[b]

$0 < R \leq 115$ 10^3 lb steam/hr	0.30 lb/10^3 lb stack gas
$115 < R \leq 10{,}000$ 10^3 lb steam/hr	*$E=0.964R^{-0.246}$ lb/10^3 lb stack gas
$R > 10{,}000$ 10^3 lb steam/hr	[c]

Continued

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- (xx)3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

2. Other coal firing facilities:

$0 < R \leq 100$ 10^3 lb steam/hr	0.65 lb/10^3 lb stack gas
$100 < R \leq 300$ 10^3 lb steam/hr	*$E=0.75-1.0\times10^{-3}R$ lb/10^3 lb stack gas [d]
$R > 300$	

NOTES:
[a] The regulation value is dependent upon the rated capacity (R), which is the steam output in 1000 lb/hr.
[b] Including cyclone furnaces.
[c] The emission limit is established on an individual basis by the State Air Pollution Control Commission. In general, for facilities with rated capacities < 10^7 lb steam/hr the equation ($E=0.964R^{-0.246}$) is used. For larger facilities, the allowable limit usually is 0.1 lb/10^3 lb stack gas.
[d] The emission limit is established on an individual basis by the State Air Pollution Control Commission.
*Indicates equations derived from figures or other information given in the SIP regulation.

Minnesota

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:
The allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D)
1. The maximum allowable emission rate in the Minneapolis-St. Paul AQCR (131) and the city of Duluth is 0.4 lb/MMBtu
2. The maximum allowable emission rate in other areas is 0.6 lb/MMBtu

B. New Installations (constructed after 4-13-72):
The allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of: 0.4 lb/MMBtu

Mississippi

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- (xx) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- (xx) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- (xx) 1. an entire plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Fossil Fuel Burning:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 0.8803Q^{-0.1665}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.19 lb/MMBtu

B. Combination Boilers using a mixture of combustibles (i.e. fossil fuel + a non-fossil fuel): 0.30 grains/SCFD

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Missouri

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Kansas City Metropolitan Area, Kansas City, and the Springfield-Greene county area:
1. Existing and new sources:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E=1.026Q^{-0.233}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.12 lb/MMBtu

B. Other Areas:
1. Existing sources[a]:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E=0.896Q^{-0.1743}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.18 lb/MMBtu

2. New Installations (modified or constructed after 2-24-71)[a]:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 2000$ MMBtu/hr	*$E=1.3072Q^{-0.3381}$ lb/MMBtu
$Q \geq 2000$ MMBtu/hr	0.10 lb/MMBtu

NOTES: [a]In addition, the following regulations are applicable in the St. Louis Metropolitan Area, St. Louis County and St. Louis City:
1. For an installation of multiple stacks the allowable emission rate is the lesser of B (above) and ASME Standard, APS-1, Figure 2 (See Appendix D).
2. For an installation with $Q \geq 5$ MMBtu/hr, control equipment is required which will remove at least 85% of the particulate matter from effluent gases.
3. Emission of particles > 60 micrometers is prohibited.

*Indicates equations derived from figures or other information given in the SIP regulation.

Montana

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 0.8803Q^{-0.1665}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.19 lb/MMBtu

B. New Equipment (constructed or modified after 11-23-68):

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 1.026Q^{-0.233}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.10 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Nebraska

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- (xx)3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 3{,}800$ MMBtu/hr	$E = 1.026Q^{-0.233}$ lb/MMBtu
$Q \geq 3{,}800$ MMBtu/hr	0.15 lb/MMBtu

B. New Equipment (constructed after 8-17-71) 0.10 lb/MMBtu

Nevada

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- (xx)3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Indirect Heat Transfer Fuel Burning Equipment:

$Q \leq 10$ MMBtu/hr	0.6 lb/MMBtu
$10 < Q < 4{,}000$ MMBtu/hr	$E = 1.02Q^{-0.231}$ lb/MMBtu
$Q \geq 4{,}000$ MMBtu/hr	$E = 17.0Q^{-0.568}$ lb/MMBtu

New Hampshire

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx)1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E=0.8803Q^{-0.1665}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.19 lb/MMBtu

B. New Equipment (constructed after 2-18-72):

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q \leq 250$ MMBtu/hr	*$E=1.0286Q^{-0.2341}$ lb/MMBtu
$Q > 250$ MMBtu/hr	0.10 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx)1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- (xx)2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- (*)6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:

