U.S. ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51 and 58

[AD-FRL-5157-7]

Proposed Requirements for Implementation Plans and Ambient Air Quality Surveillance for Sulfur Oxides (Sulfur Dioxide) National Ambient Air Quality Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: Today's action proposes implementation strategies for reducing short-term high concentration sulfur dioxide (SO_2) emissions in the ambient air. The EPA is concerned that a segment of the asthmatic population may be at increased health risk when exposed to 5-minute peak concentrations of SO_2 in the ambient air while exercising. "Exercising" in this case can include walking up stairs or hills, as well as more strenuous activities.

In a related document published on November 15, 1994 at 59 FR 58958 in the Federal Register (part 50/53 document), EPA proposed not to revise the current 24-hour and annual primary national ambient air quality standards (NAAQS) for sulfur oxides (measured as SO_2) while soliciting comment on the possible need to adopt additional regulatory measures to address short-term peak SO_2 exposures. The three alternatives under consideration include: (1) Augmenting

the implementation of the existing standards by focusing on those sources or source types likely to produce high 5-minute peak SO_2 concentrations; (2) establishing a new regulatory program under the authority of section 303 of the Clean Air Act (Act) to supplement protection provided by the existing SO_2 NAAQS; and (3) revising the existing SO_2 NAAQS by adding a new 5-minute NAAQS of 0.60 ppm SO_2, 1 expected exceedance. All three regulatory alternatives would be implemented through a risk-based targeted strategy designed to protect the population at risk while minimizing the burden on the States for implementation.

This document presents EPA's proposed targeted implementation strategy and the associated regulatory requirements for implementing each of the regulatory measures under consideration. Also in this document, EPA solicits comments on appropriate changes to the new source review (NSR) programs (40 CFR parts 51 and 52) as they relate to the 5-minute NAAQS regulatory alternative, and EPA proposes to incorporate appropriate changes to the ambient air quality surveillance requirements (40 CFR part 58).

DATES: Written comments on this proposal must be received by [insert date 90 days after date of publication in the Federal Register]. The EPA will hold a public hearing on this document in approximately 30 days and will announce the time and place in a subsequent Federal Register document.

ADDRESSES: Submit comments on the proposed revisions to the requirements for the preparation, adoption, and submittal of implementation plans (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 (for part 51 comments) or A-94-56 (for part 58 comments), 401 M Street, S.W., 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 FURTHER INFORMATION CONTACT: Andrew M. Smith, Information Transfer and Program Integration Division (MD-12), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541-5398, for the part 51 SIP. For parts 51 and 52 new source review programs, contact Dan deRoeck, Information Transfer and Program Integration Division (MD-12), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541-5593. For part 58 ambient air quality surveillance, contact David Lutz, Emissions Monitoring and Analysis Division (MD-14), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541-5476.

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SUPPLEMENTARY INFORMATION:

I. Background

As required under sections 108 and 109 of the Act, EPA has completed a thorough review of the air quality criteria and the current SO_2 NAAQS. Based on the health effects information assessed in the air quality criteria, EPA provisionally concludes that the current 24-hour and annual primary standards provide adequate protection against the effects associated with those averaging periods. As discussed in detail in the part 50/53 document, 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_2 concentrations.

As discussed in the part 50/53 document, the available air quality and exposure data indicate that the likelihood that the asthmatic population as a whole would be exposed to 5-minute peak SO_2 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_2 concentrations can occur around certain sources or source types with some frequency, suggesting asthmatic individuals that reside in the vicinity of such sources or source types will be at greater health risk than indicated for the asthmatic population as a whole. These assessments lead EPA

to conclude that if any additional regulatory measures are adopted to provide additional protection, they should be implemented through a risk-based targeted strategy that focuses on those individual sources most likely to produce high 5-minute peak SO_2 concentrations.

Based on these consideration, EPA is soliciting comment on the part 50/53 notice on three regulatory alternatives: (1) Augmenting implementation of the existing standards by focusing on those sources or source types likely to produce high 5-minute peak SO_2 concentrations; (2) establishing a new regulatory program under section 303 of the Act to supplement the protection provided by the existing NAAQS; and (3) revising the existing NAAQS by adding a new 5-minute standard of 0.60 ppm, 1 expected exceedance. Because the risk-based targeted strategy is an integral part of each of the three alternatives being proposed for comment, this notice will first present EPA's approach for targeting sources with a high potential for causing or contributing to high 5-minute peak SO_2 concentrations. As discussed below and in the part 58 notice, a key element of this strategy will be to relocate existing SO_2 monitors to areas in proximity of point sources of concern. The relocation of monitors is necessary because the existing SO_2 monitoring network is designed to characterize urban ambient air quality associated with 3-hour, 24-hour, and annual SO_2

concentrations. These monitors are not located to measure peak SO_2 concentrations from point sources. As a result, EPA's existing guidance on siting criteria, the spanning of SO_2 instruments, and instrument response time likely leads to underestimates of high 5-minute peak SO_2 concentrations. To address these concerns, EPA is proposing 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 part 50/53 document.

In addition to outlining the targeted implementation strategy, this notice presents EPA's proposed program for implementing the section 303 program and the 5-minute SO_2 NAAQS alternative. Regardless of the alternative selected (i.e., retain the existing standards but augment their implementation, establish a new 303 program, or add a new 5-minute NAAQS), the targeted implementation strategy would be used to identify areas that may be subject to high 5-minute SO_2 concentrations. The measures that sources must take if they cause or contribute to such high peaks and the actions that the States must take will vary depending on the proposed alternative, if any, selected.

The following discussion gives statutory background information on the regulatory approach used in addressing

air pollution. Under sections 108 and 109 of the Act, EPA is responsible for issuing air quality criteria and for proposing and promulgating NAAQS. Under section 110(a)(1) and part D of title I, the States then have primary responsibility for implementing the NAAQS. In broad outline, each State must develop and submit to EPA a plan that provides for attainment of each NAAQS within certain time limits. The EPA must review the SIP submittal and approve or disapprove its provisions. If States fail to submit required SIP's or submit inadequate SIP's, and the deficiencies are not cured within specified time periods, the States become subject to certain sanctions under section 179, and EPA ultimately becomes subject to an obligation to promulgate a Federal implementation plan (FIP). For a more complete discussion of the provisions of title I of the Act, see the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 published in the Federal Register on April 16, 1992 (57 FR 13498).

The 1990 Amendments preserved the existing framework of the SIP process, i.e., States are still responsible for preparing and submitting SIP's, and EPA is still responsible for reviewing and approving or disapproving SIP's. In addition, the 1990 Amendments, among other things, provide EPA with the unilateral authority to designate areas as either attainment, nonattainment or unclassifiable with

respect to any NAAQS (see generally, section 107(d)(1)). States with areas designated nonattainment for a NAAQS are required to submit SIP's which provide for attainment of that NAAQS. States can face sanctions and other repercussions if they fail to meet the various SIP requirements of title I.

