

U.S. ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 51

[AD-FRL-            ]

Proposed Implementation Requirements for Reduction of  
Sulfur Oxide (Sulfur Dioxide) Emissions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA is proposing a new intervention level program under the authority of sections 301(a)(1) and 303 of the Clean Air Act (Act) to supplement protection provided by the primary and secondary sulfur dioxide (SO<sub>2</sub>) national ambient air quality standards (NAAQS). The program proposed today is in lieu of the three alternative implementation strategies for reducing high 5-minute SO<sub>2</sub> concentrations in the ambient air proposed on March 7, 1995 (60 FR 12492).

The intervention level program addresses EPA's concern that a segment of the asthmatic population may be at increased health risk when exposed to 5-minute peak concentrations of SO<sub>2</sub> in the ambient air while exercising ("exercising" in this case can include walking up stairs or hills, as well as more strenuous activities). At certain concentration levels or frequencies, such peaks can represent imminent and substantial endangerment to public health. This proposed program also responds to comments received on the March 7, 1995 proposal.

In addition, EPA is reproposing the implementation strategy for identifying and prioritizing areas with potential 5-minute SO<sub>2</sub> peaks. The changes to the monitoring strategy discussed in the March 7, 1995 proposal address public comments regarding the flexibility of the strategy and the criteria used to identify sources for monitoring.

Finally, EPA has reviewed comments concerning the revisions to the 24-hour significant harm levels (SHL) for SO<sub>2</sub> discussed in the March 7, 1995 proposal. After further consideration, the EPA now believes the proposed revisions to those levels are not needed at this time. The EPA is requesting comment on whether the proposed changes to the SHL are necessary or should be withdrawn.

DATES: Written comments on this proposal must be received by [insert date 60 days after date of publication in the Federal Register]. Persons wishing to present oral testimony pertaining to this notice should contact EPA at the address listed below under FOR FURTHER INFORMATION CONTACT by [insert date 15 days after date of publication in the Federal Register]. If anyone contacts EPA requesting to speak at a public hearing, a separate notice will be published announcing the date, time, and place where the hearing will be held.

ADDRESSES: Submit comments on this proposal (two copies are preferred) to: Office of Air and Radiation Docket and

Information Center (Air Docket 6102), Room M 1500, U.S. Environmental Protection Agency, Attention: Docket No. A-94-55, 401 M Street, SW, Washington, DC 20460. The docket may be inspected between 8:00 a.m. and 5:30 p.m. on weekdays, and a reasonable fee may be charged for copying. The Air Docket may be called at (202) 260-7548. For the availability of related information, see SUPPLEMENTARY INFORMATION.

FOR FURTHER INFORMATION CONTACT: Eric L. Crump, Integrated Policies and Strategies Group (MD-15), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541-4719.

SUPPLEMENTARY INFORMATION:

Regulated entities. Entities potentially regulated by this action are those which contribute to 5-minute ambient SO<sub>2</sub> concentrations that pose a health threat to sensitive, exposed populations. Regulated categories and entities would include:

<u>Category</u>	<u>Examples of regulated entities</u>
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Industry	Pulp and paper mills, lead, aluminum, and copper smelters, petroleum refineries, iron and steel mills, carbon black manufacturers, portland cement plants, oil and gas extraction processes, fertilizer manufacturers, industrial and utility boilers, sulfuric acid plants
Federal government	Federal agencies which operate industrial or utility boilers
State/tribal government	State/tribal agencies which operate industrial or utility boilers

This table is not intended to be exhaustive; furthermore, entities listed in this table would not necessarily be subject to regulation under this proposed action. This table is intended only as a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA believes could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your facility, company, business or organization would be regulated by this proposed action, you should ascertain whether your facility, company, business, or organization (1) emits SO<sub>2</sub>, and (2) is located in an area subject to ambient air concentrations that exceed the criteria in §51.154 of 40 CFR. If you have questions

regarding the applicability of this action to a particular entity, consult the person listed in the preceding "FOR FURTHER INFORMATION CONTACT" section.

Availability of Related Information. The 1982 revised criteria document, Air Quality Criteria for Particulate Matter and Sulfur Oxides (three volumes, EPA-600/8-82-029af-cf, December 1982; Volume I, NTIS # PB-84-120401, \$36.50 paper copy and \$9.00 microfiche; Volume II, NTIS # PB-84-120419, \$77.00 paper copy and \$9.00 microfiche; Volume III, NTIS # PB-84-120427, \$77.00 paper copy and \$20.50 microfiche); the 1986 criteria document addendum, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982): Assessment of Newly Available Health Effects Information (EPA/600/8-86-020-F, NTIS # PB-87-176574, \$36.50 paper copy and \$9.00 microfiche); the 1994 criteria document supplement, Supplement to the Second Addendum (1986) to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982): Assessment of New Findings on Sulfur Dioxide Acute Exposure Health Effects in Asthmatic Individuals (1994) (EPA-600/FP-93/002); the 1982 staff paper, Review of the National Ambient Air Quality Standards for Sulfur Oxides: Assessment of Scientific and Technical Information (EPA-450/5-82-007, November 1982; NTIS # PB-84-102920, \$36.50 paper copy and \$9.00 microfiche); the 1986 staff paper addendum, Review of the National Ambient Air

Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information (EPA-450/05-86-013, December 1986; NTIS # PB-87-200259, \$19.50 paper copy and \$9.00 microfiche) and the 1994 staff paper supplement, Review of the National Ambient Air Quality Standards For Sulfur Oxides: Updated Assessment of Scientific and Technical Information, Supplement to the 1986 OAQPS Staff Paper Addendum (1994) (EPA-452/R-94-013, September 1994; NTIS # PB-95-124160, \$27.00 paper copy and \$12.50 microfiche) are available from: U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, or call 1-800-553-NTIS. (Add \$3.00 handling charge per order.)

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## SUPPLEMENTARY INFORMATION:

I. BackgroundA. Overview

As discussed in the November 15, 1994 proposal (59 FR 58958), EPA completed a thorough review of the air quality criteria and the current SO<sub>2</sub> NAAQS required by sections 108 and 109 of the Act and concluded provisionally that the current 24-hour and annual primary standards provide adequate protection against the effects associated with those averaging periods. The key issue that emerged from the review is whether additional regulatory measures are needed to provide additional protection for asthmatic individuals that may be exposed to high 5-minute peak SO<sub>2</sub> concentrations.

As explained in the March 7, 1995 Federal Register proposal (60 FR 12492), the available air quality and exposure data indicate that the likelihood that the asthmatic population in general would be exposed to 5-minute peak SO<sub>2</sub> concentrations of concern, while outdoors and at exercise, is very low when viewed from a national perspective. The data indicate, however, that high peak SO<sub>2</sub> concentrations can occur around certain sources with some frequency, and as a result, asthmatic individuals in the vicinity of such sources would be subject to a greater

health risk than asthmatics not subject to such peaks or the nonasthmatic population. These assessments lead EPA to believe that if any additional regulatory measures are adopted to provide additional protection, they should be addressed through an approach that focuses on those locations where the sensitive population is more likely to be exposed to high 5-minute peak SO<sub>2</sub> concentrations.

Based on these considerations, EPA requested comment on three regulatory measures proposed on March 7, 1995 to address high 5-minute SO<sub>2</sub> peaks: (1) augmenting implementation of the existing standards by focusing on those sources or source types likely to produce high 5-minute peak SO<sub>2</sub> concentrations; (2) establishing a new regulatory program under section 303 of the Act to supplement the protection provided by the existing NAAQS; and (3) supplementing the existing NAAQS with a 5-minute NAAQS of 0.60 parts per million (ppm).

The public comments received represented various concerns regarding the three alternatives. Of the many comments received, the following arguments appeared to be most compelling: (1) short-term peak emissions are more of a localized issue rather than a widespread concern and that instead of a broad national regulatory program, States and tribes should be given the authority to address such issues; and (2) States and tribes need more flexibility to address

situations that create exposures to high short-term ambient concentrations, especially in cases when the short-term peaks are rare and the potential for exposure is low (for example, when the source is located in a relatively isolated area). The comments received confirm EPA's original assessment that high 5-minute peak episodes of SO<sub>2</sub> are not a uniformly widespread problem; rather, these episodes are limited to certain localized areas throughout the country. The EPA now believes that a national regulatory program developed for implementation by every State and tribe would be counterproductive, placing an administrative burden on many parts of the country that are not subject to risk from these peak concentrations.