Heat Input Rate, Q (MMBtu/hr)	Allowable Emission (lb/hr)
1	0.6
10	6.0
100	15.0
140	17.5
180	19.3
200	20.0
>200	0.1Q

New Mexico

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- (xx) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Coal Burning Equipment: Effective 1-1-75	0.05 lb/MMBtu*
B. Oil Burning Equipment:	
$Q \leq 10^6$ MMBtu/yr/unit ($\leq$114.16 MMBtu/hr)	No emission limit
$Q > 10^6$ MMBtu/yr/unit (>114.16 MMBtu/hr)	0.005 lb/MMBtu

NOTE: *For particulates with equivalent aerodynamic diameters < 2 micrometers, the emission limit is 0.02 lb/MMBtu.

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

I. Solid Fuel Burning Installations[a,b]	
A. Individual Installations (Q < 300 MMBtu/hr) in operation prior to 6-1-72:	
1. Spreader Stokers	0.60 lb/MMBtu
2. Other than Spreader Stokers:	
$1 < Q \leq 100$ MMBtu/hr	0.60 lb/MMBtu
$100 < Q \leq 300$	*$E=0.75 - 1.5Q \times 10^{-3}$ lb/MMBtu
B. Other Installations:	
$1 < Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	$E=1.02Q^{-0.219}$ lb/MMBtu
C. New Installations (Q > 250 MMBtu/hr)[c]	0.10 lb/MMBtu
II. Oil Burning Installations[a,b]	0.10 lb/MMBtu

NOTES:
[a] The allowable emission rate (E) for a mixture of fuels burned in a single furnace is calculated using: $E = \Sigma$ (allowable emission rate of a fuel) x (heat input derived from each fuel).
[b] The State has established an emission limit of 0.10 lb/MMBtu for plants converting from oil to coal-firing.
[c] If an application for a permit to construct is submitted after 8-11-72 then the source is classified as a new installation.
*Indicates an equation derived from figures or other information given in the SIP regulation.

North Carolina

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- (xx) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Sources:	
$Q \leq 10$ MMBtu/hr	0.6 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 1.0903Q^{-0.2594}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.1 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

North Dakota

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- (xx) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations: 0.8 lb/MMBtu

B. New Installations (modified or constructed after 12-15-73):

$Q \leq 10$ MMBtu/hr	0.6 lb/MMBtu
$Q > 10$ MMBtu/hr	$E=0.811Q^{-0.131}$ lb/MMBtu

Ohio

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- (xx)3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Priority I[a] Regions:

$Q \leq 10$ MMBtu/hr	0.40 lb/MMBtu
$10 < Q < 1{,}000$ MMBtu/hr	*$E=0.8003Q^{-0.3011}$ lb/MMBtu
$Q \geq 1{,}000$ MMBtu/hr	0.10 lb/MMBtu

B. Priority II[b] and III[c] Regions:

1. By 7-17-72:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 1{,}000$ MMBtu/hr	*$E=1.2006Q^{-0.3011}$ lb/MMBtu
$Q \geq 1{,}000$ MMBtu/hr	0.15 lb/MMBtu

2. By 7-1-75:

$Q \leq 10$ MMBtu/hr	0.40 lb/MMBtu
$10 < Q < 1{,}000$ MMBtu/hr	*$E=0.8003Q^{-0.3011}$ lb/MMBtu
$Q \geq 1{,}000$ MMBtu/hr	0.10 lb/MMBtu

NOTES: The enforcement of these regulations is being held in abeyance by the Ohio EPA until the sulfur oxide emission regulations are promulgated and are legally enforceable.

[a]Priority I Regions include AQCR's 079, 103, 124, 173, 174, 176, 178, 179 and 181.

[b]Priority II Regions include AQCR's 175, 177, and 183.

[c]Priority III Regions include AQCR's 180 and 182.

*Indicates equations derived from figures or other information given in the SIP regulation.

Oklahoma

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- (xx)5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:

A. AQCR's 017, 022, 184, and 186:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 1.0903Q^{-0.2594}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.10 lb/MMBtu

B. AQCR's 185, 187, 188, and 189 — No emission limit

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Oregon

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- (xx)4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources — 0.2 grains/cubic ft.