In general, for each of the proposed regulatory alternatives, the Act may or may not require specific actions on the part of EPA or the States. If the existing NAAQS is retained, then the Act imposes no new SIP requirements on EPA and the States, although EPA will use its discretionary authority to effectuate the Act's protective purposes by requiring States to implement targeted monitoring around sources capable of producing short-term high concentrations of SO_2 to the extent that those sources contribute to ambient concentrations of SO_2. If the existing NAAQS is retained along with a trigger level for implementing an emergency program under section 303, then the State would be principally responsible for developing and implementing the necessary prevention and/or abatement strategies. If a new 5-minute NAAQS is established, States would have to develop and submit SIP's which provide for implementation, maintenance and enforcement of the new NAAQS.

Further discussion of the requirements that are to be met by the States is provided below with regard to each of the additional regulatory alternatives to be considered by EPA.

II. Targeted Implementation Strategy

This section principally proposes EPA's strategy to identify those areas where the potential exists for exceedances of the current SO_2 NAAQS as well as the potential for high 5-minute concentrations of SO_2. This strategy has two stages. The first stage is to identify potential problem areas and then to conduct ambient monitoring at those areas. The second stage is to take corrective action should monitoring conducted during the first stage reveal concentrations in excess of the appropriate SO_2 NAAQS or trigger level. To begin this strategy, EPA intends to refocus Agency monitoring resources into those areas with potential 5-minute SO_2 peaks. The development and implementation of this strategy relies on the ability of the States to identify the specific emission and operating characteristics of sources which can contribute to violations of the existing NAAQS as well as contribute to high 5-minute SO_2 concentrations. Successful implementation of this strategy will result in either the identification of additional SO_2 problem areas or the conclusion that the ambient SO_2 problem is largely solved. It also allows EPA to apply finite resources in an efficient way where public health is most likely to be jeopardized by air pollution. The EPA intends to pursue this targeted strategy regardless of the outcome of the NAAQS proposal

published in the part 50/53 notice and solicits comments on the targeted implementation strategy.

A. Background

1. Modeling

For implementing the current SO_2 program, EPA has historically relied on mathematical dispersion models for predicting air pollutant concentrations for the following needs: (1) For redesignating areas to nonattainment or attainment under section 107 of the Act; (2) for setting emission limits for an attainment strategy as required per 14 section 110(a)(2)(K) and part 40 of the Code of Federal Regulations, section 51.115 (40 CFR 51.115); (3) for predicting locations of maximum concentrations for siting monitors; (4) for determining boundaries of nonattainment areas; (5) for predicting consumption of ambient air increments under prevention of significant deterioration (PSD); and (6) for determining, under nonattainment NSR, if the significance level, used for determining if a major source or modification is considered to cause or contribute to a violation of the NAAQS, is exceeded.

The "Guideline on Air Quality Models (Revised)," EPA-450/2-78-027R, hereinafter referred to as "the Modeling Guideline," has provided a common basis for conducting such modeling. The Modeling Guideline was incorporated into 40 CFR part 51 on July 20, 1993 (58 FR 38816) as appendix W.

However, modeling is not currently feasible for predicting 5-minute ambient air concentrations of SO_2. This is due to present uncertainties regarding the ability of models to reliably predict SO_2 concentrations for 5-minute periods and uncertainties with the accuracy of the input data needed to run the models. A brief summary of issues follows.

Validation. Although models are available, they have not been applied in predicting 5-minute SO_2 concentrations. Model validation studies have not been conducted to determine whether existing models can estimate with sufficient accuracy to be used in a regulatory context. Model validation studies are therefore necessary to determine the precision needed for input data for achieving the desired prediction accuracy. This would help determine, for example, whether on-site 5-minute meteorological data are needed or if nearby National Weather Service data are sufficient.

Emissions Data. In addition to the unassessed uncertainties of models, the accuracy and availability of input data, such as emissions, meteorology, and the occurrence of a short-term release (e.g., a process upset or control equipment malfunction) necessary to run the models, limits the ability to accurately predict 5-minute SO_2 concentrations at this time. Obtaining accurate source emission data for 5-minute periods is of critical

importance. However, it is difficult to obtain such data since such data often depend on trying to measure emissions that may occur infrequently and at unpredictable times, concentrations, and flow rates (estimates of both flow rates and pollutant concentrations are necessary to determine mass emissions unless a mass balance can be performed, which would be difficult on a 5-minute basis). Moreover, emergency bypass valves, where measurements of emissions might be most appropriate under some circumstances, are infrequently used and therefore are not appropriate sites for the installation of monitors for continuous measurement of flow rates or pollutant concentrations.

Predicting Short-term Events. Current models used for predicting ambient air concentrations rely on a known emission release, usually some steady-state emission rate, and known past meteorological data. Short-term models use hourly weather data from the National Weather Service or from on-site meteorological stations, which are preprocessed before being used in the model. Long-term models use joint frequency distribution summaries of wind speed, direction and atmospheric stability category. In order to model for emission releases due to malfunctions, a method of determining the expected frequency of these malfunctions would have to be employed (e.g., a Monte Carlo simulation which is a computer simulation using random sampling

techniques to obtain approximate solutions to mathematical or physical problems especially in terms of a range of values each of which has a calculated probability of being the solution). To date, EPA has never attempted to integrate dispersion modeling with malfunction frequency data to set emission limits, or to perform any other regulatory modeling tasks. Indeed, EPA's longstanding position has been to regard malfunctions as violations of applicable control requirements, subject to enforcement, unless it can be shown that such malfunctions are truly unavoidable (Bennett, 1982). To allow deviations from this policy, EPA would need to develop a method along with policy and guidance for its use, which EPA does not intend to do at this time.

Meteorological Data. On-site meteorological data are preferable, but National Weather Service data may be acceptable if a station is nearby and deemed representative of the area modeled. The meteorological data requirements for 5-minute SO_2 modeling could be determined through model evaluation studies, as discussed earlier in this section.

For these reasons, in contrast with longer averaging periods, models cannot currently be used to predict 5-minute SO_2 excursions needed to support a 5-minute NAAQS. However, despite these limitations, current models may still be used as a tool in a qualitative sense in the decision-making

process for determining boundaries of nonattainment areas and for siting of monitors in areas of maximum concentrations. Consequently, the targeted implementation strategy which is designed to find areas exposed to high, 5-minute concentrations of SO_2 will rely principally on ambient air monitoring instead of modeling.

2. Ambient Monitoring

Requirements for monitoring are established at 40 CFR Part 58--Ambient Air Quality Surveillance. This part: (1) Contains criteria and requirements for ambient air quality monitoring and requirements for reporting ambient air quality data and information; (2) contains requirements pertaining to provisions for an air quality surveillance system in the SIP; (3) acts to establish a national ambient air quality monitoring network for the purpose of providing timely air quality data upon which to base national assessments and policy decisions; and (4) includes requirements for the daily reporting of an index of ambient air quality to ensure that the population of major urban areas are informed daily of local air quality conditions.

In the early 1970's when EPA and the States first began to monitor for SO_2 in the ambient air, SO_2 emissions were greater and more widespread than today. Combustion of sulfur-bearing fuels occurred not only in industrial and utility settings but in private settings as well. Fuel oil

and coal were burned in residences and building boilers for warmth. For this reason and because of the potential for exposures of the population, large metropolitan areas were generally selected for monitoring. Sulfur oxide emissions have decreased about 27 percent since 1970 (EPA, 1992b). Today most residences and buildings use electricity or natural gas for heating and nearby industrial or utility sources have installed control devices or have switched to lower sulfur fuel resulting in less sulfur emissions in the vicinity of the ambient air monitors. Because of these reductions in SO_2 emissions in populated areas, only a small number of monitors are now recording exceedances. Even these few exceedances are due not to area sources of SO_2 but instead to emissions from nearby industrial sources. Despite these changes in the profile of sources of SO_2 emissions, the SO_2 ambient air monitoring network has not been modified to reflect the ambient air quality for SO_2 near industrial sources.