Although these episodes are few, it is clear that 5-minute SO<sub>2</sub> ambient concentration peaks pose a health threat to sensitive, exposed populations, and that the severity of the threat depends upon the concentration and frequency of peak episodes and the size of the population subject to the peak episodes. Because every area that is subject to significant short-term peaks has its own unique characteristics, EPA agrees it is prudent for States, local governments, and tribal governments to assess each individual situation, and if a significant threat to public health exists, act appropriately and efficiently to reduce the risk to the public. The EPA wishes to establish an

implementation program that (1) effectively addresses real health concerns, (2) provides States, tribes, and local communities with a basis for taking protective action, and (3) provides flexibility to address a given situation appropriately.

For the reasons discussed in the May 22, 1996 Federal Register final decision (61 FR 25566), EPA has concluded that revisions to the existing SO<sub>2</sub> NAAQS are not appropriate at this time. In lieu of the three alternative approaches originally proposed to address 5-minute concentrations, EPA now proposes an intervention level program under the authority of section 303 of the Act to address the risk presented by 5-minute SO<sub>2</sub> concentrations.

Because health effects caused by 5-minute SO<sub>2</sub> ambient concentrations tend to be localized problems, EPA believes the intervention level program is the appropriate approach to address this concern. Instead of a uniform nationwide approach that might call for unnecessary administrative effort, this program would allow placement of resources and efforts precisely where the problems are. It would allow States, tribes, and local governments to analyze the variable issues relevant to peak concentration episodes in their jurisdiction, giving them the flexibility to address the sources of the peak emissions more efficiently and appropriately. The intervention level program would also

provide a catalyst for community-based approaches to environmental protection by encouraging States and tribes to incorporate citizen concerns and complaints into their criteria for assessing public health risk.

#### B. Rulemaking Docket

Docket No. A-94-55 has been established for supporting documentation for the action proposed today. The EPA established a standard review docket (Docket No. A-79-28) for the sulfur oxides review in July 1979. The EPA also established a rulemaking docket (Docket No. A-84-25) for the April 26, 1988 proposal under section 307(d) of the Act. Docket No. A-84-25 was used for the most current review of the SO<sub>2</sub> NAAQS. Both of these dockets, as well as a separate docket established for criteria document revision (Docket No. ECAO-CD-79-1), are hereby incorporated into the rulemaking docket for the action proposed today.

## II. Intervention Level Program

### A. Program Highlights

The proposed intervention level program is derived in part from the SHL program, which has served in the past as a means for implementing the authority granted under section 303 of the Act. The SHL program was designed to address emergency episodes that occur where pollution levels build up over a period of time to unhealthy levels. The SHL program establishes a specific pollutant concentration

within a given time period that is known to pose a significant threat to human health and that would require specific measures on the part of the State or tribe and emission sources to correct. In addition, the program establishes several degrees or levels of response which are triggered by pollutant concentrations below the SHL. As the concentration of a pollutant rises to each level, emission sources in the area are required to take increasingly restrictive action to reduce emissions as specified in the contingency plan within an approved State implementation plan (SIP). The SHL program is a proactive program designed to prevent an area from ever reaching the SHL.

The EPA contemplated using a similar approach to address 5-minute peak emissions of SO<sub>2</sub>, but believes the SHL program would not be the best means for addressing such short term peak episodes. A 5-minute ambient concentration peak encompasses a short period of time compared to the 3-hour and 24-hour periods used in the SHL program. The EPA believes it is impractical to expect industry, States, and tribes to have a predetermined course of corrective action in place to stop 5-minute peak episodes as they occur because 5-minute episodes would generally be over before remedial action could be taken to stop them. In the view of the Administrator, this situation calls for a more reactive approach as opposed to the proactive approach called for in

the SHL program. The EPA believes that its authority under sections 301(a)(1) and 303 of the Act provides for the creation of a new program to address these short term peaks of SO<sub>2</sub>--the intervention level program.

The intervention level program proposed herein would be similar to the SHL program in that it would establish concentration levels in the CFR that provide a basis for action by States, tribes and industry if those levels are reached. As a supplement to the four concentration levels specified in the SHL program, EPA proposes a range of concentrations under the intervention level program. The lower boundary of this range would be the concern level, set at 0.60 ppm of SO<sub>2</sub>, based on a 5-minute hourly maximum value (a 5-minute hourly maximum value for SO<sub>2</sub> is the highest of the 5-minute averages from the 12 possible nonoverlapping periods during a clock hour). The upper boundary of this range would be the endangerment level, set at 2.0 ppm of SO<sub>2</sub>, based on a 5-minute hourly maximum value. These intervention levels are based on the health criteria discussed below and in the May 22, 1996 part 50 final action (61 FR 25566), and would be used by States and tribes along with other factors to determine whether occurrences of 5-minute SO<sub>2</sub> concentrations require action to address " . . . imminent and substantial endangerment to public health or

welfare, or the environment . . . ", as stated in section 303 of the Act.

In the event that the concern level concentration is exceeded in a given area, and the State or tribe has reason to believe that the exceedance may constitute imminent and substantial endangerment, the State or tribe would assess the situation to determine whether intervention is appropriate. In making this determination, the State or tribe would consider the magnitude of the 5-minute peak concentrations; the frequency of the episodes (based on those episodes detected by monitors and an estimate of the number of 5-minute peaks not recorded by the monitoring network); the history and nature of citizen complaints; available information on potential population exposure, inferred in part by the population in the vicinity of the source; the type of process being used (i.e., one type of process within a source category may be less efficient and known to emit more SO<sub>2</sub> than another); the history of past upsets or malfunctions; the type of fuel used; knowledge of how well the source is controlled; and any other considerations the State or tribe finds to be appropriate. Because the health effects become more severe as the 5-minute SO<sub>2</sub> concentration approaches the endangerment level, it is reasonable to expect that the State or tribe would be more likely to determine that intervention is warranted, and



that the degree of intervention judged to be necessary would increase. If the endangerment level is exceeded, thereby exposing a significant population to imminent and substantial endangerment, the State or tribe may consider taking immediate action to protect public health. Even in cases when the endangerment level is exceeded, it is conceivable that the State or tribe may determine that no action is warranted. For example, if the exceedance is linked to an unusual circumstance not likely to reoccur, or causes minimal impact on public health, the State or tribe may conclude that corrective measures are not needed at this time.

In general the State or tribe will assess the health risk and implement corrective measures under the intervention level program, not EPA. If necessary, EPA would take action under the authority of section 303, as appropriate, in the event that the State or tribe fails to address (1) imminent and substantial endangerment to public health presented by exceedances of the endangerment level, or (2) evidence that exceedances above the concern level (but below the endangerment level) cause imminent and substantial endangerment due to their frequency, magnitude, and reported health impacts.

B. Health Effects and Basis for Levels

The health effects associated with exposures to the concern level, 0.60 ppm SO<sub>2</sub>, 5-minute block average, were the focus of EPA's most recent review of the primary NAAQS for sulfur oxides (measured as sulfur dioxide). The health effects and the Administrator's conclusions about the public health risks associated with exposure to the concern level are thoroughly discussed in the EPA documents generated during that review: the criteria document supplement (EPA, 1994a), the staff paper supplement (EPA 1994b), the November 15, 1994 proposal (59 FR 58958) and the May 22, 1996 final decision on part 50 (61 FR 25566). These documents are incorporated into today's proposal by reference.

The EPA's concern about the potential public health consequences of exposures to short-term peaks of SO<sub>2</sub> arose from the extensive literature involving brief (2- to 10-min) controlled exposures of persons with mild (and, in some cases moderate) asthma across the ranges of concentrations of SO<sub>2</sub> to greater than 2.0 ppm while at elevated ventilation rates. The major effect of SO<sub>2</sub> on sensitive asthmatic individuals is bronchoconstriction, usually evidenced in these studies by decreased lung function (i.e., decreased forced expiratory volume in 1 second (FEV<sub>1</sub>) and increased specific airway resistance (SR<sub>aw</sub>)) and the occurrence of clinical symptoms such as wheezing, chest tightness, and shortness of breath. The proportion of asthmatic

individuals who respond, the magnitude of the response and the occurrence of symptoms increase as SO<sub>2</sub> concentrations and ventilation rates increase. The criteria document supplement (EPA, 1994a) contains a summary of the literature on the health effects associated with brief exposures to SO<sub>2</sub>.