B. New Sources (constructed or modified after 6-1-70) — 0.1 grains/cubic ft.

NOTE: Emissions are to be corrected to 50% excess air.

Pennsylvania

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx)1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- (xx)3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. City of Philadelphia:

Existing Sources	0.20 lb/10^3 lb stack gas*
New Sources (constructed after 8-17-71)	0.10 lb/10^3 lb stack gas*

B. Allegheny County:

Combustion units:

$0.2 < Q \leq 50$ MMBtu/hr	0.40 lb/MMBtu
$50 < Q < 850$ MMBtu/hr	$E=3.6Q^{-0.56}$ lb/MMBtu
$Q \geq 850$ MMBtu/hr	0.08 lb/MMBtu

C. Other Areas:

Combustion units:

$2.5 < Q \leq 50$ MMBtu/hr	0.40 lb/MMBtu
$50 < Q < 600$ MMBtu/hr	$E=3.6Q^{-0.56}$ lb/MMBtu
$Q \geq 600$ MMBtu/hr	0.10 lb/MMBtu

NOTE: *Regulations expressed as lb/10^3 lb stack gas are corrected to 12% CO_2 by volume.

Puerto Rico

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- (xx)5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Solid Fuel Burning Equipment	0.3 lb/MMBtu
B. Liquid Fuel Burning Equipment	No emission limit

Rhode Island

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:	
$1 < Q < 250$ MMBtu/hr	0.2 lb/MMBtu
$Q \geq 250$ MMBtu/hr	0.1 lb/MMBtu

South Carolina

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

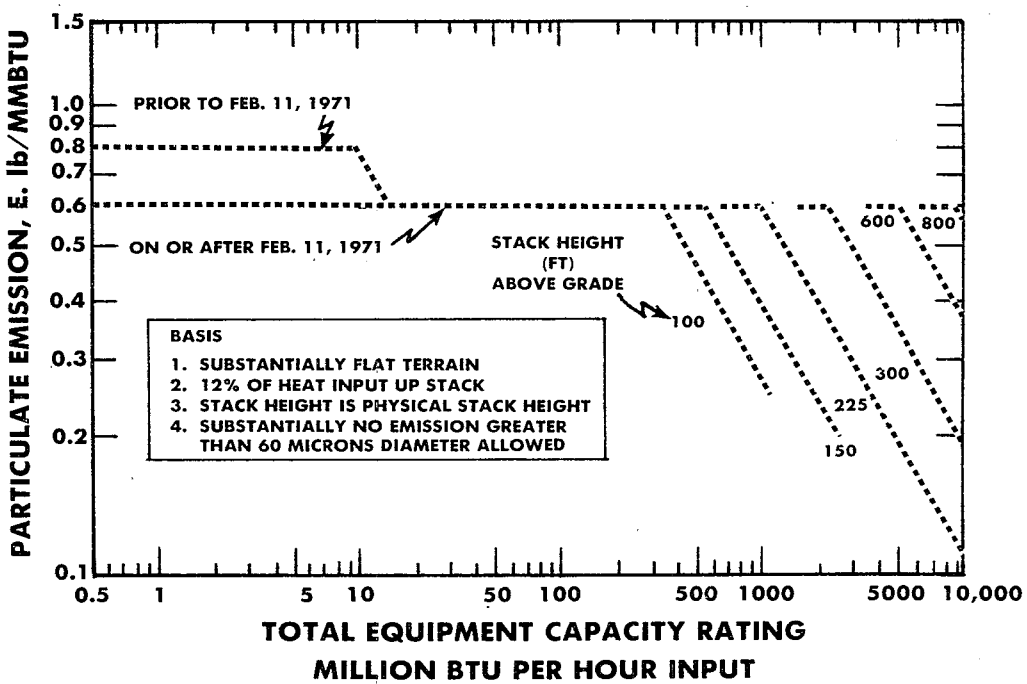
B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment (in use or under construction before 2-11-71):
- Q ≤ 10 MMBtu/hr — 0.8 lb/MMBtu
- Q > 10 MMBtu/hr — See graph below

B. New Equipment (constructed after 2-11-71):
- Q ≤ 300 MMBtu/hr — 0.6 lb/MMBtu
- Q > 300 MMBtu/hr — See graph below



South Dakota

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Solid Fuel Burning Equipment	0.3 lb/MMBtu

