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STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR SULFUR OXIDES: FUEL COMBUSTION

Second Edition

Strategies and Air Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
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SCOPE

This report summarizes State Implementation Plan regulations on the emission of sulfur oxides from fuel combustion equipment. The definition of fuel combustion equipment varies from State to State, but in all States these regulations apply to steam-electric generating plants (power plants) and industrial boilers. In many cases the regulations apply to all fuel users (Appendix D). The regulations generally do not apply to SO_2 emissions from incineration, wood burning, or for fuel used as a raw material for chemical processes, such as in manufacturing coke.

State Implementation Plans (SIPs) are designed to prevent local ambient air concentrations from exceeding the National Ambient Air Quality Standards (Appendix A). In addition to SIP regulations which are Federally approved and legally enforceable, some States, counties, or cities have adopted local SO_2 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.

STATE IMPLEMENTATION PLAN EMISSION REGULATIONS FOR SULFUR OXIDES: FUEL COMBUSTION

INTRODUCTION

This report contains a summary of each State's implementation plan regulations for the emission of sulfur oxides; a background section explaining the relationship between these regulations, the Federal ambient air standards, and Federal new source regulations; an overview of the various State regulations, and five appendices. Appendix A outlines the National Ambient Air Quality Standards, Appendix B summarizes the Federal new source regulations for SO_2, Appendix C explains how to convert units of measure of sulfur oxide regulations to a common basis, Appendix D explains the applicability of these SO_2 regulations to industrial fuel burners, and Appendix E contains additional information about the SO_2 regulations for Ohio.

Regulations aimed at controlling ambient air concentrations of sulfur dioxide (SO_2) may be written to limit either the sulfur content of fuel or the emission of sulfur dioxide or sulfur oxides. To be consistent with commonly used terminology, the following discussions refer to all sulfur limiting regulations as SO_2 regulations.

This document is <u>not</u> an official EPA listing of SIP emission regulations for SO_2, 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 were updated by tracking revisions to State Implementation Plans which had been published in the Federal Register. This summary incorporates revisions that have been approved through August 30, 1977 and, in a few cases, identifies revisions which are in progress.

This summary provides a data base of SO_2 regulations for use by EPA and otner organizations in analyzing the issues of SO_2 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:

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

The Clean Air Act Amendments 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 revision, 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 plan, 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 significantly 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.

Over the past few years, much attention has been focused on emission regulations for sulfur oxides since these regulations have a significant impact on the supply of fuel, particularly coal, which can be burned to produce electrical energy. While United States supplies of coal are plentiful, some of this coal is too high in sulfur content to be burned in compliance with State and Federal regulations for SO_2 without the use of emission reduction systems which, in some cases, are either costly or impractical. As a result, many states have been reevaluating their sulfur oxide regulations to insure that scarce low sulfur fuels are being required only in areas where they are needed to protect public health. In some cases, States have revised their sulfur regulations to allow the burning of higher sulfur fuels in less polluted areas where they can be burned without violating ambient air quality standards.

OVERVIEW OF SO_2 REGULATIONS

This summary of SIP emission requirements clearly shows the complexity and diversity of SO_2 emission regulations for fuel combustion. These regulations vary as to the units of measure in which the sulfur limiting provision is expressed and the equipment (boiler, stack, or entire plant) to which the regulations apply. In addition, some states control all emission sources equally, while other states prescribe different emission limits for sources according to the fuel used, the geographic location, the size of the source, or the type of source (e.g. power plant or other combustion units). The following discussion highlights the diversity of the regulations and explains some of the more peculiar and complex regulations.

Sulfur dioxide emissions most commonly are regulated either by limiting the amount of sulfur dioxide emitted per unit heat input (#SO_2/MMBtu), the amount of sulfur per unit heat release potential (#S/MMBtu) or by limiting the sulfur content by weight (%S) that a fuel can contain. Sulfur dioxide regulations also may limit the allowable SO_2 concentration in effluent gas (parts per million or ppm SO_2 by volume) or the mass rate of emissions (#SO_2/hr). Six states, or parts thereof specify ambient air quality standards only (i.e. no specific emission limit for a source). Other methods of limiting SO_2 emissions which appear in the SIPs include requiring a percent control of input sulfur (% control) or requiring application of "latest reasonably available control technology" (Florida) or "new proven technologies" (Texas).

Some of the above mentioned methods for regulating SO_2 control the emissions of sulfur oxides more directly than do others, and each method has different implications regarding fuels that legally can be burned. For instance, a %S regulation is a fuel restriction and, therefore, does not directly limit sulfur oxide emissions from a stack. To illustrate, a regulation requiring a coal-fired boiler to reduce its fuel sulfur from 3% to 1% may appear to result in a 67% reduction of SO_2 emissions. This assumption is valid only if the lower sulfur fuel used to comply with the regulation has the same heat content (Btu/lb) as the original fuel. If, however, the lower sulfur fuel has a lower heat content than the original fuel, then the rate of fuel consumption for the boiler will have to be increased to maintain the heat output at existing levels. As a result,

the emission reduction achieved by complying with this hypothetical regulation may be less than 67%, the degree of emission reduction depending upon the heating value of the complying coal. On the other hand, a regulation requiring a boiler to reduce emissions from 6 #SO_2/MMBtu to 2 # SO_2/MMBtu, in all cases will result in a 67% reduction of SO_2 emissions because this emission regulation is specified on the basis of total heat input to a combustion unit.

Regulations written in #SO_2/hour directly control the amount of sulfur emissions, but the sulfur content of fuel that can be used to comply with a SO_2/hr regulation is a function of other parameters in addition to the value of the regulation. For instance, consider a boiler operating at full capacity (i.e. maximum designed fuel consumption rate) and then at one-half of full capacity. In both cases, assume that the boiler is meeting the #SO_2/hr emission requirement. When operating at one-half of full capacity, the boiler legally can burn a fuel with twice the sulfur content that it can burn when operating at full capacity, because the rate of fuel consumption (and thus, sulfur input to the boiler) has been reduced by one-half. Likewise, the sulfur content of fuel required to meet a regulation expressed in ppm SO_2 will vary depending on the amount of excess air (air fed during the combustion process) and other parameters specified for computing the emission limit. For example, to comply with a regulation of 500 ppm SO_2 at 50% excess air would require coal with a sulfur content of about 0.86 %S. But to comply with the same emission limit at 12% excess air would require coal with sulfur content of about 0.65 %S.

On the other hand, the effect of ambient air quality regulations on allowable emissions is difficult to predict. These regulations were approved for Arkansas, Missouri, Oklahoma, Texas, Wisconsin, and Wyoming because no violations of the National Ambient Air Quality Standards (NAAQS) had been detected in these areas and because the States anticipated no industrial growth which might result in contravention of the air standards. If, however, the state ambient air quality standard is exceeded in these areas, the regulations provide no direct legal mechanism for requiring a plant source to reduce SO_2 emission. To control a source once an air standard is violated, the state might exercise one of several enforcement actions, including finding the source,

issuing an enforcement order, or requiring the company to submit an emission reduction plan. If, however, a National Ambient Air Quality Standard is violated (State air quality standards are often different, but at least as stringent as the NAAQS), EPA would require the state to adopt and submit a State Implementation Plan revision, setting forth emission limitations aimed at preventing future NAAQS violations. Similarly, it is difficult to predict the impact of regulations in Texas and Florida which call for the use of reasonably available control technologies on certain sources.

To assist in comparing SO_2 regulations on a plant-by-plant basis, Appendix C contains equations for converting SO_2 emission regulations into common units of measure of %S and $\#SO_2$/MMBtu based on the heat content of the fuel burned and the excess air specified in the applicable regulation.

Besides the various units of measure employed, regulations also vary as to the equipment upon which the emission limit is enforced. Twenty-five states or territories enforce their regulations on a boiler basis, thirteen on a stack basis, and eighteen on a total plant basis (all boilers collectively). In considering compliance with a regulation, this information determines whether a source is allowed to average its emission over all boilers (or stacks) or if each boiler (or stack) must comply with the regulation.

About one-third of the states regulate specific fuel types. These regulations usually control oil-fired sources more strictly than coal-fired sources. But, in some cases, such as New Jersey, the sulfur restriction for coal is more stringent than the restriction for oil; the objective of this regulation being to prohibit the use of coal without flue gas cleaning equipment. The range of fuel types which are individually specified in the various regulations includes oil, #1 to #6 oil individually, all distillate oils, all residual oils, coal, anthracite coal, bituminous coal, lignite, all solid fuels, all liquid fuels, gaseous fuels, fossil fuels, and non-commerical fuels. Consideration of these provisions is important in determining if a particular regulation applies to combustible material other than fossil fuels such as petrochemical by-products or solid waste.

About half of the states have specific SO_2 regulations for various geographic areas within the state. These geographic areas might be specified as cities, counties, Federal air quality control regions (AQCR), or some locally defined geographic region. In some areas, including Arizona, Georgia, New Mexico, Puerto Rico, and Ohio, regulations have been promulgated for specific plants.