Taking into account the available health effects studies and the body of comments on the health effects, the Administrator concluded in the May 22, 1996 final decision (61 FR 25566) that a substantial percentage (20 percent or more) of mild-to-moderate asthmatic individuals exposed to 0.60 to 1.0 ppm SO<sub>2</sub> for 5 to 10 minutes at elevated ventilation rates, such as would be expected during moderate exercise, would be expected to have lung function changes and severity of respiratory symptoms that clearly exceed those experienced from typical daily variation in lung function or in response to other stimuli (e.g., moderate exercise or cold/dry air). The bronchoconstriction caused by brief exposures to 0.6 to 1.0 ppm SO<sub>2</sub> is transient (i.e., measurements of lung function start to improve when exposure ceases or when the individual ceases to exercise and ventilation rates return to resting levels). However, for many responders, the effects are likely to be both perceptible and thought to be of some health concern; that is, likely to cause some disruption of ongoing activities,

use of bronchodilator medication, and/or possibly seeking of medical attention.

During the regulatory review process, there was some agreement by medical experts that at this concentration, 0.60 ppm SO<sub>2</sub>, the frequency with which such effects are experienced may affect the degree of public health risk. After taking into account the broad range of opinions expressed by Clean Air Scientific Advisory Committee (CASAC) members, medical experts, and the public in the part 50 final decision, the Administrator concluded that repeated occurrences of such effects should be regarded as significant from a public health standpoint. Furthermore, the Administrator determined that the likely frequency of occurrence of such effects should be a consideration in assessing the overall public health risk in a given situation.

The available scientific literature indicates that in the range of 0.60 to 2.0 ppm SO<sub>2</sub>, there is a dose-response relationship between SO<sub>2</sub> concentration and (1) the magnitude of the lung function changes, and (2) the proportion of the asthmatic individuals expected to respond. At 1.0 ppm SO<sub>2</sub>, 5-minute block average, approximately 60 percent of the mild-to-moderate asthmatic individuals at elevated ventilation rates are likely to respond. The health effects become more pronounced, with more substantial changes in

pulmonary function accompanied by symptoms. Asthmatic individuals may experience mild bronchoconstriction without symptoms while at rest (EPA, 1986a; EPA, 1986b).

At 2.0 ppm SO<sub>2</sub>, 5-minute block average, approximately 80 percent of mild-to-moderate asthmatic individuals at elevated ventilation rates are likely to respond. Effects can range from moderate to incapacitating. Asthmatic individuals at rest are likely to experience moderate bronchoconstriction. A moderate episode of bronchoconstriction can increase the lung function index SR<sub>aw</sub> by 100 to 200 percent, with a severe response being an SR<sub>aw</sub> increase of > 200 percent, and incapacitating bronchoconstriction entails SR<sub>aw</sub> increases much greater than 300 percent (EPA, 1994a). Horstman et al. (1986) report that 12 (of 27) subjects in the Roger et al. (1985) study, whose SR<sub>aw</sub> values did not increase by 100 percent at 1.0 ppm SO<sub>2</sub> or lower levels, were also exposed to 2.0 ppm using the same protocol. At this level, seven of these less sensitive asthmatic individuals had SR<sub>aw</sub> increases of from 100 to over 600 percent. For a more detailed discussion of the studies which support this assessment, see the 1986 criteria document addendum (Table 7; EPA, 1986a), and section IIB of the 1986 staff paper addendum (EPA, 1986b).

At 3.0 to 5.0 ppm SO<sub>2</sub>, nonasthmatic adults at mild exercise will experience bronchoconstriction, and asthmatic

individuals at rest will likely experience pronounced bronchoconstriction. For a more detailed discussion of the health effects of exposure to these higher concentrations of SO<sub>2</sub>, see the 1982 criteria document (EPA, 1982a) and the 1982 staff paper (EPA, 1982b). Based upon this information, EPA believes that exposure of a sensitive population to a 5-minute ambient concentration of 2.0 ppm or above would pose an imminent and substantial endangerment to public health and welfare and, therefore, would justify corrective action under the authority of section 303.

C. Flexible Implementation Strategy

Like the previously proposed implementation alternatives, a key element of this new implementation strategy is the relocation of existing SO<sub>2</sub> monitors to areas near point sources where peak SO<sub>2</sub> concentrations may exist. Because the monitors in the existing State and local area monitoring stations (SLAMS) network were designed to characterize urban ambient air quality associated with 3-hour, 24-hour, and annual SO<sub>2</sub> concentrations, they are not always the appropriate means for measuring 5-minute peak SO<sub>2</sub> concentrations from point sources. To make existing monitors available for the measurement of short-term peak concentrations, EPA proposed certain technical changes to the requirements for ambient air monitoring reference and equivalent methods (40 CFR part 53) and revisions to the

ambient air quality surveillance requirements (40 CFR part 58) in the November 15, 1994 (59 FR 58958) and the March 7, 1995 (60 FR 12492) proposals, respectively.

The EPA believes these changes to the monitoring requirements will give the States and tribes the flexibility to relocate existing monitors to areas where 5-minute peak concentrations may be of concern, and to respan the monitors to measure these peaks. Under the intervention level program, the States and tribes would be able to identify areas to be monitored based on State or tribal priorities, source emissions, citizen complaints, location of sensitive populations, or other variables. Upon request, EPA would assist State and tribal efforts to identify and prioritize areas for monitoring 5-minute peak concentrations by providing information compiled from various databases. The EPA would leave the discretion on how best to utilize this information in siting monitors to the States and tribes. If the State or tribe has ample reason to believe that areas within its jurisdiction do not experience health risks from 5-minute peak concentrations (for example, no sources with significant compliance issues, maintenance problems or upsets; no complaints about detrimental health effects from short-term peak SO<sub>2</sub> concentrations), the State or tribe would be justified in not relocating SO<sub>2</sub> monitors for this purpose.

### III. Legal Authority

In the November 15, 1994 Federal Register action (59 FR 58958), EPA discussed the legal authority for a proposed regulatory program under the authority of sections 110(a)(2)(G), 301, and 303 of the Act. The March 7, 1995 proposal (60 FR 12492) described this program in greater detail. Although the intervention level program proposed herein differs from the section 303 program described in these actions, the basic objective and the legal authority to establish it remain the same. Consequently, the EPA continues to rely on the legal authority discussion regarding sections 301 and 303 contained in the November 15, 1994 proposal and hereby incorporates that discussion by reference (59 FR 58970-71).

In addition, the EPA believes that in some cases the potential health effects that may result from a 5-minute peak SO<sub>2</sub> concentration above the concern level of 0.60 ppm could be an indicator of substantial endangerment to public health and welfare, depending on the frequency and magnitude of the ambient peak concentrations and the likelihood that asthmatic individuals will experience exposures of concern. For example, concentrations above the concern level may present an unacceptable risk of harm to asthmatic individuals who have not premedicated with beta-agonist bronchodilators and are exposed at elevated ventilation.



Action under the authority of section 114 to investigate the cause and potential effect of ambient concentrations above the concern level, followed by corrective action under the authority of section 303, might therefore be warranted in some cases. Furthermore, EPA believes that exposure of a sensitive population to a 5-minute ambient concentration of 2.0 ppm or above would pose an imminent and substantial endangerment to public health and welfare and, therefore, would justify corrective action under the authority of section 303.

Unlike the section 303 program EPA proposed on March 7, 1995, the intervention level program proposed today would not require States and tribes to submit revised contingency plans to EPA requiring specific actions for the State, tribe, and source to undertake once an established ambient SO<sub>2</sub> concentration is violated. The EPA believes that the approved SIP's currently in force provide the States with inadequate general authorities to implement the intervention level program without submittal of revised contingency plans for approval by EPA. Section 110 (a)(2)(G) of the Act requires that the SIP contingency plans contain adequate authority to implement section 303 programs. Furthermore, the SIP's contain general enforcement authority that allows States to request information and conduct inspections--in short, to gather the necessary data to determine the

appropriate course of action in the event that 5-minute SO<sub>2</sub> peaks pose a threat to human health. Finally, many SIP's contain general prohibitions against air pollution which provide the States broad discretion to address source-specific problems. The EPA also believes that once the tribal rule proposed on August 25, 1994 (59 FR 43956) becomes final, tribal implementation plans (TIP's) will provide tribes with similar authority.