Tennessee

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- (xx) 1. all fuel burning units at a plant.
- ( ) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- ( ) 2. an individual boiler.
- (xx) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E = 1.0903Q^{-0.2594}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.10 lb/MMBtu

B. New Installations (constructed or modified after 4-3-72):

$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 250$ MMBtu/hr	*$E = 2.1617Q^{-0.5566}$ lb/MMBtu
$Q \geq 250$ MMBtu/hr	0.10 lb/MMBtu

NOTE: A source may choose the diffusion equation below to compute allowable rates of emission if the heat input rate (Q) of the source is less than 4000 MMBtu/hr.

$$E = \frac{20650\ a\ h}{Q^{0.75}}$$

E = maximum allowable emission (lb/MMBtu)

$a = \begin{cases} 0.67 \text{ if stack height} \leq 200 \text{ ft.} \\ 0.80 \text{ if stack height} > 200 \text{ ft.} \end{cases}$

h = stack height (ft.)

Q = total plant heat input (Btu/hr)

When more than one stack exists, a weighted average of the stack heights is used in the equation and the emission limit, E, is divided by (number of stacks)$^{0.25}$.

*Indicates equations derived from figures or other information given in the SIP regulation.

Texas

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
(xx)1. aggregate heat content of all fuels burned
( )2. maximum design heat input
( )3. maximum of 1 and 2
( )4. not applicable

For:
( )1. all fuel burning units at a plant.
(xx)2. an individual boiler.
( )3. an individual stack.
( )4. not applicable.

B. The units of the regulation:
(xx)1. lb particulate/10^6 Btu.
(xx)2. lb particulate/hr.
( )3. lb particulate/1000 lb stack gas.
( )4. grains/SCF.
( )5. no emission limit.
(xx)6. other.

C. The regulation applies to:
( )1. an entire plant.
(xx)2. an individual boiler.
( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Solid Fossil Fuel Fired Steam Generators: 0.3 lb/MMBtu

NOTE: A state regulations (not part of the SIP) imposes the following restrictions:

A. Oil or Gas Fired Steam Generator:
Q > 2500 MMBtu/hr 0.1 lb/MMBtu
Q $\leq$ 2500 MMBtu/hr:
1. maximum ground level concentration on a property:
100 $\mu g/m^3$, maximum 5 hours average.
200 $\mu g/m^3$, maximum 3 hours average.
400 $\mu g/m^3$, maximum 1 hour average.
2. allowable emission rate in lb/hr:
$E=0.048 \times (\text{stack effluent flow rate in acfm})^{0.62}$; further reduction is required for low stack height.

Utah

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- (xx)6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- (xx)2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. General Regulation for Coal-fired Steam Electric Power Generators:	85% Control of Potential Emissions
B. Wasatch Front (AQCR 220):	
Fuel Burning Sources:	
$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	$E=0.87Q^{-0.16}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.20 lb/MMBtu

Vermont

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Burning Equipment:

1. Existing Equipment:

$Q \leq 10$ MMBtu/hr	0.50 lb/MMBtu
$10 < Q < 300$ MMBtu/hr	*$E=1.4865Q^{-0.4732}$ lb/MMBtu
$Q \geq 300$ MMBtu/hr	0.10 lb/MMBtu

2. New Equipment (constructed after 7-1-71):

$Q > 1000$ MMBtu/hr	0.06 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Virgin Islands

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable

For:
- ( ) 1. all fuel burning units at a plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas.
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel Combustion:

Heat Input Rate, Q	Allowable Emission, E
≤10 MMBtu/hr	0.6000 lb/MMBtu
100 MMBtu/hr	0.3520 lb/MMBtu
1,000 MMBtu/hr	0.2070 lb/MMBtu
≥10,000 MMBtu/hr	0.0904 lb/MMBtu

Virginia

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- (xx)3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Fuel Burning Equipment:

$Q < 25$ MMBtu/hr	0.40 lb/MMBtu
$25 \leq Q < 10{,}000$ MMBtu/hr	$E = 0.8425Q^{-0.2314}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.10 lb/MMBtu