In about one-third of the states, the size of the source determines whether or not the source must comply with an SO_2 emission limitation and if so, the stringency of the limitation. In most cases source size is defined by the heat input rate measured in millions of Btu per hour (MMBtu/hr). Other methods of defining source size include pounds of steam generated per hour (#steam/hr) and emission potential in tons of SO_2 emitted per year (tons SO_2/yr). In some states, the magnitude of the emission limit is determined by the heat input range under which a source falls. In many states, larger sources are controlled more stringently than smaller sources. For instance, in parts of Nevada, boilers with heat input ratesof less than 250 MMBtu/hr must comply with an emission limit of 0.7 #S/MMBtu while boilers greater than 250 MMBtu/hr must comply with an emission limit of 0.1 #S/MMBtu (250 MMBtu/hr corresponds to a boiler with an associated generating capacity of about 25 megawatts). In Pennsylvania, West Virginia, Virginia, and Indiana the heat input rate is inserted into an equation which computes the allowable emission limit.

Over half of the states employ more than one of the parameters discussed above in their regulations. In addition, about 35% of the states have separate regulations for new sources and about 10% have regulations for existing sources that become more stringent over time. For example, in Michigan, large steam generators are restricted from burning fuel with more than 1.5%S; after July 1, 1978, the fuel sulfur limitation drops to 1.0%S.

In a few states (for instance, Nebraska and New Hampshire) the limits on emissions or fuel quality are specified as maximum values averaged over a given time period. Most regulations, however, state that emissions or sulfur content shall not exceed a maximum value. This phraseology implies that instantaneous compliance with the limit is required.

SULFUR OXIDE EMISSION REGULATIONS

In the following summary of State Implementation Plan regulations for SO_2, one page has been devoted to each state regulation (more pages in a few cases 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. Also presented is the time period over which emission measurements are averaged for determining compliance with the regulation. 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 about the regulation 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 regulations 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 as emission regulations are changed.

This summary sometimes references regulations that have been "adopted" or "proposed." Proposed regulations refer to regulations adopted by a state or written by EPA which have been proposed formally in the Federal Register. Adopted regulations refer to the regulations that have been adopted by a State legislative body, but which either have not been submitted to EPA for approval or have been submitted to EPA but have not been proposed formally in the Federal Register.

The abbreviations listed below are used on the following pages in explaining SO_2 emission regulations.

AQCR - Air Quality Control Region
E - Allowable emissions
EPA - U. S. Environmental Protection Agency
FGD - Flue gas desulfurization
MMBtu - Million British thermal units
MW - Megawatts
NAAQS - National Ambient Air Quality Standard
ppm - Parts per million by volume
Q - Heat input rate (MMBtu/hr)
%S - Percent sulfur by weight
SIP - State Implementation Plan
- Pounds
$\mu g/m^3$ - Micrograms per cubic meter

ALABAMA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Category I Counties (Jefferson, Jackson and Mobile)	1.8#SO_2/MMBtu
B. Category II and Category III Counties (all other counties)	4.0#SO_2/MMBtu
C. Widows Creek Power Plant	1.2#SO_2/MMBtu

ALASKA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Equipment	500ppm SO_2

AMERICAN SAMOA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Any Fuel:	3.5% S

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

1. Coal	1.0#SO_2/MMBtu
2. Oil	1.0#SO_2/MMBtu[a]
3. Navajo Plant (Maximum emissions)	21270#SO_2/hr[b]

B. New Sources (constructed after 8/17/71):

1. Coal	0.8#SO_2/MMBtu
2. Oil	0.8#SO_2/MMBtu

NOTE: [a]The state may approve the burning of high sulfur oil with an emission limit up to 2.2#SO_2/MMBtu if adequate supplies of low sulfur oil are not available and if the NAAQS will not be violated. This provision has been proposed as a SIP revision, but has not been approved by EPA.

[b]An individual boiler must not contribute more than one third of the total emissions. The compliance date for the Navajo Plant is 7/31/77.

ARKANSAS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

II. THE STATE IMPLEMENTATION PLAN REGULATION

Ambient Air Quality Standard (30 minute average): 0.2ppm SO_2

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

Great Basin Valleys Air Basin (AQCR 23)	2000ppm SO_2 [a]
South Coast Air Basin (AQCR 24)	0.5% S
North Central Coast Air Basin (AQCR 25)	0.5% S
North Coast Air Basin (AQCR 26)	1000ppm SO_2 [a]
Northeast Plateau Air Basin (AQCR 27)	
Lassen and Modoc Counties	0.5% S
Eastern Shasta County	1500ppm SO_2 [a]
Siskiyou County	2000ppm SO_2 [a]
Sacramento Valley Air Basin (AQCR 28)	
Tehama County	0.5% S
Plumas and western Shasta Counties	1000ppm SO_2 [a]
Other Counties	2000ppm SO_2 [a]
San Diego Air Basin (AQCR 29)	0.5% S
Bay Area Air Basin (AQCR 30)	300ppm SO_2 [a,b]
San Joaquin Valley Air Basin (AQCR 31)	2000ppm SO_2 [a]
South Central Coast Air Basin (AQCR 32)	0.5% S
Southeast Desert Air Basin (AQCR 33)	
Imperial, eastern Riverside, and northeastern San Bernadino Counties	0.5% S
Eastern San Diego County	500ppm SO_2 [a]
Eastern Kern and northeastern Los Angeles Counties	2000ppm SO_2 [a]

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

B. New Sources:
1. The limitations in A also are applicable to new sources.
2. Additional limitation for new fuel burning units in the following areas:

South Coast Air Basin (AQCR 24)	
Sacramento Valley Air Basin (All counties in AQCR 28 except Plumas, western Shasta, and Yuba Counties	
South Central Coast Air Basin (Northern Santa Barbara County only, in AQCR 32)	
Southeast Desert Air Basin (All counties in AQCR 33 except eastern Kern and eastern San Diego Counties)	200 #SO_2/hr

NOTES: [a]All emission regulations expressed as ppm SO_2 are corrected to 50% excess air.

[b]Current regulations permit a source to comply with the ambient air quality standard of 0.04 ppm SO_2, maximum 24-hr average, in lieu of the emission limitation for Bay Area Air Basin. However, EPA has proposed to disapprove this provision and to require a source to comply with the specific emission limitation of 300 ppm SO_2.

COLORADO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources: No emission limit

B. New Sources (constructed after 2/1/72):
1. Emission limit from any stack: 150 ppm SO_2
2. If all individual units connected to a stack are controlled to 5 tons/day or less, then the allowable emission from the stack is 500 ppm SO_2.

NOTES: On March 13, 1975, the State adopted a revision to the SIP regulation which redefined a new source as one which is constructed after 1/1/80 (has not been approved by EPA).

A local regulation enforceable by the State limits emissions from existing sources to 500 ppm SO_2.

CONNECTICUT

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:	0.5% S
With Stack-gas Cleaning	0.55#SO_2/MMBtu

DISTRICT OF COLUMBIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A.	After 2/7/69:	
	1. Coal	1.0% S
	2. Oil	1.0% S
B.	After 3/31/77:[a]	
	1. Coal	0.5% S
	2. Oil	0.5% S

NOTE: [a]Although the original effective date of this provision was 7/1/75, EPA on 12/6/76 approved postponement for enforcement of this provision.

DELAWARE

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

1 month

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Distillate Oil:	0.3% S
B. Other Fuels:	
1. New Castle County (in AQCR 045)	1.0% S
2. Other Counties	No emission limit

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

Existing sources -- no time interval specified
New sources -- 2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

1. Q < 250 MMBtu/hr — "Latest reasonably available technology"

2. Q > 250 MMBtu/hr
   a. Duval, Escambia and Hillsborough Counties:
      - Solid fuel — 1.5#SO_2/MMBtu
      - Liquid fuel — 1.1#SO_2/MMBtu
   b. All other counties:
      - Solid fuel — 6.17#SO_2/MMBtu
      - Liquid fuel — 2.75#SO_2/MMBtu

B. New Sources (constructed after 1/18/72):

1. Q < 250 MMBtu/hr — "Latest reasonably available technology"

2. Q > 250 MMBtu/hr
   - Solid fuel — 1.2#SO_2/MMBtu
   - Liquid fuel — 0.8#SO_2/MMBtu

NOTES: The heat input rate (Q) applies to an entire plant.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment

A source must comply with both of the following provisions:

1. Sulfur-in-fuel limitation:

a. Q < 100 MMBtu/hr	2.5% S
b. Q ≥ 100 MMBtu/hr	3.0% S
c. Atkinson Power Plant (No. 2 oil)	0.2% S

2. SO_2 Emission Limitation from a stack (h=stack height)[a]:

h < 90 feet	$R = 12\ F\ h^3$	$\#SO_2$/hr
90 < h < 300 feet	$R = 4000\ F\ (h/300)^2$	$\#SO_2$/hr
h > 300 feet	$R = 4000\ F\ (h/300)$	$\#SO_2$/hr

B. New Equipment (constructed after 1/1/72)

1. Q < 250 MMBtu/hr — Limitations in A are applicable

2. Q > 250 MMBtu/hr

Solid fuel	1.2$\#SO_2$/MMBtu
Liquid fuel	0.8$\#SO_2$/MMBtu

NOTES: The heat input rate (Q) applies to an individual boiler.