The EPA believes the general authority possessed by States and tribes to implement the intervention level program under section 303 is an advantage. By eliminating the need for States and tribes to revise their contingency plans, as well as the need for an extensive review and approval process, the intervention level program should minimize the potential administrative burden on the States and tribes. If a particular State SIP or tribal TIP does not contain adequate authority to implement the intervention level program, EPA expects the State/tribe to revise its SIP/TIP accordingly to provide the necessary authority. In the event that the State/tribe does not take prompt action to revise its SIP/TIP, EPA would issue a SIP/TIP call for the State/tribe. The EPA interprets sections 110(a)(2)(G) and 303 of the Act, along with section 301 (which grants general authority to prescribe regulations necessary to carry out the functions of the Administrator), as providing

adequate legal authority to establish this program and to promulgate the necessary regulations to implement it.

#### IV. Program Implementation

##### A. Requirements Associated with Implementation of the Intervention Level Program

As stated earlier, EPA's intent in proposing the intervention level program is that the States and tribes would be given the flexibility to address particular sources of 5-minute SO<sub>2</sub> peak concentrations in the most efficient and appropriate manner, based on an area-specific analysis of the particular characteristics of peak ambient concentration episodes in their jurisdictions. The following discussion is intended as a guide for implementing the intervention level program and is not meant to be prescriptive.

The EPA believes that when the concern level of 0.60 ppm has been exceeded in a given area, the State or tribe should consider whether or not the situation presents a significant public health risk. If the number of exceedances per year are few in number, or linked to rare incidents, the State or tribe may determine that no further action is warranted unless the frequency or severity of the exceedances increases. If the concern level is exceeded on a more regular basis, or to a more severe degree, the State or tribe should conduct a more detailed analysis. The

analysis could include elements such as identification of the sources that contribute most to the peak ambient concentrations, the number of observed and projected exceedances, the magnitude of the exceedances, the nature and location of the sources, the proximity of the sources to sensitive populations, and other pertinent factors needed to characterize the risk to public health. The State or tribe may choose to follow up the analysis with a compliance inspection of the sources that contribute to the peak ambient concentrations. If the magnitude of the peak concentrations is significantly higher than the concern level of 0.60 ppm (but still less than the endangerment level of 2.0 ppm), the State or tribe may choose to conduct a compliance inspection after only one exceedance. If any of the sources under consideration are out of compliance with their existing emission limits (based on the NAAQS or other air pollution requirements), then the State or tribe would take the necessary steps to bring the sources into compliance. If, however, the State or tribe determines a substantial threat to public health exists, but (1) finds it unlikely that bringing sources into compliance with their existing emission limits would prevent further exceedances of the concern level, or (2) determines the source to be in compliance with applicable emission limits, then further action in addition to assuring compliance may be needed. In

such circumstances, the next step would be for the State, tribe and source to examine the sources of the peak concentrations. Once that is determined, an appropriate approach to address the high peak concentrations would need to be developed.

Under the intervention level program, EPA would not specify a time limit in which States, tribes and sources must take corrective action (whether it be control devices, process or operational modifications, or other selected protective approach). However, EPA expects that development and implementation of any course of corrective action for a given situation would occur expeditiously and efficiently, based on the risk to public health; the specific processes or operations at the source that cause the peak episodes; the available options for addressing the public health risk; the reasonable lead time necessary to plan, design, procure and install control devices and process modifications, or to implement alternative approaches to control; and other pertinent considerations. Implementation need not wait until the process of incorporating the selected course of action into the SIP/TIP, permit, or other enforceable agreement is complete. Once the approach for addressing the public health risk has been determined, the State/tribe should issue a section 303 order to the source to expedite implementation of the selected action.

In determining the course of corrective action, States, tribes, and sources should keep in mind that the goal of the intervention level program is to prevent imminent and substantial endangerment to public health caused by short-term peak ambient concentrations. Control measures to prevent recurrences of 5-minute SO<sub>2</sub> peaks may include better maintenance of control equipment, better capture of fugitive emissions, raising the stack height (refer to section A under Relationship between the Intervention Level Program and Existing Programs), restriction of operations during times of peak exposure (e.g., conducting activities during hours when fewer people are outside), or other innovative courses of action. In some cases (e.g., areas where the risk is minimal due to low population density or where infrequent 5-minute peaks occur), after consultation with sources and the affected communities, the State or tribe may determine that control measures may not be the most appropriate means for reducing the risk to the public. In such cases, States or tribes, in consultation with sources and the impacted communities, may elect to address the health risk through alternative approaches. Examples of alternative approaches that States, sources, and communities might select are: public education campaigns for asthma prevention, public warning/notice of potential health problems due to peak episodes (e.g., a local alert system,

posting of areas where short-term peaks occur), or providing support for State, tribal, or local public health programs. Should an alternative approach be chosen, the State/tribe should ensure that the alternative measures required of the source are federally enforceable.

As the concentration approaches the endangerment level of 2.0 ppm averaged over a 5-minute period, the health effects, as discussed earlier, will become more pronounced and severe. The EPA expects States and tribes will be more concerned about the potential impacts and be more assertive in pursuing corrective remedies with the sources as the 5-minute peak concentrations approach the endangerment level. At concentrations at or above the endangerment level, EPA believes that imminent and substantial endangerment to the public health and welfare could occur, and if such is the case, urgent corrective actions would be warranted.

However, even an isolated exceedance of the endangerment level might not require corrective action if the State or tribe find that the circumstances related to the exceedance are not likely to reoccur, or that the risk of exposure to sensitive populations is minimal. Again, EPA encourages States and tribes to determine the appropriate course of action for each situation based on the potential for public exposure and the risk to public health. While the State/tribe would issue section 303 orders requiring urgent

corrective actions, any long-term corrective actions would have the same enforceability, recordkeeping, and compliance requirements as specified for the concern level actions.

The EPA believes proper and judicious implementation of the intervention level program by States and tribes would provide adequate protection against the recurrence of high, 5-minute SO<sub>2</sub> peaks once such emissions are identified as a problem for particular sources. In EPA's view, States and tribes, being in the best position to assess the impact of 5-minute concentrations in their jurisdiction, would have primary responsibility to execute this section 303 program. However, EPA would retain the authority to take whatever actions the Agency considers appropriate under section 303 to address these situations. For example, if a State or tribe does not take action after the endangerment level has been exceeded, EPA would consult with the State or tribe to discuss the basis for their decision not to act. If EPA then determines that corrective action is warranted to protect public health, EPA itself would take action. Similarly, EPA would consult with the State or tribe and take action in cases where it is evident that frequent exceedances of the concern level constitute an imminent and substantial endangerment to public health, and the State or tribe has failed to take protective action.

B. Compliance and Enforcement Issues



If the State/tribe decides that action is required under the intervention level program to abate the threat to public health, an effective means for ensuring that the source (or sources) has implemented the required course of action is needed. In many cases, compliance would consist of the State or tribe ensuring that the source has implemented the required remedies (e.g., equipment/process modifications, improving maintenance to address emissions contributing to short-term peaks, or a system to alert the public that conditions conducive to high 5-minute peak concentrations are present). However, if there are instances in which emissions can be feasibly measured on a 5-minute basis, or if fuel sampling can be shown to be a feasible compliance indicator, the State or tribe may elect to set an emission limit and use emission measurement or fuel sampling as the method for determining compliance with any control requirements. In such cases, ambient air monitoring over a reasonable period after the implementation of the selected approach would be necessary to verify the effectiveness of the selected corrective actions.

Enforcement of the intervention level program requirements would be based on the requirements of the applicable operating permit, enforceable consent order or agreements, or SIP. Because States and tribes have differing mechanisms for implementing their programs, EPA

believes States and tribes are in the best position to determine the most appropriate implementation mechanism for their situations. Nonetheless, EPA believes that any corrective action required of a source by the State/tribe should be effective and practically enforceable--on both the State/tribal and Federal levels. Furthermore, the State/tribe should provide opportunity for public notice and comment on these actions. To this end, SIP revisions, operating permits, court orders, or other implementation mechanisms that provide for Federal enforceability and public participation would be appropriate methods for establishing corrective actions.