As a result of past emphasis on urban scale air quality management, SO_2 monitoring networks are designed to measure population exposure over a large area and are not generally designed to measure the influence of specific point sources. To an increasing extent, therefore, SO_2 nonattainment areas have been identified by air quality dispersion models and defined by one or a few point sources with probability of

causing a violation of the SO_2 NAAQS when operating at allowable emission limits at times of unfavorable meteorology. Increased concerns about high short-term concentrations of SO_2 occurring near point sources, together with the prevalence of low concentrations at existing networks and the inability of models to predict short-term concentrations, suggest a need to redirect monitor networks near these sources.

As already briefly discussed, there are about 675 SO_2 SLAMS monitors across the Nation. In this notice, EPA is proposing changes to 40 CFR part 58 to allow for fewer SLAMS monitors per metropolitan statistical area. This will enable monitors and resources to be redirected towards placing monitors near point sources. There is a higher initial cost associated with finding and setting up new monitoring sites than the annual operating cost of the monitor itself. Because of this and because of limited State monitoring resources, not all monitors initially freed up can be immediately placed around a targeted source, but will be phased in over a period of time.

For the reasons stated above, EPA proposes to direct States to redeploy SO_2 monitors around targeted sources of SO_2 and respan the instrumentation at selected sites to measure values above 0.5 parts per million (ppm). The monitors will be sited at microscale, middle, or

neighborhood distance from the targeted sources in order to best measure high, 5-minute concentrations of SO_2. Micro, middle, neighborhood, and urban scales are all more completely defined in 40 CFR part 58, appendix D. The EPA and States will first monitor around those sources in areas with population with the greatest potential to exposure to 5-minute, peak SO_2 levels. The EPA and States will consider discontinuing the operation of existing monitors and relocate them for the purpose of monitoring around targeted sources (see part 58 discussion published elsewhere in this notice for monitoring requirements).

B. Implementing the Targeting Strategy

As discussed earlier, the available air quality and exposure information indicates that a large degree of protection against exposure to short-term peak SO_2 concentrations is provided by the current NAAQS. Full implementation of the Acid Rain Program will result in further reduction of SO_2 emissions and the likelihood of peak SO_2 concentrations. The available data indicate, however, that peak concentrations of SO_2 can still occur around certain sources or source types with some frequency, suggesting asthmatic individuals who reside in the vicinity of such sources or source types will be at greater health risk than indicated for the asthmatic population as a whole. These assessments have led EPA to conclude that any

regulatory measures adopted to provide additional protection should be implemented through a risk-based targeted strategy that focuses on those individual sources more likely to produce high 5-minute peaks.

Therefore, in order to gather more information, to focus implementation efforts on those sources that EPA's existing data suggest may pose the greatest health risk, and to allocate monitoring resources as efficiently as possible, EPA has developed an approach to guide States in developing a prioritized list of sources to be targeted for monitoring. As further discussed below, potential sources have been placed in one of three groups based on the overall likelihood of the source category to emit high 5-minute SO_2 peaks. However, before redeploying monitors, States must evaluate each of these facilities individually, basing their decision on more specific information such as size, configuration, compliance history and proximity to population centers.

As just described, States need to review their current SO_2 monitoring networks to determine which monitor sites should continue operating and which should be discontinued and relocated around potential sources. The EPA will work with each State to develop a targeted SO_2 monitoring plan to implement the strategy, based on the number of targeted

sources, SO_2 monitoring resources, and within a reasonable time horizon.

The EPA believes that new locations for siting monitors should be in the vicinity of sources suspected of causing short-term SO_2 peaks. Some examples of sources which emit SO_2 are petroleum refineries, sulfuric acid plants, fossil fuel-fired industrial boilers, utility boilers, pulp and paper mills, iron and steel mills, wet corn milling operations, nonferrous smelters, carbon black manufacturing, portland cement manufacturing, phosphatic fertilizer production, and natural gas production. This list is not exhaustive and could potentially include other process sources with known emissions of SO_2. These sources have the ability to emit relatively large quantities of SO_2 over short durations. Such large quantities of emissions may be due to releases from batch type operations, operational malfunctions or upsets requiring control equipment bypasses, control equipment malfunctions that can result in uncontrolled emissions to the atmosphere, startup/shutdown, short stacks subject to downwash, or fugitive emissions.

1. Ranking of Source Categories

The information most heavily relied on in developing this ranking of source categories was: (1) Available 5-minute air quality data documenting the number of high, short-term concentrations observed in the vicinity of

various sources by monitoring networks (Table 3-1, EPA, 1994b); (2) estimates of exposures from various source types, which integrated a source's likelihood to emit short-term SO_2 peaks with the size and activity of the surrounding population, as summarized in Table 3-5, Table B-1, and Table B-2 (EPA, 1994b), as well as accompanying documentation (Rosenbaum et al., 1992; Stoeckenius et al., 1990; Burton et al., 1987); and (3) the Geographic Targeting Data Base for nonutility sources that is derived from combining a census of manufacturing, the EPA Facilities Index System, and the EPA Aerometric Information Retrieval System (AIRS) into a projected source impact data set. This data base, which will be available through AIRS, is a data set of nonutility sources sorted on the projected annual process emissions per source and per size category.

In order to further refine the ranking of source categories, both within and between groups, EPA solicits technical information concerning several issues which include: (1) The likelihood of source categories to produce short-term SO_2 peaks; (2) the characteristics; within a source category which cause a subset of facilities to be more likely to produce short-term SO_2 peaks; and (3) the factors which are likely to drive the variability in SO_2 emissions of individual facilities within a source category.

The ranking described here separates source categories into three groups: A, B, and C. In pursuit of this targeting strategy, EPA intends to require States to evaluate groups A, B, and C sources and produce a refined monitoring plan. States are free to substitute, e.g., group B sources for group A sources in their priority schemes, but should provide a reasoned justification for finding that the risks posed by these sources justifies such substitution. Ultimately, EPA anticipates that sources in all three groups will be assessed for their exposure potential and appropriate actions taken to address them. The EPA believes that there is a higher probability of finding individual sources that produce high, short-term ambient concentrations of SO_2 within each source category in group A than in the other groups. As such, they are judged in general to pose the highest risk of exposing population in their vicinity to high, short-term concentrations of SO_2, as well as potentially exposing some individuals to several peaks per year.

The source categories within group A were generally found to meet two of the three following characteristics. Either the source category contained SO_2 sources which: (1) Have a high emission rate, (2) are near monitors which measured 5-minute peaks, or (3) are estimated, based on exposure analysis, to expose a high number of asthmatics

living in their vicinity at elevated ventilation rates to SO_2 concentrations greater than 0.6 ppm. In addition, these source categories are known to have short-term releases due to events discussed later.