[a] For a plant with heat input less than 10000 MMBtu/hr, F = 2; for a larger plant, F = 3. If a plant has more than one stack, then each stack is further restricted to the emission limit computed using an average stack height, which is determined by the equation below.

$$h = \sum_{i=1}^{n} h_i R_i \Big/ \sum_{i=1}^{n} R_i$$

where i = 1,2, ---, n, refers to the stack number
R_i = allowable emission rate from stack i, computed by equations in paragraph A2 above.
h_i = height of stack i.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels: 0.80#SO_2/MMBtu

NOTE: A SIP revision has been proposed which would limit the sulfur content of fuels to 0.75% (has not been approved by EPA).

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Equipment:

1. Q > 250MMBtu/hr (power generating output > 25MW)	0.5% S
2. Other Fuel-burning Equipment	2.0% S

NOTE: The heat input rate (Q) applies to an entire plant.

IDAHO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Sulfur content in fuels:

1. Coal (effective 1/1/73)	1.0% S
2. Distillate Oil #1 (effective 1/31/73)	0.3% S
3. Distillate Oil #2 (effective 1/31/73)	0.5% S
4. Residual Oil #4-#6 (effective 1/31/74)	1.75% S

ILLINOIS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

1 hour

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources - Solid Fuels (effective 5/30/75)
1. Major Metropolitan Areas of Chicago (AQCR 67), St. Louis (AQCR 70), and Peoria (AQCR 65): 1.8#SO_2/MMBtu
2. If air quality monitoring in any other Major Metropolitan Area indicates SO_2 levels > 60μg/m^3 (0.02ppm) for any year ending prior to 5/30/76, or levels > 45μg/m^3 (0.015ppm) on or after 5/30/76, the allowable emission rate is: 1.8#SO_2/MMBtu
3. Other Areas: 6.0#SO_2/MMBtu

B. Existing Sources - Liquid Fuels
1. Residual Oil 1.0#SO_2/MMBtu
2. Distillate Oil 0.3#SO_2/MMBtu

C. New Sources (constructed after 4/14/72):

FUEL TYPE	HEAT INPUT (Q)	
	≤ 250MMBtu/hr	> 250MMBtu/hr
Solid Fuel	1.8#SO_2/MMBtu	1.2#SO_2/MMBtu
Residual Oil	1.0#SO_2/MMBtu	0.8#SO_2/MMBtu
Distillate Oil	0.3#SO_2/MMBtu	0.3#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

1. Emission limitation

a. Dearborn, Jefferson, Lake LaPorte, Marion, Vigo and Warrick Counties:

$Q \leq 24$ MMBtu/hr	6.0#SO_2/MMBtu
24 < Q < 3081 MMBtu/hr	$17Q^{-0.33}$ #SO_2/MMBtu
$Q \geq 3081$ MMBtu/hr	1.2#SO_2/MMBtu No emission limit

2. Maximum contribution to ground level concentration (1-hour average):

Priority A basins (Lake County)	200 µg SO_2/m^3
Priority B basins (Dearborn and Marion Counties	500 µg SO_2/m^3

B. New Sources (constructed after 9/14/72)

1. $Q \leq 24$ MMBtu/hr[a]	6.0#SO_2/MMBtu
2. 24 < Q < 250 MMBtu/hr[a]	$17Q^{-0.33}$ #SO_2/MMBtu
3. $Q \geq 250$ MMBtu/hr:	
Solid fuel	1.2#SO_2/MMBtu
Liquid fuel	0.8#SO_2/MMBtu

NOTES: The heat input rate (Q) is the total design heat input rate for the entire plant.

[a]The maximum contribution to ground level concentration (1-hour average) for a new source (less than 250 MMBtu/hr) is limited to 200 µg SO_2/m^3 in Priority A basins, 500 µg SO_2/m^3 in Priority B basins and 900 µg SO_2/m^3 in all other areas.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

1. Solid fuels	
Effective 1/1/74	6.0#SO_2/MMBtu
Effective 1/1/75	5.0#SO_2/MMBtu
Effective 6/1/77 (for sources in Black Hawk, Clinton, Des Moines, Dubuque, Jackson, Lee, Linn, Louisa, Muscatine and Scott Counties)	6.0#SO_2/MMBtu
2. Liquid fuels	
Effective 6/1/77	2.5#SO_2/MMBtu

B. New Sources (constructed after 9/23/70):

1. Solid fuels	
Q $\leq$ 250 MMBtu/hr	6.0#SO_2/MMBtu
Q > 250 MMBtu/hr	1.2#SO_2/MMBtu
2. Liquid fuels	
Q $\leq$ 250 MMBtu/hr	2.5#SO_2/MMBtu
Q > 250 MMBtu/hr	0.8#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- (xx)5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment:
1. If Q > 250MMBtu/hr and the equipment burns fuels other than natural gas for more than 2000 hrs/yr, and the yearly emission rate is $\geq$ 3 x (1971 emission rate), then, the allowable emission rate is: 1.5#S/MMBtu
2. Others: No emission limit

B. New Equipment (constructed or modified after 1/1/72):
1. Q $<$ 250MMBtu/hr: No emission limit
2. Q $\geq$ 250MMBtu/hr: 1.5#S/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:

County[a]	Emission Limit ($\#SO_2$/MMBtu)					
	Solid Fuels			Liquid Fuels		
	1 < Q < 10	10 < Q < 250	Q > 250	1 < Q < 10	10 < Q < 250	Q > 250
Class I	5.0	$1.8781Q^{-.4434}$	1.2	3.0	$7.7223Q^{-.4106}$	0.8
Class II	6.0	$14.1967Q^{-.3740}$	1.8	4.0	$9.4044Q^{-.3740}$	1.2
Class III	7.0	$12.2539Q^{-.2432}$	3.2	4.6	$8.060Q^{-.2436}$	2.1
Class IV	8.0	$10.8873Q^{-.1338}$	5.2	5.4	$7.3639Q^{-.1347}$	3.5
Class V	9.0	$12.0284Q^{-.1260}$	6.0	6.0	$8.9189Q^{-.1260}$	4.0

B. New Sources (constructed after 4/9/7?[1]:

Emission Limit ($\#SO_2$/MMBtu)					
Solid Fuels			Liquid Fuels		
1 < Q < 10	10 < Q < 250	Q > 250	1 < Q < 10	10 < Q < 250	Q > 250
5.0	$9.4464Q^{-.3740}$	1.2	3.0	$5.6484Q^{-.3540}$	0.8

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

C. Boyd County (in AQCR 103):

Q (MMBtu/hr)	Emission Limit[b] (#SO_2/MMBtu)			
	Existing Sources		New Sources	
	Solid Fuels	Liquid Fuels	Solid Fuels	Liquid Fuels
≤10	4.00	2.50	4.00	2.50
100	3.70	2.30	1.70	1.10
150	3.70	2.28	1.40	0.95
200	3.60	2.24	1.30	0.86
500	3.60	2.20	1.20	0.80
1,000	3.50	2.17	1.20	0.80
≥10,000	3.50	2.00	1.20	0.80

NOTES: The heat input rate (Q) is the total design heat input rate for an entire plant.

[a]All counties in the state are designated as one of the following classes:

Class I	Counties:	Jefferson and McCracken
Class II	Counties:	Bell, Clark and Woodford
Class III	Counties:	Pulaski
Class IV	Counties:	Muhlenberg, Webster and Hancock
Class V	Counties:	All except the above and Boyd

[b]Interpolate emission limitation for heat inputs (Q) between those given in the table.

LOUISIANA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Sources — 2000ppm SO_2

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr
- ( ) 10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:

1. Metropolitan Portland (AQCR 110)	1.5% S
2. Other Areas (AQCR's 107, 108, 109, 111)	2.5% S

NOTES: A source shall be exempted from this regulation if a sulfur collecting device is installed to reduce SO_2 emission to the level equivalent to burning 1.5% S fuel.