V. Relationship between the Intervention Level Program and Existing Programs

A. Impact on SIP's, Attainment Planning and Implementation

While both the intervention level program and the SIP address health concerns caused by ambient concentrations of SO<sub>2</sub> in a given area, care should be taken to distinguish the two approaches. While the SIP and the intervention level programs are both meant to provide protection from the effects of ambient SO<sub>2</sub> concentrations, they address different health concerns. The SIP is intended for implementation of the primary and secondary SO<sub>2</sub> NAAQS, established under sections 108 and 109 of the Act to protect

public health with an adequate margin of safety and protect the public welfare. The limits for the NAAQS as established are based on an annual arithmetic mean, a maximum 24-hour concentration and a maximum 3-hour concentration. The intervention level program, under the authority of section 303, is designed to address short-term (5-minute) ambient concentrations that present imminent and substantial endangerment to public health or welfare. While these programs complement each other, satisfaction of one program's requirements does not necessarily mean compliance with the other. For example, an area within a State may be in compliance with the requirements of the SIP and still be subject to 5-minute peaks of such magnitude and frequency that action under the intervention level program is warranted. Similarly, in a nonattainment area where progress is being made toward meeting the SIP requirements, the State/tribe may conclude that action under the intervention level program is unnecessary if, for example (1) the area has no 5-minute peaks that exceed the concern level, or (2) the area has infrequent peak episodes that do not render a significant health risk. Furthermore, if any actions are taken by States, tribes, or industry to address 5-minute peaks of SO<sub>2</sub> in a given area, care should be taken to ensure that such actions do not conflict with the

existing SIP requirement, or the State or tribal attainment plan.

As an example, after investigating 5-minute SO<sub>2</sub> peak emissions in a given area and discussing various approaches with the source and the affected community, it may be determined that the most cost efficient way of addressing the situation would be to increase the stack height of a particular source. While the impact of increasing the stack height may not be considered in determining whether the emission limitation requirements of the SIP are satisfied, and though the source may already be in compliance with all applicable SIP limits, it is conceivable that the best way to address a given 5-minute concentration problem under the intervention level program could be through the use of dispersion techniques and intermittent controls. The EPA is not suggesting by this example that increasing stack heights is generally an appropriate means for addressing short-term peaks. States, tribes, sources, and affected communities are encouraged to consider other available approaches for minimizing the risk from short-term SO<sub>2</sub> exposures.

In conclusion, implementation of the intervention level program cannot and should not lead to any relaxation of the SIP requirements. However, there will be cases where the implementation of the intervention level program will complement the implementation of the SIP, if reductions in

emissions are achieved. In nonattainment areas where 5-minute SO<sub>2</sub> peaks are also prevalent, the State or tribe may wish to coordinate attainment plan development so that the corrective action taken by the source is consistent with the objectives of both the attainment plan and the intervention level program.

B. Malfunctions

The EPA has on occasion used its enforcement discretion in determining how and whether to act on unavoidable violations of source emission limits during periods of startup, shutdown and malfunction (40 CFR 60.11(d)). This policy recognizes that during certain startup and shutdown conditions, effective pollutant control may sometimes not be technically feasible due to process temperatures and pressures that have not yet stabilized. The policy also recognizes that certain source malfunctions are not reasonably foreseeable and are unavoidable, which result in uncontrolled emissions to the atmosphere. However, in some cases these emissions may be causing 5-minute SO<sub>2</sub> peak concentrations that exceed the concern level of 0.60 ppm. The State or tribe must decide when and if action is needed to address such cases. The State or tribe may find that if exceedances associated with malfunctions, start-ups, or shutdowns occur frequently and pose a risk to public health, an appropriate remedial response (including controls,

improved maintenance, or other alternative approaches) would be warranted.

C. Significant Harm Level Program

The EPA views the SHL program and the intervention level program as separate programs designed to address different situations that pose a threat to public health. The SHL program establishes corrective actions in advance to address emergency episodes that occur over a period of time (in the case of SO<sub>2</sub>, the timeframe would be 24 hours or more). The intervention level program is intended to address peak concentrations which occur over a relatively short timeframe (5 minutes) and, thereby, calls for the appropriate means to address the peaks to be determined after the peak episode occurs.

In most cases, no overlap between the two programs is expected to occur. It is, however, conceivable that an area may be subject to high SO<sub>2</sub> emissions and generate 5-minute and 24-hour ambient concentrations of such magnitude that a State or tribe would have cause to take action under the auspices of both the intervention level and the SHL programs. For example, an area experiencing a 24-hour average SO<sub>2</sub> concentration of 1.0 ppm (the significant harm level) would also experience 5-minute peak concentrations in excess of 0.60 ppm (the concern level for the intervention level program).

Under such circumstances, EPA expects corrective action will be promptly initiated through the SHL program. Once the corrective action required under that program has been established, steps would be taken to determine whether (1) that action effectively prevents 5-minute peak concentration episodes in excess of the intervention levels, or (2) if the 5-minute episodes occur independently of events in which the 24-hour episode levels are exceeded. In the latter case, States and tribes would be expected to take further action under the intervention level program as necessary.

#### D. Acid Rain Program

Under the acid rain program, sources (primarily coal-fired electric utilities) are given flexibility in how they choose to meet their emissions reductions, including the buying or selling of SO<sub>2</sub> emissions allowances. Regardless of the number of SO<sub>2</sub> allowances a source holds, it may not emit at levels that would violate Federal, State, or tribal emission requirements established under title I of the Act to protect public health, including any emission requirements that would be established to carry out the intent of the intervention level program.

#### VI. Community Involvement in the Intervention Level Program

As stated earlier, the intervention level program as designed would give States, tribes, local governments, and communities the authority, ability and flexibility to

address localized health concerns caused by 5-minute SO<sub>2</sub> episodes more effectively. While State or tribal regulatory agencies and industrial sources would be expected to be primarily responsible for implementing the intervention level program, members of the local community, whose health may be significantly impacted by peak ambient SO<sub>2</sub> concentrations, have a primary interest in the implementation of this program. The EPA encourages the States, tribes, industry, and local citizens to work together through the intervention level program to identify areas subject to 5-minute peaks, to assess the need for corrective action, and to develop corrective solutions.

When identifying areas that are subject to high ambient peaks, States and tribes may not wish to limit their analysis to ambient air monitoring and risk analysis. The States and tribes may want to consider the number and nature of citizen complaints received as an indicator of a potential public health problem and apply appropriate resources to receiving, reviewing, and addressing the concerns of citizens and community groups. The EPA recommends that citizens who express concern about the health and welfare effects due to high ambient concentration peaks be given the opportunity to present and clarify their concerns to the State or tribe. Citizens, in turn, should be informed of the types and levels of information that



would be most helpful in determining links between peaks and health effects and be given every opportunity to gather and provide that information. The EPA can serve as an information resource for States, tribes, and citizens providing the information it has available regarding health effects, risk analysis, ambient air concentrations, monitoring, and other issues, if requested.

After the State or tribe completes its assessment of the health risks in an area caused by 5-minute SO<sub>2</sub> concentrations, it may determine one of three things in an area: (1) measures to protect the public health are needed, (2) measures to protect the public health are not needed, or (3) more information is needed to reasonably determine if protective measures are needed. The EPA encourages States and tribes to keep local citizens and community groups informed during the decision-making process, to explain the factors and information used to supporting the decision, and to provide citizens ample opportunity to comment if they disagree with the decision.

If the State or tribe decides that measures to protect the public health are necessary, EPA recommends that the protective measures be developed through a collaborative process involving the State, tribe, industry, and the local community. As part of the collaborative process, the parties involved should determine: (1) an agreed outcome or

goal to be achieved by the protective measures, (2) appropriate actions to be taken by the emission sources to reduce the risk due to 5-minute ambient SO<sub>2</sub> concentrations, (3) a reasonable timetable for completion of the agreed-upon action (or actions), (4) a process to ensure that the action (or actions) agreed upon has been taken, and (5) a reasonable yardstick for assuring that the desired objectives have been achieved.