Group A consists of the following source categories: Sulfite pulp and paper mills, primary copper smelters, primary lead smelters, aluminum smelters, and the top 20 percent of the petroleum refineries in terms of projected annual emissions of SO_2 as listed in the Geographic Targeting Data Base.

Source categories were selected for group B because they have high annual emissions or are subject to events leading to short-term releases of SO_2. In addition, in some instances, there were air quality or exposure data which indicate the source category to be of concern for emitting short-term SO_2 peaks.

The EPA judged group B source categories to have the potential to produce high 5-minute peaks of SO_2 but to pose less risk than group A because: (1) Air quality or exposure data indicated that the potential to emit high 5-minute peaks of SO_2 was less than for group A; (2) the grouping was based on annual emission data, but lacked 5-minute data to estimate risk; or (3) the overall risk posed by the source category was judged to be low. This was the case for industrial boilers because, while exposure analysis

indicated that this group was responsible for a considerable number of exposures, the exposures were attributed to a very small subset of industrial boilers. The EPA expects that States will examine their source categories within this group very closely for inclusion in the targeted SO_2 monitoring plan.

The group B sources are as follows: Kraft sulfate pulp and paper mills, secondary copper smelters, secondary lead smelters, the remaining petroleum refineries, iron and steel mills, carbon black manufacturing, portland cement manufacturing, crude petroleum and natural gas extraction processes, phosphatic fertilizer manufacturing, industrial boilers, and sulfuric acid plants.

Industrial boilers were placed in this group because they accounted for about 30 to 50 percent of the 5-minute SO_2 exposure events given in the staff paper supplement (Table 3-5, EPA, 1994b). However, in a study by Stoeckenius et al. (Table 2-14, 1990), approximately half of the total industrial boiler exposures were attributed to a very small proportion (< 2 percent) of the total population of industrial boilers analyzed. Good engineering judgment suggests that the use of higher sulfur coal and short stack height would contribute to an increased likelihood of producing ambient SO_2 peaks.

The group C source category consists of utility boilers. Although utility boilers can emit large quantities of SO_2, many power plants are not anticipated to cause 5-minute violations despite their high emission rates due to tall stacks and steady-state operating conditions. They are placed in group C because as a source category, utility boilers may be responsible for approximately 17 to 37 percent of total estimated exposures (Table 3-5, EPA, 1994b). However, the risk of exposures is very unevenly distributed across the sources in this category. Approximately 75 percent of the utility sector's post-title IV exposures were estimated to result from less than 10 percent of the power plants (Rosenbaum, 1992, Table 3, Burton et al., 1987).

With the passage of the 1990 Amendments, Congress created under title IV an SO_2 emission trading program as an integral part of the Acid Rain Program, which is designed to reduce SO_2 emissions by 10 million tons nationwide by the year 2010. Phase I, which begins in 1995, reduces emissions from the 110 largest emitting power plants, which are identified in table A of section 404 of the Act. The Acid Rain Program introduces a flexibility for sources to choose the most cost-effective compliance strategy to achieve their emission reduction obligations and to maintain the national cap of 8.95 million tons of SO_2 emissions. Compliance

flexibility may involve switching to low-sulfur coal, scrubbing, conservation, other emission control technologies, or buying SO_2 allowances.

Title IV sources participating in the Acid Rain Program are under the obligation to match their annual SO_2 emissions with their allowance holdings. They are also required to meet all other requirements of the Act and regulations that apply to them, including the NAAQS. Therefore, the compliance flexibility offered under the Acid Rain Program does not permit any source to violate regulations adopted to attain or maintain the SO_2 NAAQS. Emissions from these sources will be closely tracked, because title IV sources are also required to install continuous emissions monitoring systems (CEMS) and report to EPA on a quarterly basis their emissions of SO_2, nitrogen oxides, and carbon dioxide.

Further improvements in air quality are expected to be realized from the SO_2 emission reductions under Phase II of the Acid Rain Program to be implemented by January 1, 2000 under title IV of the Act. Because of the potential to have higher emissions and because of potential plume downwash and interaction of complex terrain, EPA is mainly concerned with those power plants that buy allowances rather than reduce emissions themselves in order to comply with title IV and those located in complex terrain, respectively. Complex terrain is defined for modeling applications as that terrain

exceeding the height of the stack, but this definition is being applied here for monitoring applications as well. In a study done for EPA, that is contained in the docket for this rulemaking (Polkowsky, 1991), many of the predicted exceedances of the SO_2 standards in the vicinity of power plants should be reduced or eliminated by allocating allowances based on a reduced rate under Phase II. Any remaining exceedances not addressed by the more restrictive Phase II emission rates will require a reanalysis of the SO_2 NAAQS control strategy demonstration and consideration of more restrictive emission limits to protect the air quality standards.

Because of the SO_2 reductions that will occur under the Acid Rain Program, the accurate stack monitoring of their emissions, and the long-range atmospheric transport of these emissions due to taller stacks at most large utilities, EPA believes that higher priority in placing ambient monitors should be given to nonutility sources. However, in instances at a particular power plant where the possibility of high 5-minute emission peaks still exists, EPA believes that consideration should be given by the State to locating monitors near the facility.

2. Other Considerations

In addition to the guidelines and groupings listed above, which are based largely on available information

concerning the likelihood of a source type to produce concentrated peaks of SO_2, States may have other information which may lead them to believe that a source located in a lower probability group should be made a higher priority for SO_2 monitoring. Of particular importance to consider is any available information on potential population exposure, inferred in part by the population in the vicinity of the source.

In addition, other information can be incorporated by States into an evaluation of the relative likelihood of sources under their jurisdiction to produce SO_2 exposures, thus refining their judgments on priority of monitoring decisions. Such other information can include 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_2 than a newer one), a history of past upsets or malfunctions, the type of fuel used, the type of terrain around the source (e.g., is the source in a river valley or on flat terrain), knowledge of how well the source is controlled, and a history of citizen complaints, and should be considered by the States when deciding which sources to monitor first. Such considerations would be noted in each State's targeted SO_2 monitoring plan presented during the annual SLAMS review as described below.

As part of the targeting strategy, the States will also need to decide how much relative weight should be given any particular source. For example, a State would have to determine how heavily to weigh a group A source in a less densely populated area versus a group C source burning a high sulfur fuel in a more densely populated area. In addition, some sources are often found collocated with other sources such as sulfuric acid plants with copper smelters. Industrial boilers may be located with any number of process sources. There may be small geographic areas where there is clustering of an assorted number of SO_2 sources. In these situations there is no precise way to determine what source should be targeted first at this point. For this reason, the decision making should rest with the States who have better knowledge of the individual circumstances pertaining to the potential sources to be targeted.

3. States' Targeted SO_2 Monitoring Program

The EPA will review and take appropriate action on the States' targeted SO_2 monitoring plans during the annual SLAMS network review process to ensure that States provide an adequate rationale for any deviations from the grouped approach. The States are then expected to present to EPA in a targeted SO_2 monitoring plan at the annual SLAMS network review their listing of sources to be monitored, the schedule for conducting such monitoring, and the rationale

for selecting these sources. Requirements for the targeted SO_2 monitoring plan are discussed later in this notice for part 58 but EPA expects the targeted SO_2 monitoring plan to be a dynamic process that could change depending on data gathered from early rounds of monitoring or changes at targeted sources, such as installation of control equipment.