The following revised regulation has been adopted by the State and proposed as a SIP revision:

A. Portland Peninsula Region (section of the City of Portland bordered on the west by Interstate 95, on the south and east by the Fore River and on the north by Casco Bay and the inlet to Back Bay)

After 11/1/75	1.5% S
After 11/1/85	1.0% S

B. Metropolitan Portland AQCR (110) outside the Portland Peninsula Region

After 6/1/75	2.5% S

C. All other areas (AQCRs 107, 108, 109 & 111)

After 11/1/73	2.5% S

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Solid Fuels (Q > 100 MMBtu/hr):	
AQCRs 047, 113 and 115	1.0% S
AQCRs 112, 114 and 116	3.5# SO_2/MMBtu
B. Residual Oil:	
AQCRs 047, 113 and 115	1.0% S
AQCR 112, 114 and 116	2.0% S
C. Distillate Oil	0.3% S

NOTE: The heat input rate (Q) applies to an entire plant.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
( )1. %S for all fuels.
(xx)2. %S for each fuel.
( )3. lb $SO_2/10^6$ Btu for all fuels.
( )4. lb $SO_2/10^6$ Btu for each fuel.
( )5. lb $S/10^6$ Btu for all fuels.
(xx)6. lb $S/10^6$ Btu for each fuel.
( )7. ppm SO_2 in exhaust gas.
( )8. impact on ambient air quality in ppm.
( )9. lb SO_2/hr
( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. *Metropolitan Boston AQCR (119)*

1. Cities and towns of Arlington, Belmont, Boston, Brookline, Cambridge, Chelsea, Everett, Malden, Medford, Newton, Somerville, Waltham or Watertown
   a. Coal or residual oil:
      Q > 2,500 MMBtu/hr
        Before 7/1/78 — 0.55#S/MMBtu
        After 7/1/78 — 0.28#S/MMBtu
      Q ≤ 2,500 MMBtu/hr — 0.28#S/MMBtu
   b. Distillate oil — 0.17#S/MMBtu
   c. Fossil fuel utilization facility of less than 6 MMBtu/hr:
      Burning of residual fuel oil is not permissable after 7/1/74

2. Other areas in AQCR 119
   a. Coal or residual oil:
      Q ≥ 100 MMBtu/hr
        Before 7/1/78 — 1.21#S/MMBtu
        After 7/1/78 — 0.55#S/MMBtu
   b. Distillate oil — 0.17#S/MMBtu

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- (xx)6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

B. Merrimack Valley-Southern New Hampshire AQCR (121)	
1. Coal	0.55#S/MMBtu
2. Residual oil:	
City of Lawrence, Towns of Andover, Methuen and North Andover	0.55#S/MMBtu
Other areas	2.20% S
3. Distillate oil	0.17#S/MMBtu
C. Hartford-New Haven-Springfield AQCR (042)	
1. Coal	1.60% S
2. Residual oil:	
Q $\geq$ 100 MMBtu/hr	
Before 6/1/78	2.2%S
After 6/1/78	0.55#S/MMBtu
Q < 100 MMBtu/hr	0.55#S/MMBtu
3. Distillate oil	0.17#S/MMBtu
D. Central Massachusetts AQCR (118)	
1. Coal	0.55#S/MMBtu
2. Residual oil:	
a. Cities of Worcester and Fitchburg	0.55#S/MMBtu
b. Other areas	
Q $\geq$ 100 MMBtu/hr	
Before 7/1/78	1.21#S/MMBtu
After 7/1/78	0.55#S/MMBtu
Q < 100 MMBtu/hr	0.55#S/MMBtu
3. Distillate oil	0.17#S/MMBtu

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- (xx)6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

E. Berkshire and Metropolitan Providence AQCRs (117 & 120)

1. Coal or residual oil	0.55#S/MMBtu[a]
2. Distillate oil	0.17#S/MMBtu

NOTES: The heat input rate (Q) applies to an entire plant.

For a fossil fuel utilization facility with heat input of 3 MMBtu/hr or less, burning of residual fuel oil is not permissible.

[a]A SIP revision has been proposed to permit any source in Berkshire AQCR and any large source (Q > 100 MMBtu/hr) in Metropolitan Providence AQCR to burn fossil fuel with a sulfur content up to 1.21#S/MMBtu until 5/1/78.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Fossil Fuel-Fired Steam Generators

1. Effective 7/1/75:
   - Plant Capacity $\leq$ 500,000 lb steam/hr — 2.0% S
   - Plant Capacity > 500,000 lb steam/hr — 1.5% S
2. Effective 7/1/78:
   - Plant Capacity $\leq$ 500,000 lb steam/hr — 1.5% S
   - Plant Capacity > 500,000 lb steam/hr — 1.0% S

B. Wayne County (in AQCR 123)

Fuel Type	Steam Generator	Space & Water Heating	All Other Uses
Pulverized Coal	1.0% S	0.3% S	0.5% S
Other Coal	0.5% S	0.3% S	0.5% S
Residual Oil	0.7% S	0.7% S	0.7% S
Distillate Oil	0.3% S	0.3% S	0.3% S

NOTE: In areas other than Wayne County, there is no emission regulation for fuel burning equipment other than fossil fuel-fired steam generators.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- (xx) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr
- ( ) 10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Minneapolis-St. Paul AQCR (131):

Fossil Fuels	
Q < 250 MMBtu/hr	2.0% S
Q > 250 MMBtu/hr	1.5% S

B. Other Areas (AQCR's 127, 128, 129, 130, 132, 133):

1. Q < 250 MMBtu/hr	No emission limit
2. Q > 250 MMBtu/hr	2.0% S

NOTES: The heat input rate (Q) applies to an entire plant.

The following revised regulation has been adopted by the state (10/4/76) but has not been approved by EPA:

A. Existing Sources

	Emission Limit (#SO_2/MMBtu)	
	Solid Fuels	Liquid Fuels
1. Minneapolis-St. Paul AQCR		
q < 250 and Q > 250 MMBtu/hr	3.0	1.6
q ≤ 250 and Q ≤ 250 MMBtu/hr	4.0	2.0
2. City of Duluth		
q < 250 and Q > 250 MMBtu/hr	4.0	2.0
q ≤ 250 and Q ≤ 250 MMBtu/hr	a	a
3. All other areas		
q < 250 and Q > 250 MMBtu/hr	4.0	2.0
q ≤ 250 and Q ≤ 250 MMBtu/hr	a	a

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- ( ) 2. %S for each fuel.
- ( ) 3. lb $SO_2/10^6$ Btu for all fuels.
- (xx) 4. lb $SO_2/10^6$ Btu for each fuel.
- ( ) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr
- ( ) 10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

B. New Sources

	Emission Limit (#SO_2/MMBtu)	
	Solid Fuels	Liquid Fuels
1. Minneapolis-St. Paul AQCR		
$q > 250$ and $Q > 250$ MMBtu/hr	1.2	0.8
$q \leq 250$ and $Q > 250$ MMBtu/hr	3.0	1.6
$q \leq 250$ and $Q \leq 250$ MMBtu/hr	4.0	2.0
2. City of Duluth		
$q > 250$ and $Q > 250$ MMBtu/hr	1.2	0.8
$q \leq 250$ and $Q > 250$ MMBtu/hr	4.0	2.0
$q \leq 250$ and $Q \leq 250$ MMBtu/hr	a	a
3. All other areas		
$q > 250$ and $Q > 250$ MMBtu/hr	1.2	0.8
$q \leq 250$ and $Q > 250$ MMBtu/hr	4.0	2.0
$q \leq 250$ and $Q \leq 250$ MMBtu/hr	a	a

where q = Rated heat input of the specific indirect heating equipment (i.e., no direct contact between process material and products of combustion in the combustion unit)
Q = Total rated heat inputs of all direct and indirect heating equipment at a location
a = no emission limit

MISSISSIPPI

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. All Fuel-burning Installations: 4.8#SO_2/MMBtu

B. Units constructed or modified after 1/28/72 with generating capacity < 250MMBtu/hr: 2.4#SO_2/MMBtu

NOTE: No increase in the emission rate from that of 1970 is permitted unless authorized by the State Commission.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. St. Louis AQCR (070):

Q $\geq$ 2000 MMBtu/hr	2.3#SO_2/MMBtu
Q < 2000	2.0% S

B. All Other Areas:

Ambient Air Quality Standards[a]:

Maximum 1-hour average, not to exceed once in any 4 days period	0.25ppm SO_2
Maximum 24-hour average, not to exceed once in any 90 days period	0.07ppm SO_2

NOTES: The heat input (Q) applies to an entire plant.

[a]Any source which contributes to a violation of the ambient air quality standards and which emits more than 1000#SO_2/hr is required to submit an emission reduction plan to the state. No source shall be required to comply with an emission limitation more stringent than 1000#SO_2/hr. The state is in the process of developing explicit emission regulations for fuel-burning equipment.

MONTANA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:

( )1. %S for all fuels.
( )2. %S for each fuel.
( )3. lb $SO_2/10^6$ Btu for all fuels.
( )4. lb $SO_2/10^6$ Btu for each fuel.
(xx)5. lb $S/10^6$ Btu for all fuels.
( )6. lb $S/10^6$ Btu for each fuel.
( )7. ppm SO_2 in exhaust gas.
( )8. impact on ambient air quality in ppm.
( )9. lb SO_2/hr.

. The regulati[illegible]

( )1. an en[illegible]
)2. an ind[illegible]

II. THE STATE IMPLEMENTA[illegible]

Liquid or Solid Fuels [illegible]

NEBRASKA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

Existing Fossil Fuel-burning Equipment — $2.5\#SO_2/MMBtu$

Note: The yearly emission rate for any plant shall not exceed the rate emitted by by that plant in 1971, and the 24 hour emission rate shall not exceed the maximum 24 hour emission rate of 1971.