Washington

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- ( )2. maximum design heat input
- ( )3. maximum of 1 and 2
- (xx)4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- (xx)4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- (xx)4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Puget Sound Interstate AQCR (229):	
1. New Sources (constructed or modified after 10-5-73)	0.05 grains/SCFD
2. Existing Sources	0.10 grains/SCFD
B. Whatcom, Skagit, San Juan and Island Counties (in AQCR 228):	
1. Residual Oil	0.10 grains/SCFD
2. Other Fuel	0.05 grains/SCFD
C. Other Areas:	
1. Existing Sources:	
Before 7-1-75	0.20 grains/SCFD
After 7-1-75	0.10 grains/SCFD
2. New Sources (constructed or modified after 10-5-73)	0.10 grains/SCFD

West Virginia

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- ( )1. lb particulate/10^6 Btu.
- (xx)2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- (xx)1. an entire plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Electric Power Plants	0.05Q lb/hr
Maximum discharge rate	1,200 lb/hr
B. Industrial Furnaces	0.09Q lb/hr
Maximum discharge rate	600 lb/hr

Wisconsin

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- ( )1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:
1. Lake Michigan Interstate AQCR (237):
   The allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of — 0.30 lb/MMBtu
2. Southeast Wisconsin Interstate AQCR (239)[a] — 0.15 lb/MMBtu
3. Other AQCRs:
   The allowable emission rate is determined using ASME Standard APS-1, Figure 2 (See Appendix D) with a maximum allowable rate of — 0.60 lb/MMBtu

B. New or Modified Sources (after 4-1-72):
- $Q \leq 250$ MMBtu/hr — 0.15 lb/MMBtu
- $Q > 250$ MMBtu/hr — 0.10 lb/MMBtu

NOTES: [a]Installations in the Southeast Wisconsin Interstate AQCR with a heat input rate (Q) less than 250 MMBtu/hr shall not burn coal.

Wyoming

REGULATIONS FOR PARTICULATE MATTER EMISSIONS FROM FUEL COMBUSTION EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- ( )1. aggregate heat content of all fuels burned
- (xx)2. maximum design heat input
- ( )3. maximum of 1 and 2
- ( )4. not applicable

For:
- (xx)1. all fuel burning units at a plant.
- ( )2. an individual boiler.
- ( )3. an individual stack.
- ( )4. not applicable.

B. The units of the regulation:
- (xx)1. lb particulate/10^6 Btu.
- ( )2. lb particulate/hr.
- ( )3. lb particulate/1000 lb stack gas.
- ( )4. grains/SCF.
- ( )5. no emission limit.
- ( )6. other.

C. The regulation applies to:
- ( )1. an entire plant.
- ( )2. an individual boiler.
- (xx)3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	
$Q \leq 10$ MMBtu/hr	0.60 lb/MMBtu
$10 < Q < 10{,}000$ MMBtu/hr	*$E=0.8963Q^{-0.1743}$ lb/MMBtu
$Q \geq 10{,}000$ MMBtu/hr	0.18 lb/MMBtu
B. New Sources (constructed after 4-9-73)	0.10 lb/MMBtu

NOTE: *Indicates equations derived from figures or other information given in the SIP regulation.

Appendix A

NATIONAL AMBIENT AIR QUALITY STANDARDS

SUMMARY OF NATIONAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	PRIMARY STANDARDS	SECONDARY STANDARDS	FEDERAL REFERENCE METHOD (FRM)	COMMENTS
PARTICULATE MATTER	Annual (Geometric Mean) 24 - Hour*	75 $\mu g/m^3$ 260 $\mu g/m^3$	60 $\mu g/m^3$ 150 $\mu g/m^3$	Hi-Volume Sampler	The secondary annual standard (60$\mu g/m^3$) is a guide for assessing SIPs to achieve the 24-hour secondary standard.
SULFUR OXIDES	Annual (Arithmetic Mean) 24 - Hour* 3 - Hour*	80 $\mu g/m^3$ (0.03ppm) 365 $\mu g/m^3$ (0.14ppm) ——	—— —— 1300 $\mu g/m^3$ (0.5ppm)	Pararosaniline	
CO	8 - Hour* 1 - Hour*	10 mg/m^3 (9ppm) 40 mg/m^3 (35ppm)	(Same as Primary)	Non-Dispersive Infrared Spectrometry	
NO_2	Annual (Arithmetic Mean)	100 $\mu g/m^3$ (0.05ppm)	(Same as Primary)	Jacobs-Hochheiser (Rescinded)	On March 17, 1976, chemiluminescence was proposed (Federal Register) as the new FRM for NO_2
PHOTOCHEMICAL OXIDANTS	1 - Hour*	160 $\mu g/m^3$ (0.08ppm)	(Same as Primary)	Chemilumines-cence	The FRM measures O_3 (ozone)
HYDROCARBONS (Non-Methane)	3 - Hour* (6 to 9 a.m.)	160 $\mu g/m^3$ (0.24ppm)	(Same as Primary)	Flame Ionization	The HC standard is a guide to devising SIPs to achieve the Oxidant standard. The HC standard does not have to be met if the oxidant standard is met.