Section 110(a)(2)(B) of the Act requires SIP's which provide for the establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor, compile and analyze data on ambient air quality. Should EPA determine that a State's targeted SO_2 onitoring plan is inadequate, then EPA expects to issue a call for a SIP revision under section 110(k)(5) of the Act based on a finding that the SIP is substantially inadequate in meeting the requirement of section 110(a)(2)(B). The EPA solicits comments on all aspects of this approach to grouping of sources to investigate potential air quality problems.

In the State targeted SO_2 monitoring plan, EPA expects SO_2 monitoring network reviews to be completed within 1 year of the effective date of promulgation of any of the three regulatory alternatives. Implementation of network revisions is expected to take longer.

4. Addressing the Problem

Regardless of the regulatory alternative chosen by the Administrator, those areas which have monitored exceedances of the existing or revised NAAQS or of a section 303 trigger level should undergo a compliance inspection by the State of the targeted source. If the source is out of compliance, EPA expects that the responsible air pollution control agency will initiate appropriate enforcement action to bring it into compliance, e.g., by using available administrative or judicial enforcement authorities. If the source is in compliance, the State will need to pursue other appropriate solutions to the problem as discussed later in section III.

The EPA encourages States to pursue, where appropriate, the enforcement and improved compliance options before other regulatory actions. In many cases, air quality problems may be due to poor operation and maintenance or other resolvable compliance problems. In these instances, enforcement action can result in timely resolution of violations and avoid the sometimes lengthy regulation development process. However, the State should pursue existing regulatory options where the regulations are inadequate, e.g., because the source is in compliance with the existing regulations and an air quality problem still exists.

C. Relocating Monitors

The EPA's criteria for the network design of monitors are discussed in 40 CFR part 58, appendix D. Elsewhere in this notice, EPA is proposing changes to part 58 in order to implement the proposed targeting program. The EPA recognizes that it is not a trivial matter to relocate monitors and that there are concerns that agencies will need to consider in making relocation decisions.

1. Resource Concerns

The EPA believes that the resources currently devoted to monitoring ambient concentrations of SO_2 may be more effectively utilized through systematic evaluations and reconfigurations of existing monitoring networks. However, even if States and locals acquire no additional SO_2 monitors and rely solely on the current number of monitors, there will be some costs incurred when relocating monitors. Costs associated with moving a monitor include the resources taken in locating new sites and negotiating leases along with the capital costs of a new shelter and associated equipment. Because of the costs for relocating monitors, not all monitors freed up can be immediately placed around a targeted source, but will be phased in over a period of time. The operating costs saved by not operating these monitors will be used toward the costs of relocating monitors.

In more detail, the costs for moving an SO_2 monitor have been calculated in 1994 dollars to be $60,940 per site. These costs include initial capital costs, operation, and amortization. The initial costs include network design and site selection, land lease, power drop, shelter, site preparation, calibration equipment, data logger, quality assurance plan preparation, etc. The operation costs include routine site visits, repairs, maintenance, data acquisition and reporting, quality assurance calibrations, and supervision. The amortization costs for replacement capital equipment were also calculated.

The total costs for the initial 3 years are summarized as follows. The existing network of 679 NAMS, SLAMS, and industrial monitors costs about $16 million per year. The first year costs for reconfiguration and operation of NAMS, SLAMS, and industrial monitors in order to comply with changes to 40 CFR part 58, which is being proposed in this notice and is not a result of the targeted implementation strategy, is estimated to be $12.4 million per year. This will leave an available $3.6 million to be used toward the targeted implementation strategy the first year to establish and operate four monitors around 15 sources.

The second year costs for operating the NAMS, SLAMS, industrial, and targeted implementation strategy monitors is estimated to be $9.6 million dollars, making available $6.4

million for the targeted implementation strategy. This will allow for establishing sites around 26 sources in addition to the 15 sources from the first year for a total of 41 targeted sources.

The third year costs for operating monitors are estimated to be $11.4 million, leaving $4.6 million for the targeted implementation strategy. This will allow for establishing sites around 16 sources in addition to the 41 sources established in the first and second years for a total of 57 targeted sources. The EPA estimates that monitors at 7 of the 15 sources established in the first year would be moved in the third year due to no monitored violations.

2. Siting Concerns

The EPA is aware of the many considerations that arise when siting monitoring stations. Monitors are usually sited where electrical power is already available, they are reasonably secure, the immediate environment satisfies the siting criteria of part 58, and they are in proximity to the desired locations. Waiver provisions are also included in the regulations to deviate from siting criteria when appropriate. Generally, monitors are sited at or within reasonable proximity of the desired locations. For purposes of convenience, monitors are sometimes sited where other pollutants are already monitored.

When conducting the SO_2 network review, EPA-approved air quality models and saturation studies may be used to predict locations where maximum concentrations are expected within the vicinity of SO_2 sources or clusters of sources. As discussed earlier, models can be used in a qualitative sense to predict relative ambient impacts and are useful as a tool for establishing preferred monitor locations for predicting 5-minute concentrations.

3. Trends Data Concerns

A potential concern regarding the movement of monitors is the effect on EPA's ability to detect and evaluate trends in air quality. When monitors are operated in the same locations for several years, it is possible to account for the effects of meteorology, seasonal patterns in air pollutant concentrations and other variables specific to a monitor location. When monitors are moved, the confidence in detecting trends in air pollutant concentrations is compromised due to a new set of variables that may affect ambient concentrations at the new location.

The EPA needs to maintain a certain number of monitors for detecting and evaluating trends in air pollutant concentrations. However, EPA believes that a sufficient number of monitors now used for trends analyses are not critical to the objectives of trends reporting and should be considered for relocation. Elsewhere in this notice, the

EPA is proposing changes to 40 CFR part 58, appendix D, in which a minimum number of SO_2 monitors in the metropolitan areas will be retained for trends purposes.

4. Barriers

Certain institutional barriers may be encountered in some attempts to relocate monitors. These stem from the separate political entities responsible for implementation of air pollution control programs at the State and local levels throughout the U.S. Where monitor sites considered for relocation are within the boundaries of one political entity, the problems are diminished, since the resources necessary to maintain existing monitoring sites may be redirected to the new sites, providing the SO_2 monitor is not sharing a site with other pollutant monitors. Sites in a network around targeted sources of SO_2 emissions which are located in different States or air pollution control districts may present some added difficulties. In such cases, resources, such as grants for support of air pollution planning and control programs as allowed under section 105 of the Act, may be redirected by EPA to aid in relocating and maintaining new monitoring stations.

5. Conclusion

In general, EPA believes that a portion of the monitors now directed to monitoring ambient air quality in population areas for trends purposes should be considered for

relocation. While EPA may not normally require monitors operated by industries to be relocated and thus industry-operated monitors will not be candidates for relocation, EPA strongly encourages companies to evaluate their networks in light of today's notice. However, quality-assured data from such monitors could allow for the relocation of nearby SLAMS monitors to other locations if monitored air quality concentrations from industry-operated monitors provide assurances that the SO_2 NAAQS are maintained.