NEVADA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (xx) 1. %S for all fuels.
- (xx) 2. %S for each fuel.
- (xx) 3. lb $SO_2/10^6$ Btu for all fuels.
- ( ) 4. lb $SO_2/10^6$ Btu for each fuel.
- (xx) 5. lb $S/10^6$ Btu for all fuels.
- ( ) 6. lb $S/10^6$ Btu for each fuel.
- ( ) 7. ppm SO_2 in exhaust gas.
- ( ) 8. impact on ambient air quality in ppm.
- ( ) 9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Fuel-burning Equipment:	
Q $\leq$ 250MMBtu/hr	0.7#S/MMBtu
Q > 250MMBtu/hr	0.105#S/MMBtu
B. Clark County[a] (in AQCR 013):	
Fuel-burning Equipment	0.15#SO_2/MMBtu
Fuel Oil	1.0% S
C. Washoe County (in AQCR 148):	
Fuel-burning Equipment	
Q < 250MMBtu/hr	1.0% S
Q > 250MMBtu/hr	0.105#S/MMBtu
D. Regulations Adopted by the State (not yet approved as part of SIP):	
Q < 250MMBtu/hr	0.7#S/MMBtu
Q $\geq$ 250MMBtu/hr	
Solid	0.6#S/MMBtu
Liquid	0.4#S/MMBtu

NOTES: [a]Nevada has suspended this regulation for plants larger than 1000MW (has not been approved by EPA).
The heat input rate (Q) applies to an entire plant.

NEW HAMPSHIRE

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- (xx)6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

Coal fuel -- 3 months
Other fuel -- no time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:

1. Coal	
Maximum emission	2.8#S/MMBtu
Maximum 3-month average	2.0#S/MMBtu
2. Oil	
#2	0.4% S
#4	1.0% S
#5 and #6	
Androscoggin AQCR (107)	2.2% S
Other areas	1.5% S[a]

B. New Installations (constructed after 4/15/70):

1. Coal	
Maximum emission	1.5#S/MMBtu[b]
Maximum 3-month average	1.0#S/MMBtu[b]
2. Oil	
The regulations for new oil-fired installations are identical to those applicable to existing oil-fired installations.[a]	

NOTE: [a]Effective 3/22/75, a State regulation permits 2.0% S. This proposed SIP revision has not been approved by EPA.

[b]This provision has been deleted from the State regulation, but the deletion has not been approved as a SIP revision.

NEW JERSEY

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Coal:	
1. Counties of Atlantic, Cape May, Cumberland, Hunterdon, Ocean, Sussex and Warren (effective 5/6/68)	
Bituminous[a]	1.0% S
With FGD and State approval	1.5#SO_2/MMBtu
Anthracite	0.7% S
With FGD and State approval	1.0#SO_2/MMBtu
2. Other Areas:	
Effective 5/6/68[a]	Above Regulations Apply
Effective 10/1/71[b]	
Bituminous	0.2% S (dry basis)
Anthracite	0.2% S (dry basis)
B. Oil[c]:	
#2 and lighter	0.2% S
#4	0.3% S
#5, #6, and heavier	0.3% S
C. Non-Commercial Fuel (corrected to 12% CO_2 by volume):	640ppm SO_2
D. Mixtures of Commercial and Non-Commercial Fuels (corrected to 12% CO_2 by volume):	310ppm SO_2

NOTES: [a]If it is demonstrated that a facility cannot burn bituminous coal with a sulfur content $\leq$ 1.0%, then the State may authorize a less restrictive regulation (in no case > 1.5% S).

[b]If emissions are controlled to $\leq$ 0.30#SO_2/MMBtu, or if Equipment (rated capacity $\geq$ 2000MMBtu/hr for a facility or 450MMBtu/hr for a group of facilities) was in existence in 5/6/68, then the State may authorize the use of 1.0% S Bituminous or 0.7% S Anthracite Coal.

[c]Not applicable for #4, #5, and #6 oils if emissions $\leq$ 0.3#SO_2/MMBtu.

NEW MEXICO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- (xx)10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Coal Burning Equipment (Q > 250 MMBtu/hr):	
1. Existing equipment:	
250 < Q < 3000 MMBtu/hr	65% control of input sulfur[a]
Q ≥ 3000 MMBtu/hr	No emission limit[b]
2. New Equipment (constructed after 9/1/77)	0.34#SO_2/MMBtu
B. Oil Burning Equipment (Q > 114 MMBtu/hr):	0.34#SO_2/MMBtu

NOTES: The heat input rate (Q) applies to an entire plant.

[a]Compliance required by 7/31/77.

[b]Development of regulations for existing coal burning equipment of 3000 MMBtu/hr or more is in progress.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. New York City (Bronx, Kings, Queens, New York, and Richmond Counties):	
1. Solid Fuel	0.2#S/MMBtu
2. Distillate Oil	0.2% S
3. Other Oils	0.3% S
B. Nassau, Rockland and Westchester Counties:	
1. Solid Fuel	0.2#S/MMBtu
2. Oil	0.37% S
C. In Sulfolk County, the towns of Babylon, Brookhaven, Huntington, Islip and Smithtown:	
1. Solid Fuel	0.6#S/MMBtu
2. Oil	1.0% S
D. Erie and Niagara Counties:	
1. Solid Fuel	
Maximum	1.7#S/MMBtu
Maximum 3-month average	1.4#S/MMBtu
2. Oil	
Effective 9/26/74	2.2% S
Effective 10/1/75	1.1% S
E. Other Areas:	
1. Solid Fuel	
Maximum	2.5#S/MMBtu
Maximum 3-month average	1.9#S/MMBtu
2. Oil	2.0% S

NOTE: For plants converting from oil or gas to coal, the maximum allowable emission rate in #S/MMBtu is the product of 0.55 and (maximum allowable % S for oil).

NORTH CAROLINA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources	2.3#SO_2/MMBtu
B. New Sources (constructed after 7/1/71)	1.6#SO_2/MMBtu
C. All Sources after 7/1/80[a]	1.6#SO_2/MMBtu

NOTE: [a]Compliance with this provision is not required if a source can demonstrate that the NAAQS will not be contravened.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Installations	3.0#SO_2/MMBtu

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Fossil Fuel-Fired Steam Generating Units ($Q > 10$ MMBtu/hr)[a], except for certain power plants which are specified in paragraph B.

County	Emission Limit, E ($\#SO_2$/MMBtu)
Athens	7.50
Butler	1.40
Columbiana	4.40
Crawford	9.60
Cuyahoga	
$10 < Q < 350$	$E = 7.014Q^{-0.3014}$
$Q \geq 350$	1.20
Delaware	4.00
Erie	1.60
Franklin	
$10 < Q < 50$	$E = 8.088Q^{-0.4307}$
$Q \geq 50$	1.50
Hamilton	2.00
Hancock	5.20
Henry (oil)	2.10
Huron	8.00
Jefferson	
coal	1.80
oil	0.80
Lake	
$10 < Q < 1,000$	$E = 14.976Q^{-0.3431}$
$Q \geq 1,000$	1.40
Lawrence	1.22

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

County	Emission Limit, E (#SO_2/MMBtu)
Licking (oil)	1.50
Lorain	
10 < Q < 100	$E = 21.176Q^{-0.5477}$
Q ≥ 100	1.70
Lucas	
coal	1.50
oil	1.00
Mohoning	0.50
Marion	6.10
Medina	8.00
Meigs	11.00
Mercer	8.00
Miami	3.20
Montgomery	1.60
Ottawa	5.90
ckaway (oil)	0.85
ike	7.00
andusky	7.00
cioto	
coal	6.90
oil	0.60
Seneca	
coal	8.20
oil	1.20
Stark	
10 < Q < 60	$E = 18.48Q^{-0.4886}$
Q ≥ 60	2.50

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

County	Emission Limit, E (#SO_2/MMBtu)
Summit	
10 < Q < 300	$E = 17.55Q^{-0.3993}$
Q ≥ 300	1.80
Trumbull	
coal	3.00
oil	1.00
Vinton	4.80
Wayne	7.00
Wood	1.10

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
( )1. %S for all fuels.
( )2. %S for each fuel.
(xx)3. lb $SO_2/10^6$ Btu for all fuels.
( )4. lb $SO_2/10^6$ Btu for each fuel.
( )5. lb $S/10^6$ Btu for all fuels.
( )6. lb $S/10^6$ Btu for each fuel.
( )7. ppm SO_2 in exhaust gas.
( )8. impact on ambient air quality in ppm.
( )9. lb SO_2/hr
( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