*Not to be exceeded more than once per year.

NOTE: The air quality standards and a description of the reference methods were published on April 30, 1971 in 42 CFR 410, recodified to 40 CFR 50 on November 25, 1972.

August 4, 1976 - JDC

Appendix B

NEW SOURCE PERFORMANCE STANDARDS FOR PARTICULATE MATTER

STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES
EMISSIONS OF PARTICULATE MATTER

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The heat input value (Q), expressed in MMBtu/hr, shall be the:
- (xx) 1. aggregate heat content of all fuels burned
- ( ) 2. maximum design heat input
- ( ) 3. maximum of 1 and 2
- ( ) 4. not applicable.

For:
- ( ) 1. all fuel burning units at a plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.
- ( ) 4. not applicable.

B. The units of the regulation:
- (xx) 1. lb particulate/10^6 Btu.
- ( ) 2. lb particulate/hr.
- ( ) 3. lb particulate/1000 lb stack gas
- ( ) 4. grains/SCF.
- ( ) 5. no emission limit.
- ( ) 6. other.

C. The regulation applies to:
- ( ) 1. an entire plant.
- (xx) 2. an individual boiler.
- ( ) 3. an individual stack.

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fossil-fuel fired steam generating units (constructed or modified after August 17, 1971 with Q > 250 MMBtu/hr)
Fossil fuel — 0.1 lb/MMBtu

Appendix C

CONVERSION FACTORS FOR PARTICULATE EMISSION REGULATIONS

CONVERSION FACTORS FOR PARTICULATES EMISSION REGULATIONS

The following equations can be used to convert the units of measure of particulate emission regulations to lb/MMBtu.

Nomenclature:

A	SIP value in given units
H	Heat content of fuel in Btu/lb for coal, Btu/gal for oil
E	Emission of particulates in units of lb/MMBtu
X	Excess air in units of % excess
Q	Heat input rate in units of MMBtu/hr

Computation:

Units of the regulation (A)	E (lb/MMBtu)
grains/SCF (assuming X is known)	
Coal	$(1.99 \times 10^4 + 1.89 \times 10^2 X)\ A/H$
Oil	$(2.094 \times 10^5 + 1.993 \times 10^3 X)\ A/H$
grains/SCFD (assuming X = 50%)	
Coal	$2.905 \times 10^4\ A/H$
Oil	$3.091 \times 10^5\ A/H$
grains/SCFD (assuming X is known)	
Coal	$(1.96 \times 10^4 + 1.89 \times 10^2 X)\ A/H$
Oil	$(2.094 \times 10^5 + 1.993 \times 10^3 X)\ A/H$
grains/SCFD (assuming X = 50%)	
Coal	$2.905 \times 10^4\ A/H$
Oil	$3.091 \times 10^5\ A/H$
lb/hr	
Coal	A/Q
Oil	A/Q
$lb/10^3$ lb stack gas	
Coal	$1.596 \times 10^4\ A/H$
Oil	$1.668 \times 10^5\ A/H$
$lb/10^2$ lb Bagasse	2.5 A

Assumptions:

1. The heat content of bagasse is assumed to be 4000 Btu/lb bagasse.

2. Density of fuel oil is assumed to be 7.88 lb oil/gal oil.

3. In the conversion from units of grains/SCF, grains/SCFD and lb particulates/10^3 lb stack gas, it is assumed that coal contains 72%C, 5%H_2, 2%N_2, 1%S and 10% moisture.

4. In the conversion from units of grains/SCF, grains, SCFD and lb particulates/10^3 lb stack gas, it is assumed that oil contains 88%C, 9.5%H_2 and 0.5% moisture.