D. Compliance and Enforcement Issues

Certain compliance and enforcement issues will arise only if either the section 303 alternative or the new 5-minute NAAQS alternative is selected. The issues are how to determine compliance to ensure protection of a trigger level or NAAQS that has a 5-minute averaging period, and what actions are appropriate by the State when the cause of the violation may be process upsets, startup or shutdown, batch operations, or other nonsteady-state sources. As is currently done with the NAAQS, measurement of SO_2 ambient air concentrations with ambient air monitors under each of the three proposed regulatory alternatives will serve as indicators of compliance. Enforcement will be based on the results of compliance inspections at the source, and the compliance inspection will be based on requirements in the applicable operating permit or SIP. In most instances, EPA

believes that in order to ensure protection of the 5-minute NAAQS or trigger level, compliance will need to be determined through sources meeting recordkeeping and reporting requirements or carrying out any other agreed-upon actions designed to reduce short-term emission peaks.

1. Averaging Times for Emission Limits

Under EPA's policy for emissions averaging under the current SO_2 NAAQS, sources are to be controlled through the imposition of emission limits having averaging times consistent with the averaging period of the air quality standard of concern. As an example, in order to protect the SO_2 ambient air quality standard that has been established for a 24-hour period, mass emission limits for sources should normally allow averaging of emissions over no more than a 24-hour period when determining compliance with the limits. The purpose of this is to restrict extreme variations in emissions of short duration that might otherwise be allowed to occur if emission variations are averaged over much longer periods (e.g., 30 days). Air quality concentrations in excess of the standard could be produced while sources are still complying with long-term average emission limits by reducing emissions sufficiently at other times within their emission averaging periods.

A variety of emission limit averaging times had been developed by State and local agencies for SIP's both prior

and subsequent to the implementation of this policy on averaging. As a result, those SIP's with averaging times inconsistent with the policy that were adopted prior to implementation of the policy are included in an effort by EPA to correct general SIP enforcement deficiencies. The EPA has not taken final action on those rules developed subsequent to the policy.

The EPA has allowed the use of stack tests and analysis of fuel samples for sulfur content as surrogates for continuous compliance monitoring with the emission limits. In many cases, these methods will continue to be feasible for ensuring compliance with a 5-minute trigger level or NAAQS. Technically, SO_2 emissions can be measured in a stack at intervals less than 5 minutes using Method 6c (the instrumental analyzer procedure) in Appendix A of 40 CFR part 60 or by using a CEM. However, EPA believes that in many instances 5-minute releases of SO_2 that would cause exceedances of a 5-minute NAAQS or trigger level will occur at unpredictable times or as fugitive emissions (i.e., not through a stack), making stack tests an impractical compliance method. Nor may sampling fuel at 5-minute intervals be a practicable alternative as in the case of coal in which sulfur content may not be homogeneous. In addition, the source of the emission may not be due to combustion of fossil fuel but to chemical process emissions.

The EPA believes that in most instances, in order to attain a 5-minute NAAQS or trigger level, the State will not be able to rely on measurable emission limits but instead on actions by the source to, for example, modify equipment or process or to have improved maintenance that will address the emission releases that are causing 5-minute exceedances. Because of these potential limitations to determining compliance of emission limits designed to protect a 5-minute NAAQS or trigger level, compliance will in most instances need to consist of the State ensuring that the source has implemented the necessary remedies. Verification that actions have been effective will require that ambient air monitoring continue for a reasonable period, e.g., another 2 years following the corrective action. However, in those instances where emissions can be feasibly measured on a 5-minute basis or it is determined that fuel sampling is a feasible compliance indicator, the State may elect to set an emission limit and use emission measurement or fuel sampling as the method for determining compliance.

2. Malfunction Policy

As stated previously, EPA has on occasions 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 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. Clearly, in many cases, forces of nature such as floods, tornadoes and lightning strikes can overwhelm a source's ability to function in a normal fashion and may produce conditions that preclude proper operation of sources or control equipment. However, some conditions may be reasonably anticipated and proper design of equipment can ameliorate their effects (e.g., grounding of equipment for lightning protection, observation of flood plains, etc). It is possible in some cases to address this through design of redundant control systems to guard against the release of uncontrolled emissions to the atmosphere should one system suffer a malfunction; however, the cost may be prohibitive and such systems are not uniformly required. Some SO_2 control systems offer this protection, such as dual acid plants operated in parallel at petroleum refineries. Should one plant experience operational problems in such cases, the other is available to provide a continued partial level of sulfur (and ultimately SO_2) removal.

3. Conclusion

As is currently done, where there have been monitored violations of the 24-hour, 3-hour, or 5-minute SO_2 NAAQS or trigger level, the State shall be required to determine the source of the SO_2 emissions and investigate the cause of the emissions at that source. Where the results of these investigations demonstrate that improper operation and maintenance practices and/or poor control equipment design are primarily responsible for release of uncontrolled emissions to the atmosphere, the State shall be expected to work with the source to take appropriate actions to reduce inadequately controlled source emissions.

For purposes of verifying the results of any corrective actions taken and compliance, the EPA intends to rely on continued ambient air monitoring. The EPA also anticipates the need to review the implementation of its malfunctions policy in light of the concerns discussed in this document with the possible result of more stringent showings required to justify the conclusion that malfunctions are truly unavoidable. Recordkeeping based on earlier baseline assessments of the problem at the source should be maintained at the source to assist in evaluations should further exceedances be monitored.

III. Requirements Associated With Retention of Existing NAAQS

The State is not required to revise its SIP to address 5-minute, high concentrations of SO_2 if the existing NAAQS is retained. However, in concert with changes in monitoring requirements for part 58 proposed in this document, as discussed above, EPA is proposing to require States to implement a targeting strategy to more aggressively monitor process sources that are likely producing high concentrations of SO_2 even if for short periods of time. As described previously, the targeted strategy will be implemented through the annual SLAMS network review during which the States will report on progress made the previous year. The EPA believes that the results of such a targeting strategy will reduce the possibility and frequency of 5-minute high-concentration SO_2 exposures as an incident to more effectively monitoring peak SO_2 concentrations and by bringing into compliance those sources violating the existing NAAQS. However, EPA acknowledges that there may be occurrences of SO_2 releases which could exceed the 5-minute NAAQS or section 303 trigger level proposed in the part 50/53 notice and not exceed the current SO_2 NAAQS. In those cases, the State should, nevertheless, conduct compliance inspections in the eventuality that the source is out of compliance with current SIP requirements. Beyond these measures, EPA would not have authority to take further actions under the title I SIP program.

If violations of the current NAAQS cannot be resolved through compliance and enforcement (i.e., the source is in compliance), then the State will be expected to take steps to reduce emissions on its own initiative by revising the emission limit, by requiring process modifications, or other control measures. The State shall then prepare a SIP revision for EPA approval in order to make the emission reductions federally enforceable. In the event that a State does not take these steps, then EPA can take either of two actions: (1) If the area is currently designated attainment, using the authority under section 107(d) to redesignate the area nonattainment; and/or (2) issuing a SIP call under section 110(k)(5) of the Act to notify the Governor of the State that the SIP is inadequate to attain and maintain the SO_2 NAAQS and to call for a SIP revision as necessary to correct such inadequacies.