B. Electric Power Plants

Plant	Stack	Emission Limit (#SO_2/MMBtu)
Acme[b]	any stack, coal	3.00
	oil	1.06
Ashtabula	1, 2, 3	2.40
	4	9.10
	5	8.20
Bayshore[b]	any stack, coal	1.20
	oil	0.50
Beckjord[c]	any	2.02
Beech Street[b]	any	2.71
Cardinal[c]	any	4.76
Conesville[b,c]	1, 2, 3	5.66
	4 (boilers 5 & 6)	NSPS[d]
Dover	any	4.60
Gavin	any	9.50
Gorge[b]	any	2.56
Hutchings[c]	any stack, coal	1.20
	diesel oil	0.65
Kyger Creek	any	8.20
Lake Shore	any stack from boiler 18	1.30
	boilers 91-94	1.90
Mad River[c]	1, 2, 3	4.62
	4, 5	1.00
Miami Fort	2	0.30
	3, 4	3.30
	5	5.50
	6 (boiler 8)	NSPS[d]

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (x)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

B. Electric Power Plants

Plant	Stack	Emission Limit (# SO_2/MMBtu)
Muskingum River[c]	any	6.48
Niles[c]	any	5.41
Orrville	any	7.00
Painesville	any stack from boilers 1-4	5.20[d]
	boiler 5	NSPS[d]
Philo[c]	any	1.14
Picway[b,c]	any	6.04
Piqua[c]	any	4.78
Poston[b,c]	1, 2	3.72[d]
	3 (boilers 5 & 6)	NSPS[d]
Sammis[c]	any	2.91
Shelby	any	9.30
Stuart[c]	any	3.16
Tait	any stack, coal	1.25
	diesel oil	0.65
Tidd[c]	any	1.58
Toronto	any	8.10
Woodcock	any	4.38

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

NOTES: [a]The heat input rate (Q) is the maximum design heat input of an entire plant.

[b]The final compliance date is 6/17/80 for these power plants. For all other power plants, the final compliance date is 8/27/79.

[c]In lieu of meeting the emission limit for a given stack, the power plant may elect to comply with emission limitations by satisfying equations promulgated by EPA as shown in Appendix E.

[d]NSPS refers to Federal new source performance standards summarized in Appendix B.

OKLAHOMA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

New sources -- 2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Equipment (Maximum contribution to ambient air quality):

5-minute average	0.52ppm SO_2
1-hour average	0.46ppm SO_2
3-hour average	0.25ppm SO_2
24-hour average	0.05ppm SO_2

B. New Equipment (constructed after 1/23/72):

1. Solid fuel	2.0#SO_2/MMBtu
2. Liquid fuel	0.3#SO_2/MMBtu
3. Gaseous fuel	0.2#SO_2/MMBtu

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

New sources -- 2 hours
Existing sources -- no time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	
1. Portland Interstate (AQCR 193) [a]	1000 ppm SO_2
2. Other Areas (AQCR's 190, 191, 192, 194):	
a) Coal (effective 7/1/72)	1.0% S
b) Residual Oil (effective 7/1/74)	1.75% S
c) #1 Distillate Oil (effective 7/1/74)	0.3% S
d) #2 Distillate Oil (effective 7/1/74)	0.5% S
B. New Sources (constructed or modified after 1/1/72):	
1. Solid Fuel	
150 < Q < 250MMBtu/hr	1.6#SO_2/MMBtu
Q > 250MMBtu/hr	1.2#SO_2/MMBtu
2. Liquid Fuel	
150 < Q < 250MMBtu/hr	1.4#SO_2/MMBtu
Q > 250MMBtu/hr	0.8#SO_2/MMBtu

NOTES: The heat input rate (Q) applies to an individual boiler.

[a] After 1/1/79, the state regulation prohibits burning of residual fuel oil with sulfur content of more than 0.5% S in Multnomah, Clackamas, Washington and Columbia Counties (in AQCR 193). This provision has not been approved by EPA, as a part of the SIP.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^5$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. City of Philadelphia: All fuels (effective 11/1/75)	0.3% S[a]
B. Beaver Valley, Monongahela Valley, and Southeast Pennsylvania Air Basins, and Allegheny County:	
2.5 < Q < 50 MMBtu/hr	1.0#SO_2/MMBtu
50 < Q < 2000 MMBtu/hr	$1.7Q^{-0.14}$ #SO_2/MMBtu
Q ≥ 2000 MMBtu/hr	0.6#SO_2/MMBtu
C. Other Air Basins:	
2.5 < Q < 50 MMBtu/hr	3.0#SO_2/MMBtu
50 < Q < 2000 MMBtu/hr	$5.1Q^{-0.14}$ #SO_2/MMBtu
Q ≥ 2000 MMBtu/hr	1.8#SO_2/MMBtu
D. Other Areas	4.0#SO_2/MMBtu

NOTES: The heat input rate (Q) applies to an individual boiler.

[a]SIP revisions have been proposed to delay the effective date of this regulation. Local law permits all fuel burning installations to burn fuel with a sulfur content of up to 0.5%.

PUERTO RICO

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. All Fuels:	
Q < 8MMBtu/hr	2.5% S
Q > 8MMBtu/hr	3.1% S
B. Palo Seco Plant:	
1 and 2/unit	2.5% S
G-1, G-2, G-3	0.5% S
J-1, J-2	0.15% S
C. San Juan Plant:	
1 and 2/unit	1.5% S
J-1, J-2	0.15% S
D. South Coast Plant	
1 and 2/unit	1.0% S
P-1	0.5% S
J-1	0.15% S

NOTE: This regulation became effective 10/14/75.

RHODE ISLAND

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- (xx)5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels:	0.55#S/MMBtu
With stack-gas cleaning and State approval	1.1#SO_2/MMBtu

SOUTH CAROLINA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Class I Counties - Charleston

Q ≤ 10MMBtu/hr	3.5#SO_2/MMBtu
Q > 10MMBtu/hr	2.3#SO_2/MMBtu

B. Class II Counties - Aiken and Anderson

Q ≤ 1000MMBtu/hr	3.5#SO MMBtu
Q > 1000MMBtu/hr	2.3#SO MMBtu

C. Class III Counties - All Others

All Fuel-burning Sources	3.5#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an entire plant.

SOUTH DAKOTA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Fuel-burning Installations	3.0#SO_2/MMBtu

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Burning Sources

Class I Counties:	
$Q \leq 1{,}000$ MMBtu/hr	1.6#SO_2/MMBtu
$Q > 1{,}000$ MMBtu/hr	1.2#SO_2/MMBtu
Class II Counties:	
$Q \leq 1{,}000$ MMBtu/hr	5.0#SO_2/MMBtu
$Q > 1{,}000$ MMBtu/hr	1.2#SO_2/MMBtu
Class III Counties	2.4#SO_2/MMBtu
Class IV Counties:	
Coal	4.0#SO_2/MMBtu
Other solid fuels	2.7#SO_2/MMBtu
Residual oils	2.7#SO_2/MMBtu
Other fuel oils	0.5#SO_2/MMBtu
Class V Counties	4.0#SO_2/MMBtu
Class VI Counties	5.0#SO_2/MMBtu

B. New Source Units (constructed after 4/3/72)

Rated capacity greater than 250 MMBtu/hr:	
Solid fuels	1.2#SO_2/MMBtu
Liquid fuels	0.8#SO_2/MMBtu

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
-)2. %S for each fuel.
- (xx)3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

2 hours

II. THE STATE IMPLEMENTATION PLAN REGULATION

B. New Source Units (continued)

Rated capacity less than 250 MMBtu/hr:

Class I Counties	1.6#SO_2/MMBtu
Class II Counties	5.0#SO_2/MMBtu
Class III Counties	2.4#SO_2/MMBtu
Class IV Counties	4.0#SO_2/MMBtu
Class V Counties	4.0#SO_2/MMBtu
Class VI Counties	5.0#SO_2/MMBtu

NOTES: The heat input rate (Q) is the maximum design heat input of a plant.

Class I Counties:	Polk
Class II Counties:	Humphreys, Maury and Roane
Class III Counties:	Sullivan
Class IV Counties:	Shelby
Class V Counties:	Anderson, Davidson, Hamilton, Hawkins, Knox and Rhea
Class VI Counties:	All other counties

TEXAS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Ambient Air Quality Standards:

1. Land Use Areas A, B, and D:	
Maximum 30-minute average[a]	0.4ppm SO_2
Maximum 24-hour average	0.2ppm SO_2
2. Land Use Area C:	
Maximum 30-minute average[a]	0.5ppm SO_2
Maximum 24-hour average	0.3ppm SO_2

B. Maximum allowable emission rate for AQCR's 106, 153, 210, 211, 214, 216, and 218:

1. Solid Fossil Fuel-fired Steam Generator[b]	3.0#SO_2/MMBtu
2. Liquid Fossil Fuel-fired Steam Generator, Furnace, or Heater[c]	440ppm SO_2

C. Galveston and Harris Counties (in AQCR 216):

Maximum permissiable ground level concentration (30-minute average):	0.28ppm SO_2

D. Jefferson and Orange Counties (in AQCR 106)

Maximum permissable ground level concentration (30-minute average):	0.40ppm SO_2

NOTES: [a]This limit shall not be exceeded more than once in any 12 hour period.
[b]New proven technology must be applied in removing SO_2.
[c]The standard effective stack height (ft.) can be calculated from: 0.49 x (stack effluent flow rate in SCFM)$^{0.50}$. If the effective stack height is less than the standard stack height, the allowable emission concentration must be multiplied by:

(effective stack height/standard stack height)^2

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- (xx)10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Installations:	
1. Coal	1.0% S
2. Oil	1.5% S
B. New Installations with Uncontrolled SO_2 Emission > 250tons/yr[a]	80% Control of Input Sulfur

NOTES: With FGD and State approval, fuel of higher sulfur content may be used.