#### VII. Source Prioritization and Monitor Allocation

Like the three implementation options originally proposed, a key element of this new proposed implementation strategy is the relocation of existing SO<sub>2</sub> monitors to areas near point sources where peak SO<sub>2</sub> concentrations may exist. Historically, EPA has relied on modeling to predict air pollutant concentrations. However, the use of models is not currently an effective means for predicting 5-minute SO<sub>2</sub> excursions. The reasons for this, discussed in detail in the March 7, 1995 proposal (60 FR 12492), are summarized as follows: (1) model validation studies have not been conducted to determine if existing models can estimate with sufficient accuracy to be used in a regulatory context; (2) it is difficult to obtain accurate source emission data for 5-minute periods, since such data often depend on trying to measure emissions that may occur infrequently and at unpredictable times, concentrations, and flow rates; and (3)

a method of determining the expected frequency of emission releases due to malfunctions would have to be employed in order to model these releases.

For these reasons, EPA presented a "targeted implementation strategy" in the March 7, 1995 proposal that relied principally on ambient air monitoring instead of modeling to find areas exposed to high, 5-minute concentrations of SO<sub>2</sub>. Because the layout of the existing SLAMS network was intended for characterizing urban ambient air quality associated with 3-hour, 24-hour, and annual SO<sub>2</sub> concentrations, the network is not currently designed to measure 5-minute peak SO<sub>2</sub> concentrations from point sources. To allow for the relocation of monitors for measuring 5-minute peak concentrations, EPA proposed revisions to the ambient air quality surveillance requirements (40 CFR part 58) and proposed certain technical changes to the requirements for ambient air monitoring reference and equivalent methods (40 CFR part 53) in the November 15, 1994 (59 FR 58958) and the March 7, 1995 (60 FR 12492) proposals. The March 7, 1995 proposal also presented a strategy States and tribes could use to prioritize potential sources of high, 5-minute SO<sub>2</sub> peaks for monitoring. The strategy presented three groups of sources ranked by their capacity for high emission rates and their potential for high, 5-minute peaks. Available air quality or exposure data and

the effects of source location in complex terrain were also considerations in developing the groups.

In ranking sources for monitoring 5-minute peaks, EPA did not expect States and tribes to rely solely on the three categories described in the original proposal. The EPA also recommended that States and tribes evaluate each facility on an individual basis, considering such factors as the type of process, past upsets and malfunctions, the type of fuel used, the complexity of the surrounding terrain, knowledge of how well the source is controlled, the compliance history of the source, proximity to population centers, and the history of citizen complaints. The States and tribes would also need to determine how heavily to weigh a Group A source in an area with low population density versus a Group C source in a more densely-populated area and consider the impact of different source types clustering within a given area. These considerations would form the basis for a State or tribal monitoring plan which would be submitted to EPA during the annual review of the SLAMS network. While EPA would review the monitoring plan developed by States or tribes, it was EPA's intent that States and tribes would retain the main role of decision making since they would have better knowledge of the individual circumstances pertaining to the potential sources to be targeted.

Comments received on the targeted monitoring strategy indicate that some members of the public viewed the proposed strategy as being more rigid than EPA intended. Many commenters felt that the data and assumptions used to develop the ranking categories were outdated and/or conservative. Some felt that their respective industries should not have been given as high a priority as suggested by the categories. Many rejected the concept of prioritizing industrial categories, preferring that the prioritization of sources be based on the additional factors EPA originally proposed--health and exposure data, the size and configuration of sources, compliance history, proximity to population centers, etc.

In response to the comments received, EPA wishes to clarify the criteria discussed in the March 7, 1995 proposal for use by States and tribes to prioritize the monitoring of sources for high, 5-minute SO<sub>2</sub> peaks. The EPA is not requiring States or tribes to prioritize sources for monitoring in accordance with the three categories of industrial sources discussed in that proposal. The EPA is now recommending that States and tribes evaluate the need to monitor sources based on factors such as the history of citizen complaints, the compliance history of the sources in question, the State or tribe's knowledge of the operational characteristics of a given source (e.g., the likelihood of

highly variable emissions, maintenance history), the population in the vicinity of a source (or more specifically, the population of asthmatics and other individuals susceptible to high SO<sub>2</sub> concentrations), and environmental justice concerns. The EPA maintains the proposed revisions to the ambient air quality surveillance requirements (40 CFR part 58) and the proposed technical changes to the requirements for ambient air monitoring reference and equivalent methods (40 CFR part 53), as discussed earlier.

#### VIII. Reconsideration of Proposed 24-hour SHL and Episode Criteria

In the March 7, 1995 action (53 FR 14926), EPA also proposed revisions to the 24-hour SHL for SO<sub>2</sub>. The EPA is now reconsidering this proposed SHL revision.

The EPA based its previous proposal on a reassessment of the data upon which the original SHL were based and an assessment of more recent scientific evidence on sulfur oxides and particulate matter. The scientific evidence suggested that the combination of SO<sub>2</sub> and high levels of particulate matter can be associated with increases in daily mortality. The final 24-hour PM-10 (particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) SHL of 600 µg/m<sup>3</sup> takes this potential interaction into account. This raised the question as to

whether the remaining SO<sub>2</sub> SHL is sufficient. The possibility that SO<sub>2</sub> alone or in combination with other pollutants or fog droplets may be in part responsible for the effects associated with 24-hour exposures suggests the need to continue a 24-hour SHL for SO<sub>2</sub>, but at a substantially lower concentration. Accordingly, EPA proposed to revise the 24-hour SO<sub>2</sub> SHL from 1.0 (2,620 µg/m<sup>3</sup>) to 0.29 ppm (750 µg/m<sup>3</sup>), as well as revisions to the 24-hour episode levels.

Upon further consideration, EPA now believes that a revised 24-hour SHL is not necessary to protect the public health. Based on a review of existing data, the EPA now believes the additional areas that would require corrective action as a result of changing the SHL (and the episode levels) are generally areas that have not attained the SO<sub>2</sub> NAAQS. The EPA expects that continued efforts of the States and tribes toward submittal, approval, and enactment of State or tribal implementation plans should not only achieve attainment of the NAAQS, but should also address the impact on human health caused by significant 24-hour SO<sub>2</sub> episodes. For this reason, EPA is amending its earlier proposal, recommending that no revision to the 24-hour SHL for SO<sub>2</sub> be made at this time. The EPA solicits comment on this issue.

IX. Comments and the Public Docket

The EPA welcomes comments on all aspects of this proposed rulemaking. Commenters are especially encouraged to give suggestions for improving or clarifying any aspects of the proposal. All comments, with the exception of proprietary information, should be directed to Docket No. A-94-55 (see "ADDRESSES").

Commenters who wish to submit proprietary information for consideration should clearly separate such information from other comments by: (1) labeling proprietary information "Confidential Business Information," and (2) sending proprietary information directly to the contact person listed (see "FOR FURTHER INFORMATION CONTACT") and not to the public docket. This will help ensure that proprietary information is not inadvertently placed in the docket. If a commenter wants EPA to use a submission labeled as confidential business information as part of the basis for the final rule, then a nonconfidential version of the document, which summarizes the key data or information, should be sent to the docket. Information covered by a claim of confidentiality will be disclosed by EPA only to the extent allowed and by the procedures set forth in 40 CFR part 2. If no claim of confidentiality accompanies the submission when it is received by EPA, the submission may be made available to the public without notifying the commenters.



IX. Administrative Requirements

A. Executive Order 12866

Under Executive Order 12866, the Agency must determine whether a regulatory action is "significant" and, therefore, subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order. The order defines a "significant regulatory action" as one that may:

(1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another Agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations or recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

While EPA does not believe the intervention level program would potentially have an annual effect on the economy of \$100 million or more, the proposed intervention level program was developed in part due to comments received on earlier proposed implementation strategies which were

deemed to be significant. Also, to some extent, the characteristics of the intervention level program--local responsibility, flexibility, community involvement--represents a novel regulatory approach. For these reasons, EPA has judged that the proposed intervention level program is a significant regulatory action as defined by Executive Order 12866 and has submitted this action to OMB for review. The EPA has prepared a regulatory impact analysis (RIA) which is summarized below.