There are advantages and disadvantages in using either the nonattainment redesignation or SIP call approach. For instance, the nonattainment redesignation process, in addition to requiring expeditious attainment of the standard, imposes the requirements applicable under part D, title I, of the Act (e.g., reasonably available control measures (RACM), reasonable further progress (RFP), nonattainment NSR, and contingency measures), and requires

sanctions and FIP's if the SIP is not developed and implemented in a timely manner.

While these part D requirements may well be useful in effectively addressing the air quality problem, plan development may proceed more quickly in response to a SIP call in some cases because the SIP call does not entail the process and time needed to undertake a redesignation of an area (including the notification of the Governor required under section 107(d)(3)). The SIP submitted in response to a SIP call under section 110 must also provide for expeditious attainment of the NAAQS. A disadvantage of relying on SIP calls for attainment areas is that, unless an area is otherwise subject to section 173 permit requirements, no mandatory sanctions are applicable in the event the State fails to respond adequately to the SIP call. The discretionary air grant funding sanction under section 179 remains available for attainment areas, however. The requirement for EPA to promulgate a Federal plan if the State fails to submit an approvable SIP is wholly applicable for either option.

In addition to the advantages and disadvantages just described, decisions about which regulatory approach to use should consider factors specific to the affected area. Among the factors EPA will consider are the following:

(1) The magnitude of the violation.

(2) The persistence of violations.

(3) The exposure potential. (For example, is it near a population center or a school?)

(4) The State's regulatory process. (For example, is it lengthy; does the legislature only meet periodically? Would the timeline of one option fit better within the State's regulatory frame work?)

(5) Other sources in the area. (For example, can culpability be clearly determined? Would one process facilitate that determination of culpability over the other? Is new source growth anticipated?)

(6) The need for a more objective level of control.

(7) The type of information available for indicating a problem exists (monitoring, modeling, others).

(8) If there is uncertainty associated with modeling and/or past history of failing to attain the standard, does the action taken provide for appropriate contingencies that can be implemented if the area fails to provide a SIP or to attain and maintain the standards?

(9) Is there a need for long-range planning for the area and does the approach taken facilitate this planning effort?

IV. Requirements Associated with Retention of Existing NAAQS and Implementation of a Section 303 Program

In attempting to address health concerns with population exposure to high concentrations of SO_2 for short periods of time, one of the alternatives that EPA considered in the part 50/53 notice is to reaffirm the existing SO_2 NAAQS and at the same time to promulgate a trigger level for implementation of a program under section 303 of the Act. The basic rationale and legal authority for that program are discussed in that notice. What follows in more detail is the proposed implementation program, including the proposed regulatory text. The EPA believes that a targeted implementation strategy, as already discussed, could be used to find sources that would be subject to further emissions or operational control under a section 303 program. The EPA believes that a program to protect the public from exposure to high concentrations of SO_2 for short periods of time may be successfully implemented under section 303. The type of program EPA is proposing to implement would require States to submit contingency plans to EPA that would require certain actions on behalf of the State and source once an established ambient SO_2 concentration ("trigger level") is violated. The State would be required to take certain actions to determine the source of the emissions and to protect against future violations of the trigger level.

As described in the part 50/53 notice concerning the regulatory alternative of the section 303 program, EPA believes that sections 303, 110(a)(2)(G), and 301 provide adequate legal authority to establish this program and to promulgate regulations to implement it. As with the existing section 303 program, EPA's proposed regulations require States to adopt contingency plans under section 110(a)(2)(G) to carry out the program. The EPA is proposing to require that each State submit such plans to EPA within 18 months of the promulgation of final regulations establishing a section 303 program. The EPA believes that section 110(a)(2))G) authorizes EPA to require these submissions and that 18 months is an adequate period of time to develop and submit the programs to EPA for approval.

Once the section 303 trigger level has been violated, EPA proposes that the following actions occur. First, within 30 days of a violation of the trigger level, the State would carry out a compliance inspection of the culpable source. The EPA recommends that the State not wait for a violation but conduct a compliance inspection after the first exceedance. If the source is out of compliance with its existing emission limits, then the State would take the necessary steps to bring the source into compliance within 30 days of the compliance inspection. If, however, the State determines that bringing the source into

compliance with its existing emission limits would not be likely to prevent further exceedances of the trigger level, or the State determines the source to be in compliance with applicable emission limits, then further action would be needed. In such circumstances, the next step would be for the State and source to examine the cause of the emissions. Once that is determined, enforceable actions would need to be developed to address the cause of the pollution. These actions must eventually be made federally enforceable by adopting them as source-specific SIP revisions. The EPA proposes to require that actions be taken within 60 days of the compliance inspection and provide for implementation of any new control measures as expeditiously as practicable. The EPA expects that the control measures that may need to be implemented to prevent recurrences of 5-minute SO_2 peaks may include better maintenance of control equipment, better capture of fugitive emissions, raising the stack height, or other innovative control measures.

The EPA believes that the actions required of States and sources would provide adequate protection against the recurrence of high, 5-minute SO_2 peaks once such emissions are identified as a problem for particular sources. The EPA also believes that the time periods for taking action that it is proposing are reasonable periods, as they provide sufficient time for the required actions to take place,

while assuring that any necessary corrective actions will be taken and implemented as expeditiously as practicable.

The EPA would also retain the ability to take whatever actions it believed appropriate directly under section 303. Thus, EPA could take direct action under section 303 prior to the adoption of State contingency plans if needed, or take action after their adoption if circumstances warranted such Federal action. Moreover, once the section 303 contingency plans have been adopted and incorporated into SIP's, EPA may directly enforce their provisions pursuant to section 113 of the Act.

However, it is EPA's position that the States are primarily responsible for carrying out actions under this section 303 program. If a State does not exercise its responsibility under section 303 once a trigger level has been violated, EPA intends to consult with the State prior to taking action itself.

The EPA is proposing to add an Appendix X to 40 CFR part 51 which explains the computations necessary to determine from monitoring data whether the 5-minute trigger level has been exceeded or violated. Appendix X defines several terms, among them, "5-minute hourly maximum," "exceedance," "expected exceedance," and "violation." Appendix X explains the convention used to calculate

expected exceedances, which essentially is a procedure which makes an adjustment for missing monitoring data.

In brief, the 5-minute trigger level is not violated when the number of expected exceedances per year is less than or equal to one. In general, this determination is made by recording the number of 5-minute hourly maximum exceedances at a monitoring site for each year, making the adjustment for missing data (if required), averaging the number of exceedances over a 2-year period, and comparing the number calculated to the allowable number of exceedances (one). The 2-year period reduces the likelihood of a source being penalized for a violation that may be attributed to a one-time event. Aside from changes in terminology to make the language appropriate for a section 303 program rather than a NAAQS, the proposed Appendix X is identical to the Appendix I to 40 CFR part 50 for interpreting the 5-minute NAAQS for SO_2 that was proposed in the part 50/53 document. The EPA is soliciting comments on Appendix X.