[a]This provision was deleted from the state regulation on 7/9/75. The change, however, has not been approved by EPA.

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- (xx)2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

All Fuels (effective 10/1/74): 1.0% S

NOTE: A change to permit 2.0% sulfur fuel has been proposed and submitted to the EPA for approval.

VIRGIN ISLANDS

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (1. %S for all fuels.
- (xx 2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Emission Limits:

Coal	No emission limit
Oil	0.5% S

NOTE: Use of high sulfur fuel oils with sulfur content up to 2.0% in Islands of St. Thomas and St. John, or greater than 0.5% in Island of St. Croix may be granted if the NAAQS is not contravened.

VIRGINIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Combustion Installations:	
1. General Regulation	2.64K #SO_2/hr
2. By Discretion of Virginia Air Pollution Control Board, Installations in Regions not Meeting NAAQS:[a]	1.58K or 1.06K #SO_2/hr
3. The Virginia portion of AQCR 047 (National Capital Interstate)	1.06K #SO_2/hr

NOTES: K is the maximum design heat input of a plant in MMBtu/hr.

[a]This provision has been deleted from the state regulation (adopted 8/9/75) but the proposed SIP revision has not been approved by EPA.

WASHINGTON

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
-)3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- (xx)7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources	2000ppm SO_2
Effective 7/1/75	1000ppm SO_2
B. New Sources (constructed or modified after 10/5/73)	1000ppm SO_2
C. Northwest Air Pollution Control Authority (Whatcom, Skagit, San Juan, and Island Counties)	1.5#SO_2/MMBtu

NOTE: Emissions are to be corrected to 7% oxygen (dry basis) in exhaust gas.

WEST VIRGINIA

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. EPA Priority I[a] and II[b] Regions:	
1. Electric Power Plants:	
Effective 6/30/75	2.7K #SO_2/hr
Effective 6/30/78	2.0K #SO_2/hr[e]
2. Other Combustion Units:	
Effective 6/30/75	3.1K #SO_2/hr
Effective 6/30/78	2.3K #SO_2/hr[f]
B. EPA Priority III[c] Regions (Except State Region IV):	
1. Electric Power Plants:	
Effective 6/30/75	3.2K #SO_2/hr
Effective 6/30/78	2.0K #SO_2/hr[e]
2. Other Combustion Units:	
Effective 6/30/75	3.2K #SO_2/hr
Effective 6/30/78	2.3K #SO_2/hr[f]
C. State Region IV (Effective 1/1/73)[d]:	
1. Electric Power Plants	1.6K #SO_2/hr[e]
2. Other Combusion Units	1.6K #SO_2/hr[g]
D. John E. Amos Power Plant	1.0% S

Continued

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (1. %S for all fuels.
- (2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- (xx)9. lb SO_2/hr
- ( )10.%control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

NOTES: K is the total design heat input for the plant in MMBtu/hr.

The emission rate for an individual stack must not exceed 125% of the emission rate determined by prorating the total allowable emission rate among all stacks.

[a]EPA Priority I Regions: Brooke, Hancock, Marshall, Ohio, Grant and Mineral Counties

[b]EPA Priority II Regions: Jackson, Pleasants, Tyler, Wetzel and Wood Counties

[c]EPA Priority III Regions: All other areas.

[d]State Region IV: Counties of Kanawha and Putnam, Magesterial Districts of Falls and Kanawha in Fayette County.

[e]Maximum rate of emission from all stacks may not exceed 45,000 #SO_2/hr.

[f]Maximum rate of emission from all stacks may not exceed 8,000 #SO_2/hr.

[g]Maximum rate of emission from all stacks may not exceed 5,500 #SO_2/hr.

Enforcement of SO_2 emission regulations has been suspended by the state of West Virginia pending development of new regulations.

WISCONSIN

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr.

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

A. Existing Sources:	No emission limit
B. New or Modified (after 4/1/72) fossil fuel fired steam generators (Q > 250MMBtu/hr):	
1. Solid Fuel	1.2#SO_2/MMBtu
2. Liquid Fuel	0.8#SO_2/MMBtu

NOTE: The heat input rate (Q) applies to an individual boiler.

WYOMING

REGULATIONS FOR SULFUR OXIDE EMISSIONS FROM FUEL BURNING EQUIPMENT

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- (1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- ( )4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- (xx)8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

No time interval specified

II. THE STATE IMPLEMENTATION PLAN REGULATION

Ambient Air Quality Standard:

1. Maximum 3-hour average (not to be exceeded more than once per year)	0.5ppm SO_2
2. Maximum 24-hour average (not to be exceeded more than once per year)	0.1 ppm SO_2
3. Annual mean	0.02ppm SO_2

NOTES: Regulations adopted by the state (have not been approved by EPA):

1. Existing Sources:	
Coal	
250 < Q < 2500MMBtu/hr	1.2#SO_2/MMBtu
2500 < Q < 5000MMBtu/hr	0.5#SO_2/MMBtu
Q > 5000MMBtu/hr	0.3#SO_2/MMBtu
Oil	No emission limit
2. New Sources (Constructed after 1/1/74):	
Coal	0.2#SO_2/MMBtu
Oil	0.8#SO_2/MMBtu

The heat input rate (Q) applies to an individual boiler.

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)	The continuous Saltzman, Sodium Arsenite (Christie), TGS, and Chemiluminescence have been proposed as replacements for the J-H method. New FRM to be decided upon by Jan. 1975.
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.

January 30, 1974 - JDC

Appendix B

NEW SOURCE PERFORMANCE STANDARDS FOR SO2

STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

SULFUR DIOXIDE EMISSIONS

I. BASIS FOR DETERMINING ALLOWABLE EMISSION RATE

A. The units of the regulation:
- ( )1. %S for all fuels.
- ( )2. %S for each fuel.
- ( )3. lb $SO_2/10^6$ Btu for all fuels.
- (xx)4. lb $SO_2/10^6$ Btu for each fuel.
- ( )5. lb $S/10^6$ Btu for all fuels.
- ( )6. lb $S/10^6$ Btu for each fuel.
- ( )7. ppm SO_2 in exhaust gas.
- ( )8. impact on ambient air quality in ppm.
- ( )9. lb SO_2/hr
- ( )10. %control of input sulfur

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

C. The time period over which the emissions are to be averaged:

Continuous (see note)

II. THE FEDERAL STANDARDS OF PERFORMANCE

Fossil-Fuel Fired Steam Generating Units
(Constructed or modified after August 17, 1971
with Q > 250 MMBtu/hr):

1. Solid fuel	1.2#SO_2/MMBtu
2. Liquid fuel	0.8#SO_2/MMBtu

NOTES: 1. Emission sources are required to pass an initial performance test, after which sources must continuously monitor SO_2 emissions or fuel sulfur content and report to EPA periods of excess emissions.

2. The heat input rate (Q) applies to an individual boiler.

3. EPA plans to propose a revision to the Federal new source performance standard for coal-firing by December 1978.

Appendix C

CONVERSION FACTORS FOR SO2 EMISSION REGULATIONS

CONVERSION FACTORS FOR SO_2 EMISSION REGULATIONS

The following equations can be used to convert the units of measure of sulfur oxide emission regulations to %S and $\#SO_2$/MMBtu.

Nomenclature:

A	SIP value in given units
H	Heat content of fuel in units reported in Form 67 (Btu/# for coal, Btu/gal for oil)
S	Sulfur content of the fuel in units of %S
X	Excess air in units of % excess
Q	Heat input rate to equipment to which regulation applies in units of MMBtu/hr
E	Allowable emission per unit heat input in $\#SO_2$/MMBtu.

Computation:

Units of A	S (%S)	E ($\#SO_2$/MMBtu)
%S		
Coal	A	2×10^4 A/H
Oil	A	1.58×10^5 A/H
$\#SO_2$/MMBtu		
Coal	5×10^{-5} AH	A
Oil	6.35×10^{-6} AH	A
#S/MMBtu		
Coal	1×10^{-4} AH	2A
Oil	1.27×10^{-5} AH	2A
ppm SO_2 (assuming the value of X is available)		
Coal	$(1.17 \times 10^{-3} + 1.11 \times 10^{-5}X)A$	$(23.3 + 0.221X)$ A/H
Oil	$(1.56 \times 10^{-3} + 1.48 \times 10^{-5}X)A$	$(245 + 2.33X)$ A/H
ppm SO_2 (assuming X = 50%)		
Coal	1.73×10^{-3} A	34.4 A/H
Oil	2.30×10^{-3} A	3.62×10^2 A/H
$\#SO_2$/hr		
Coal	5×10^{-5} AH/Q	A/Q
Oil	6.35×10^{-6} AH/Q	A/Q

Assumptions:

1. The air fed to the combustion equipment is assumed to contain no moisture.

2. Complete combustion is assumed.

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

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

5. In the conversion from units of ppm SO_2 by volume, it is assumed that coal contains 72% C, 5% H_2, 2% N_2 and 10% moisture.