In the event that a State or tribe determines that some means of corrective action is necessary under the intervention level program, the actions taken will be specific to the source and the area impacted by high, 5-minute ambient concentrations. As such, the costs can vary widely (from a low-cost alternative, such as fuel switching, to the installation of more costly add-on control equipment). Because of the tremendous uncertainty surrounding the estimation of national costs, the RIA evaluates the cost of control through a series of case studies that present information on a sample of control strategies. The case studies chosen for analysis in the RIA are based upon available data and characteristics of the SO<sub>2</sub> problem (and areas) that provide a broad scope of the issues associated with the implementation of the intervention level program. Of the predicted actions to be taken under this

program, two of them correspond with case studies provided in the RIA. It should be noted, however, that the control strategies evaluated for the case studies were chosen to provide the reader with a wide variety of approaches to resolve a short-term SO<sub>2</sub> problem, and thus, the strategies may not coincide with strategies that may be developed by States and tribes to resolve the problem in their local areas. The list of control strategies analyzed is not exhaustive, as time and resource constraints preclude analysis of all possible control alternatives (including new and innovative ways of addressing SO<sub>2</sub> concentrations that States and local communities may develop while evaluating a 5-minute SO<sub>2</sub> problem). As discussed earlier, States or tribes may choose to have sources address health risks from short-term peaks through alternative approaches such as public health education campaigns or public warning/notice of peak episodes. Such approaches may have lower costs than measures that reduce SO<sub>2</sub> emissions.

Since the current SLAMS network was not developed to identify areas that experience 5-minute peak SO<sub>2</sub> concentrations, it is difficult to predict how many areas of concern might be identified by States and tribes when they relocate monitors for this purpose. A survey of the States yielded 63 source-based monitors that monitored 5-minute concentrations during 1993 and 1994. Of these 63 monitors,

27 (43 percent) registered at least one exceedance of the concern level (0.6 ppm), and 1 (2 percent) registered exceedance of the endangerment level (2.0 ppm). Based on an detailed evaluation of data from these monitors, EPA identified ten areas that the Agency felt would be evaluated for the level of public health risk associated with short-term SO<sub>2</sub> episodes. Of the ten areas, EPA reasonably estimates that action under the intervention level program could be warranted for approximately five areas. The EPA is using several types of information as a basis for projecting the likelihood of action under the intervention level program, including: (1) historical knowledge about the situation based on interactions between the EPA Regions, States and local sources; (2) comments from sources, States, and local agencies on the original proposals which not only discuss local situations, but also the regulatory agency's likely response (because EPA is not only making a provisional judgement about the potential public health risk from these situations, but is also assessing how the regulatory agencies would respond); (3) air quality and census data; and (4) information about the industrial processes at facilities in the locations of concern.

The EPA recognizes that relocation of monitors around sources and in areas of potential concern could identify more areas where assessment of public health risk and

possible intervention would be warranted. Since there is significant uncertainty about the extent to which States and tribes will relocate monitors, the total cost of the final program could be higher than the cost EPA has so far identified. The EPA invites public comment on its approach to estimating the costs of this proposal.

The case studies indicate the range of annualized cost for solutions to different 5-minute SO<sub>2</sub> problems to be from approximately \$300,000 to \$2.2 million. In addition, some case studies have no cost associated with the program since action is not taken. Yet, other studies indicate the potential for either a cost savings of \$257,544 or a total annualized cost of \$30 million. The range of costs reflects the significant amount of flexibility that regulatory authorities, communities, and sources have under the intervention level program to resolve short-term SO<sub>2</sub> problems at a substantially lower cost than other potential regulatory vehicles. For example, the previously-proposed regulatory option of establishing a new short-term SO<sub>2</sub> NAAQS (0.60 ppm, 5-minute average) was estimated to cost \$1.75 billion. Several sources expected to incur costs under the NAAQS option would conceivably have no regulatory action taken upon them under the intervention level program and thus would not incur compliance costs. Even if the five actions predicted so far to occur under the intervention

level program have the highest end of costs estimated in the RIA case studies (\$2.2 million), the total cost of these five actions would be \$11 million--\$1.739 billion less than the NAAQS option proposed earlier.

Given that implementation of the intervention level program will only occur in areas where a State or tribe determines there is substantial risk to human health, it is unlikely that a vast number of sources in any one industry will be impacted. It is likely that only one or two sources of an industry will incur additional control costs to resolve a 5-minute SO<sub>2</sub> problem. If the sources affected by the program are not the marginal producers of an industry, the market supply curve is not likely to shift and the source would not benefit from increased prices. Rather, the source would absorb the compliance costs and incorporate them into the cost of production to determine their optimal level of operation.

The quantified benefits of the case studies ranged in value from \$2,700 to \$44,100. As such, the costs exceed benefits by a significant amount. The small magnitude of benefits results from mainly two factors. First, the short-term peaks in SO<sub>2</sub> under consideration impact a fairly small geographic area within the local vicinity of the model plants. The small geographic area leads to a relatively small number of people being exposed to these short-term

peaks. Second, the benefit estimates are limited to the health benefits accruing to asthmatics. The welfare benefits associated with any ecosystem--visibility, odor, materials damage, or particulate matter improvements that may result from control of short-term peaks in SO<sub>2</sub>--have not been considered. Although the costs determined for the case studies exceed the quantifiable benefits, the intervention level program achieves a reasonable solution to short-term SO<sub>2</sub> problems at substantially lower cost than other potential regulatory vehicles, such as the previously-proposed, new short-term SO<sub>2</sub> NAAQS. Several of the sources assumed to incur costs under the short-term NAAQS option would conceivably not require regulatory action taken upon them under the proposed intervention level program and would thus incur no compliance costs. In addition, a regulatory authority may consider environmental justice as a criteria to warrant action under the intervention level program. Paragraph E of this section of the preamble discusses the environmental justice analysis prepared for the RIA.

B. Monitoring and Administration Costs

There are 679 sites in the current SLAMS network established to monitor for violations of the SO<sub>2</sub> NAAQS. It was estimated in the previous proposal that approximately two-thirds of the monitors could be relocated in order to monitor for short-term SO<sub>2</sub> concentrations without

compromising the current network of monitors for the NAAQS. When final changes to the requirements for ambient air monitoring reference and equivalent methods (40 CFR part 53) and revisions to the ambient air quality surveillance requirements (40 CFR part 58) are promulgated, the States, tribes, and local authorities will be given guidance to place anywhere from 1 to 4 monitors around sources where short-term SO<sub>2</sub> concentrations are of concern. While the total number of monitors to be relocated cannot be determined presently, it is likely that significantly fewer than two-thirds of the current network will be relocated under the intervention level program.

The cost to relocate a monitor is specific to the monitor and site. However, if a stand-alone monitor can be relocated without having to replace operating and maintenance equipment (i.e., the shelter, calibration equipment, data logger, etc.), EPA estimates it would cost \$18,630 to relocate the monitor. If a monitor that is relocated requires the installation of new equipment, the total cost of relocation would be \$45,050. In addition, there is a cost to operate the monitor estimated at \$22,000 per year. If the monitor is currently operating independently, relocating the monitor would merely transfer this expense to the new site. Therefore, there would be no incremental cost to operate the relocated monitor. However,



the EPA is aware that some SO<sub>2</sub> monitors are colocated with other monitors (e.g., for ozone, nitrogen oxides, and particulate matter). When relocating the SO<sub>2</sub> monitor in this case, the existing site would maintain the current operating expense for the remaining monitors, and the new site for the relocated SO<sub>2</sub> monitor would incur an incremental operating cost of \$22,000. Thus the total cost to relocate a monitor could range from \$18,630 for a stand-alone monitor that already has the necessary equipment to relocate to a new site and will not incur any incremental operating costs to \$67,050 for a monitor requiring both new equipment and operating expenses.

The EPA recognizes that as monitors are relocated, areas of concern in addition to those estimated may be identified. To the extent more information becomes available, EPA will estimate the anticipated impact of relocating monitors on total program costs in the final rule.

The EPA recognizes that there are costs associated with the administration of the intervention level program. These costs include: determining the need to relocate monitors; evaluating citizen complaints; assessing public health risk; and developing, implementing, and monitoring actions required of the source to reduce risk. The EPA believes that the additional costs resulting from the intervention

level program would be minimal for two reasons. First, many States and tribes currently have sufficient administrative infrastructure in place to conduct such activities. Second, the flexibility of the program allows States and tribes to use their resources in the most efficient manner in implementing the program. The EPA invites public comment on the costs associated with administering the intervention level program.

C. Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA) requires that all Federal agencies consider the impacts of final regulations on small entities, which are defined to be small businesses, small organizations, and small governmental jurisdictions (5 U.S.C. 601 et seq.). Under 5 U.S.C. 605(b), this requirement may be waived if the Agency certifies that the rule will not have a significant economic effect on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and governmental entities with jurisdiction over populations of less than 50,000.

A decision to implement the intervention level program under the authority of section 303 would impose no new major requirements. Furthermore, the control measures necessary to implement the intervention level program are developed by the States and tribes. In selecting such measures, the

States and tribes have considerable discretion to address the risk presented by 5-minute ambient SO<sub>2</sub> concentrations. Therefore, the impact on small entities from the intervention level program would be determined by how the States and tribes choose to implement the program. For these reasons, any assessment performed by EPA on the costs of implementation at this time would necessarily be speculative. On the basis of the above considerations and findings, and as required by section 605 of the RFA, 5 U.S.C. 601 et seq, the Administrator certifies that this regulation does not have a significant impact on a substantial number of small entities.

D. Impact on Reporting Requirements

While there are reporting requirements associated with related sections of the Act, particularly sections 107, 110, 160, and 317 (42 U.S.C. 7407, 7410, 7460, and 7617), there are no specific Federal reporting requirements associated with the proposed intervention level program. Because the program gives States and tribes discretion to take action as warranted by the risk to the public health, it is difficult to project what recordkeeping and reporting requirements States and tribes may feel are needed to ensure compliance and enforceability in specific cases. Furthermore, any necessary reporting and recordkeeping would be restricted to sources the State/tribe determines as contributing to high

5-minute concentrations in a localized area. No recordkeeping or reporting would be required from sources not contributing to 5-minute peaks or from sources in areas not subject to high 5-minute peaks.

Consequently, EPA is not asking for approval under the Paperwork Reduction Act for any such requirements at this time. The EPA welcomes comments on the nature and burden of recordkeeping and reporting requirements that may be associated with the intervention level program. As the information requirements of the program become clearer, EPA will reevaluate the need for information collection approval under the Paperwork Reduction Act.

E. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), P.L. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under sections 202, 203, and 205, respectively, of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local and tribal governments, in the aggregate or to the private sector, of \$100 million or more in any 1 year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA

generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed a small government agency plan under section 203 of the UMRA. The plan must provide for notifying potentially-affected, small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The EPA has determined that this proposal does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, or tribal governments, in the aggregate or the private sector in any 1

year. The EPA anticipates that the number of cases in which abatement of short-term SO<sub>2</sub> concentrations will be necessary will be few in number and that the States and tribes will work with the sources and the local community to arrive at the most appropriate and efficient control approach to reduce the risk to the public. For these reasons, the expenditures under the intervention level program are not expected to exceed the \$100 million threshold. Thus, today's proposal is not subject to the requirements of sections 202 and 205 of the UMRA.

F. Environmental Justice

Executive Order 12898 requires that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The requirements of Executive Order 12898 have been addressed in the draft regulatory impact analysis.

A number of factors indicate that asthma may pose more of a health problem among non-white individuals, children, and urban populations. With these factors in mind, a general screening analysis is conducted to examine the sociodemographic characteristics of the case study areas potentially impacted by short-term SO<sub>2</sub> peaks.

Overall, the population distributions in the case study areas do not indicate that a disproportionate number of non-white individuals would be impacted by short-term SO<sub>2</sub> ambient concentrations greater than 0.60 ppm. The analysis also indicates that there are twice as many children residing in the case study areas as compared to the national average, and potentially 595 of these children could have asthma and thus experience health impacts during peak SO<sub>2</sub> concentrations. In addition to the large number of children potentially exposed to peak SO<sub>2</sub> concentrations, 27 percent of the households in the case study areas are below the poverty level, which is twice the national average. It should be noted, however, that it is not known how many of the households below the poverty level contain asthmatic individuals. Given the available data, there is an indication that a disproportionate number of children and households below the poverty level are exposed to short-term SO<sub>2</sub> peaks.

In general, children do not have sufficient resources to relocate or take action against sources of SO<sub>2</sub> emissions. Similarly, households below the poverty level are generally unlikely to relocate or take action against sources of SO<sub>2</sub> emissions. Not only do these households often lack the resources to relocate, but they may be dependent on the local industrial sources for employment. In such a case,

these households may be reluctant to take action against sources of SO<sub>2</sub> emissions if this action would adversely impact employment opportunities.



Proposed Implementation Requirements for Reduction of Sulfur  
Oxide (Sulfur Dioxide) Emissions -- page 61 of 65

LIST OF SUBJECTS IN 40 CFR PARTS 51

Environmental protection, Administrative practices and  
procedure, Air pollution control, Intergovernmental  
relations, SO<sub>2</sub>, Reporting and recordkeeping requirements,  
State implementation plans.

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Date

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Carol M. Browner  
Administrator

Billing Code: 6560-50-P

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- EPA (1982b), Review of the National Ambient Air Quality Standards for Sulfur Oxides: Assessment of Scientific and Technical Information-OAQPS Staff Paper, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-450/5-82-007.
- EPA (1986a), Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982): Assessment of Newly Available Health Effects Information, Environmental Criteria and Assessment Office, Research Triangle Park, NC, EPA-450/5-86-012.
- EPA (1986b), Review of the National Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information, Addendum to the 1982 OAQPS Staff Paper, Office of Air Quality Planning and Standards, Research Triangle Park, NC EPA-450/05-86-013.
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- Horstman, D. H. Roger, L. J.; Kehrl, H. R.; Hazucha, M. J. (1986). Airway sensitivity of asthmatics to sulfur dioxide. Toxicol. Ind. Health. 2:289-298.
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For the reasons set forth in the preamble, EPA proposes to amend part 51 of Chapter I of title 40 of the Code of Federal Regulations as follows:

PART 51--REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS

1. The authority citation for part 51 continues to read as follows:

Authority: 42 U.S.C. 7401(a)(2), 7475(e), 7502(a) and (b), 7503, 7601(a)(1) and 7602(1).

2. Section 51.154 is added to Subpart H to read as follows:

Subpart H--Prevention of Air Pollution Emergency Episodes.

§51.154 Intervention Levels

(a) Each plan must contain the authority to take whatever action necessary to prevent further exceedances of the following concern level attributable to emissions from a source or group of sources where one exceedance has occurred, and the State, tribe, or local air pollution control agency determines that the potential for further exceedances of this level constitutes imminent and substantial endangerment to public health or welfare, or the environment:

Sulfur dioxide (SO<sub>2</sub>) - 0.60 ppm, 5-minute hourly maximum value.

(b) Each plan must contain the authority to take whatever action necessary to prevent further exceedances of the following endangerment level attributable to emissions from a source or group of sources where one exceedance has occurred, and the State, tribe, or local air pollution control agency determines that the potential for further exceedances of this level constitutes imminent and substantial endangerment to public health or welfare, or the environment:

Sulfur dioxide (SO<sub>2</sub>) - 2.0 ppm, 5-minute hourly maximum value.

(c) Nothing in paragraphs (a) or (b) shall preclude the State, tribe, or local air pollution control agency from addressing any public health threat arising from exceedances of the concern or endangerment levels with measures other than the imposition of control requirements designed to reduce emissions from specific sources, as long as the measures chosen effectively reduce the threat to public health.

(d) The State, tribe, or local air pollution control agency shall ensure that any action to be taken on the part of the source or group of sources to address any public health threat caused by exceedances of either the concern or endangerment level shall be enforceable by the Administrator and by citizens under the Act:

(e) A 5-minute hourly maximum value for  $\text{SO}_2$  is the highest of the 5-minute averages from the 12 possible nonoverlapping periods during a clock hour. An exceedance occurs if the 5-minute hourly maximum is greater than the 5-minute concern or endangerment level after rounding. A value of 0.605 would be rounded to 0.61; a value of 2.05 would be rounded to 2.1. Therefore, the smallest value for an exceedance of the concern level is 0.61 and the smallest value for an exceedance of the endangerment level is 2.1. A 5-minute maximum shall be considered valid if: (1) the 5-minute averages were available for at least 9 of the 12 5-minute periods during the clock hour, or (2) the value of any 5-minute average is greater than the concern level.