5. The air fed to the boiler is assumed to contain no moisture.

6. The molecular weight of the stack gas is assumed to be 29.5 lb/lb mole.

7. Complete combustion is assumed.

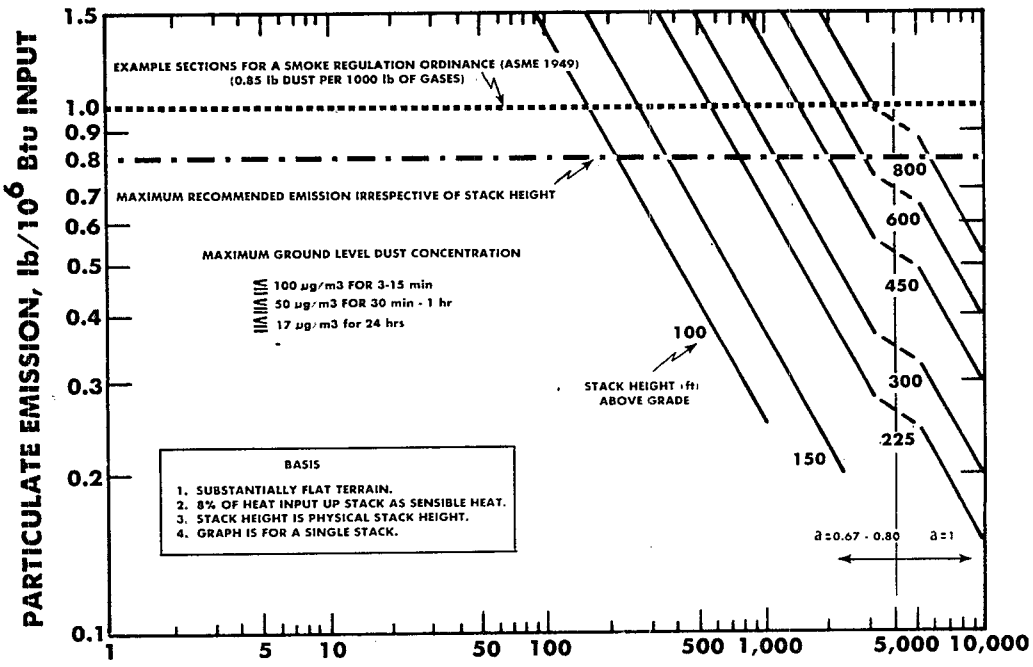
8. Standard conditions for stack gas are taken as 1 atmosphere and 60°F.

9. The stack gas is assumed to be an ideal gas.

Appendix D

ASME STANDARD APS-1, FIGURE 2

PARTICULATE EMISSION, FUEL BURNING OPERATIONS



ASME STANDARD, APS-1, FIGURE 2

Effect of Multiple Stacks

For a plant with n stacks, the result obtained from the figure should be divided by $n^{0.25}$ to account for multi-stack effect. For multiple stacks having different heights, the weighted average stack height, h, may be calculated by the following formula:

$$h = \sum_{i=1}^{n} h_i a_i Q_i^{0.25} / \sum_{i=1}^{n} a_i Q_i^{0.25}$$

where subscripts i = 1, 2, . . . , n, refer to individual stacks. Q_i represents heat input to stack i. The dimensionless factor, a_i, is 1.0 for a stack with total heat input of 4000 MMBtu/hr or more. If the total heat input to a stack is less than 4000 MMBtu/hr, a_i is 0.67 for a stack height of 150 ft. or less, and 0.80 for a stack height of 225 ft. or more. For a stack height between 150 and 225 ft., a_i is computed using the following equation:

$$a_i = 0.67 + 0.001733\ (h_i - 150)$$

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA-450/2-76-010		

4. TITLE AND SUBTITLE	5. REPORT DATE
State Implementation Plan Emission Regulations for Particulate Matter: Fuel Combustion	August 1976
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Crenshaw, J. D., C. H. Kuo, J. D. Potter	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
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16. ABSTRACT

This report presents a one-page summary of each state's implementation plan (SIP) regulations for particulate matter. The report also explains the relationship between the SIP regulations, the National Ambient Air Quality Standards, and the Federal Standards of Performance for New Stationary Sources.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Particulate Matter Regulations Emission Standards Fuel Standards Standards	Air Pollution Control State Implementation Plans	

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