6. In the conversion from units of ppm SO_2 by volume, it is assumed that fuel oil contains 88%C, 9.5% H_2 and 0.5% moisture.

Appendix D

SO_2 EMISSION REGULATIONS FOR INDUSTRIAL (NON-UTILITY) FUEL-BURNERS

SO_2 EMISSION REGULATIONS FOR INDUSTRIAL (NON-UTILITY) FUEL-BURNERS

STATE	REGULATION CODE	STATE	REGULATION CODE
Alabama	a	Missouri	a
Alaska	a	Montana	a
American Samoa	a	Nebraska	a
Arizona	c, f	Nevada	d, j
Arkansas	a	New Hampshire	a
California	a	New Jersey	a
Colorado	a	New Mexico	a
Connecticut	a	New York	a
Delaware	d, g	North Carolina	a
District of Columbia	a	North Dakota	a
Florida	c, e	Ohio	c, k
Georgia	a	Oklahoma	a
Guam	a	Oregon	a
Hawaii	c, e	Pennsylvania	b, l
Idaho	a	Puerto Rico	a
Illinois	b, h	Rhode Island	a
Indiana	b, e	South Carolina	b, e
Iowa	a	South Dakota	a
Kansas	b, e	Tennessee	b, m
Kentucky	b, e	Texas	c, n
Louisiana	a	Utah	a
Maine	a	Vermont	a
Maryland	a	Virgin Islands	a
Massachusetts	a	Virginia	a
Michigan	c, p	Washington	a
Minnesota	b, e	West Virginia	b, h
Mississippi	b, i	Wisconsin	d, o
		Wyoming	a

REGULATION CODES

a : Regulations on the state summary sheet are applicable to any fossil fuel-burning equipment.

b : Regulations on the state summary sheet are applicable to any indirect heat exchanger.*

c : Regulations on the state summary sheet are applicable only to steam generators.

d : Regulations on the state summary sheet are applicable to any fossil fuel-burning equipment with noted exceptions.

e : No emission limit for other combustion equipment.

f : 90% control of input sulfur for equipment other than steam generators.

g : Not applicable to fuels used in fluid coking or catalyst regeneration.

h : Emission limit for direct heat exchangers** is 2,000 ppm SO_2.

i : For direct heat exchangers,** the emission limits are 2,000 ppm SO_2 for existing equipment and 500 ppm SO_2 for new equipment.

j : 60% control of input sulfur from non-ferrous smelters.

k : Emission limitations are promulgated for specific sources.

l : The regulation on the summary sheet for City of Philadelphia is applicable to any combustion source. For direct heat exchangers** in other areas, the emission limit is 500 ppm SO_2.

m : For direct heat exchangers**, the emission limits are 500 ppm SO_2 in Class I Counties, 1000 ppm SO_2 in Classes II and III Counties, and 2000 ppm SO_2 in all other counties.

n : For other combustion sources, compliance with ambient air quality standards is required.

o : For recovery furnace stacks from pulping operations, the emission limit is 0.5 lb S/ton air-dried kraft pulp.

p : The regulations on the summary sheet for Wayne County are applicable to any combustion source. In other areas, there is no emission limit for fuel burning equipment other than steam generators.

*Process material does not come in direct contact with the products of combustion (such as a boiler).
**Process material comes in direct contact with the products of combustion (such as a cement kiln or certain drying operations).

Appendix E

ALTERNATIVE REGULATIONS FOR CERTAIN POWER PLANTS IN OHIO

ALTERNATIVE REGULATIONS FOR CERTAIN POWER

PLANTS IN OHIO

For some power plants in Ohio, control options have been included in the EPA promulgation (8/27/76) to allow a source to choose between a uniform emission limitation applicable to all stacks at that facility or a series of stack-specific emission limitations. The latter choice provides for maximum flexibility of emission control sufficient to assure the attainment and maintenance of National Ambient Air Quality Standards and minimum economic impact on a particular facility.

In lieu of meeting the emission limitations listed in the state summary sheet for Ohio, fourteen power plants may elect to comply with the emission limitations which will satisfy equations given below (E_i in the equations denotes emissions, in $\#SO_2/MMBtu$, from stack i where i is the stack number).

1. Beckjord Power Plant

$$0.1426\ E_1 + 0.1620\ E_2 + 0.0667\ E_3 + 0.0823\ E_4 + 0.0122\ E_5 \leq 1$$

$$0.1252\ E_1 + 0.1349\ E_2 + 0.1003\ E_3 + 0.1192\ E_4 + 0.0155\ E_5 \leq 1$$

$$0.0337\ E_1 + 0.0353\ E_2 + 0.0382\ E_3 + 0.0451\ E_4 + 0.0709\ E_5 \leq 1$$

$$0.1334\ E_1 + 0.1492\ E_2 + 0.0740\ E_3 + 0.0904\ E_4 + 0.0247\ E_5 \leq 1$$

$$0.0249\ E_1 + 0.0257\ E_2 + 0.0283\ E_3 + 0.0332\ E_4 + 0.0841\ E_5 \leq 1$$

2. Cardinal Power Plant

$$0.0668\ (E_1 + E_2) + 0.0763\ E_3 \leq 1$$

3. Conesville Power Plant

$$0.0677\ E_1 + 0.0411\ E_2 + 0.0065\ E_3 \leq 1$$

$$0.0707\ E_1 + 0.0730\ E_2 + 0.0011\ E_3 \leq 1$$

$$0.0623\ E_1 + 0.0767\ E_2 + 0.0013\ E_3 \leq 1$$

$0.0565\ E_1 + 0.0337\ E_2 + 0.0866\ E_3 \leq 1$

$0.0401\ E_1 + 0.0683\ E_2 + 0.0026\ E_3 \leq 1$

$0.0410\ E_1 + 0.1021\ E_2 + 0.0\ \ \ E_3 \leq 1$

4. Hutchings Power Plant

$0.230\ E_1 + 0.297\ E_2 + 0.306\ E_3 \leq 1$

5. Mad River Power Plant

$0.0995\ (E_1 + E_2) + 0.0173\ E_3 \leq 1$

$0.0498\ (E_1 + E_2) + 0.0516\ E_3 \leq 1$

$0.0735\ (E_1 + E_2) + 0.0190\ E_3 \leq 1$

6. Muskingum River Power Plant

$0.0773\ E_1 + 0.0622\ E_2 \leq 1$

$0.0640\ E_1 + 0.0902\ E_2 \leq 1$

7. Niles Power Plant

$0.0923\ (E_1 + E_2) \leq 1$

8. Philo Power Plant

$0.3288\ E_1 + 0.3301\ E_2 + 0.1583\ E_3 \leq 1$

$0.3588\ E_1 + 0.3605\ E_2 + 0.1557\ E_3 \leq 1$

9. Picway Power Plant

$0.0764\ E_1 + 0.0759\ E_2 + 0.0133\ E_3 \leq 1$

$0.0487\ E_1 + 0.0484\ E_2 + 0.0522\ E_3 \leq 1$

10. Piqua Municipal Power Plant

$$0.0730\ (E_1 + E_2) + 0.0628\ E_3 \leq 1$$

$$0.0700\ (E_1 + E_2) + 0.0663\ E_3 \leq 1$$

11. Poston Power Plant

$$0.1932\ E_1 + 0.0757\ E_2 \leq 1$$

$$0.1369\ E_1 + 0.1276\ E_2 \leq 1$$

$$0.1230\ E_1 + 0.1406\ E_2 \leq 1$$

12. Sammis Power Plant

$$0.1673\ E_1 + 0.1670\ E_2 + 0.0072\ E_3 + 0.0022\ E_4 \leq 1$$

$$0.0557\ (E_1 + E_2) + 0.1106\ E_3 + 0.0734\ E_4 \leq 1$$

13. Stuart Power Plant

$$0.0791\ (E_1 + E_2 + E_3 + E_4) \leq 1$$

14. Tidd Power Plant

$$0.1521\ (E_1 + E_2) + 0.3267\ E_3 \leq 1$$

$$0.1443\ (E_1 + E_2) + 0.3338\ E_3 \leq 1$$

$$0.1568\ (E_1 + E_2) + 0.3169\ E_3 \leq 1$$

$$0.1591\ (E_1 + E_2) + 0.3143\ E_3 \leq 1$$

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16. ABSTRACT

This report presents a one or two page summary of each state's implementation plan (SIP) regulations for sulfur oxides. 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, and briefly discusses the various types of emission regulations which appear in the SIPs.

This report updates the March 1977 edition to reflect changes to the SIP regulations which have been approved through August 1977.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
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