V. Requirements Associated with New 5-Minute SO_2 NAAQS

The EPA proposed in the part 50/53 document a new primary 5-minute SO_2 NAAQS which would be in addition to the 24-hour and annual primary SO_2 NAAQS. Should this new 5-minute NAAQS be promulgated, EPA intends to initiate the targeted implementation strategy previously described to determine which areas are not meeting the new 5-minute

NAAQS. In addition, EPA and the States will need to initially meet statutory requirements under sections 107 and 110. In general, these requirements are that the States must submit their initial suggested designations and statewide SIP's to EPA. Later, if areas are designated or redesignated to nonattainment, then EPA and the States must meet the requirements under section 172. The requirements under sections 107, 110, and 172 of the Act are discussed in detail below. The rationale for any requirements which are discretionary, such as setting timeframes, or which need interpretation, are also discussed. Since the current annual, 24-hour, and 3-hour NAAQS are retained under this option, all existing requirements, such as SIP submittal and attainment dates, will remain in place as to the current NAAQS.

A. Targeted Implementation Strategy

Should a new 5-minute NAAQS be promulgated, EPA intends to initiate the targeted implementation strategy previously described to determine which areas are not meeting the revised 5-minute NAAQS. And as described, the States should initially attempt to address any violations through compliance inspection and, if necessary, enforcement actions.

Because of the modeling issues discussed previously (II.A.1.), the targeted implementation strategy relies

principally on monitoring. The use of models is advocated at this time for establishing section 107 designations under a 5-minute SO_2 NAAQS due to a lack of evaluation results concerning model performance, or defining the precision and bias of modeled 5-minute ambient SO_2 concentrations. However, models may still be used under a new 5-minute SO_2 NAAQS program for the following purposes:

(1) Models may be useful as a tool for developing control strategies. When evaluating emissions from complex sources, they may provide information on the relative contributions to ambient SO_2 concentrations from various sources of emissions. Receptor modeling may be a useful tool for developing control strategies for complex sources. The use of tracers or "tramp elements" in association with these models would be needed for SO_2 emission sources to determine source locations and relative contributions to ambient SO_2 concentrations.

(2) Models can be and are recommended as a useful tool for evaluating the design of monitoring networks for a 5-minute SO_2 standard. They can provide useful information in a relative sense for determining points of maximum impact providing the characteristics of the emission source are not too complex or uncertain.

B. Designations - Section 107

1. Statutory Requirements

The 1990 Amendments require EPA to promulgate designations, of areas for new or revised NAAQS. Section 107(d)(1)(A) of the Act requires States to submit designations, and section 107(d)(1)(B) requires EPA to promulgate designations of all areas (or portions thereof) with respect to new or revised NAAQS as nonattainment, attainment or unclassifiable. The specific requirements of section 107(d)(1)(A) and (B) of the Act are described below. An area which is designated nonattainment is one that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the NAAQS for the pollutant. An area which is designated attainment is one which meets the NAAQS for the pollutant. An area which is designated unclassifiable is one that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for the pollutant. Also, while section 107(d)(1) provides for States to submit a list of areas designated, it authorizes EPA to modify the designations submitted by the States. Once an area's initial designation is promulgated, any change in the designation status is accomplished pursuant to section 107(d)(3) of the Act.

2. Timeframe for Submittal of Designations by State

As mentioned above, section 107(d)(1)(A) of the Act requires States to submit a list of all areas (or portions thereof) in the State designating them as nonattainment, attainment or unclassifiable for SO_2. States must submit such list of areas (or portions thereof) in a timeframe EPA deems reasonable but not later than 1 year after the effective promulgation date of the new or revised NAAQS. The EPA cannot require the States to submit the list of areas in less than 120 days, however.

The EPA intends to require that the initial SO_2 designations be submitted not later than 1 year from the effective date of promulgation of the revised standard in order to allow the States as much time as possible to gather the necessary data to make the designation determinations. The EPA believes that, in most instances, areas will need to be initially designated unclassifiable due to lack of adequate ambient air monitoring data and the inability to rely on models for predicting 5-minute SO_2 concentrations. By giving the maximum time allowed under the Act, States may have enough time to gather the data needed to make an adequate determination of an area's designation status. Nonetheless, EPA encourages States to submit designations sooner, wherever possible, in order to provide improved protection of public health.

3. Determining Initial Designation of an Area

The EPA expects, in most instances, to initially designate areas as unclassifiable due to the lack of complete data or no data at all reported for 5-minute averaging time increments. Most of the existing ambient monitoring data are not reported for 5-minute averaging time increments, and EPA believes that those that are reported in this manner may not meet the data completeness criteria required by the proposed SO_2 NAAQS (see discussion in revisions to CFR part 50, appendix I, published in the part 50/53 document). Revising the SO_2 NAAQS to include an additional primary standard set at 5-minute and 0.60 ppm necessitates that most ambient monitors be respanned to measure the higher concentration.

In anticipation of a revised NAAQS, EPA has requested that the States respan monitors to begin measuring for higher concentrations. In these cases, EPA and States may have data to provide as a basis for initially designating an area as nonattainment.

The EPA understands that in some instances States may want to request that certain areas be initially designated attainment for the revised SO_2 NAAQS. An area will not be initially designated as attainment based solely on ambient monitoring data since no requirements have been issued to ensure complete data. Data completeness is a significant

issue when trying to determine if an area is attaining the NAAQS as opposed to determining if an area is not attaining the NAAQS. However, areas with no SO_2 sources as shown by their emission inventory would be likely candidates for an early attainment designation. Providing ambient air monitoring data does not indicate otherwise, EPA intends to designate an area as attainment if the State can show in its emissions inventory that the area does not contain any potential major source of SO_2 as defined in the Act. This does not preclude the State or EPA from initially designating an area unclassifiable, if there is reason to believe there is an SO_2 source which may be causing a violation of the revised NAAQS in the area. The EPA believes this guidance gives reasonable assurance that the area is in attainment of the revised NAAQS. This does not prevent EPA or the State from redesignating an area, initially designated unclassifiable, to nonattainment at a later time should ambient air monitoring data indicate that the area is violating the NAAQS.

4. Determining the Boundaries of Designated Areas

States should identify the boundaries of the nonattainment, attainment and unclassifiable areas when submitting designations for the revised SO_2 NAAQS. In the absence of data or more specific boundary information, it may be more appropriate to define SO_2 nonattainment

boundaries by the perimeter of the county in which the ambient SO_2 monitor(s) recording the violation is located. Alternatively, it might be appropriate to define the nonattainment area using monitoring or other data to determine more specifically the geographic area that is nonattainment. In addition, if the ambient monitor measuring violations is located near a county boundary, then EPA recommends that the adjacent county also be designated as nonattainment for SO_2. In some situations, however, a boundary other than the county perimeter may be appropriate. States may choose, alternatively, to define the SO_2 nonattainment boundaries by using any one, or a combination, of the following techniques: (1) Qualitative analysis, (2) spatial interpolation of air monitoring data, (3) air quality simulation by dispersion modeling, or (4) saturation monitoring. If a State defines an SO_2 nonattainment boundary using one of the methods above, EPA requires that it submit a defensible rationale for the boundary chosen with the Governor's request to designate the area.

Boundaries for attainment areas can be drawn along current political boundaries if the State can show in its emissions inventory that the area does not contain any potential major source of SO_2 as defined in the Act, nor any of the sources listed in the previous section on determining the initial designation of an area.

All areas of the State not designated attainment or nonattainment will be designated unclassifiable. The boundaries of the unclassifiable area will be the "remainder of the State."

5. Promulgation of Designations by EPA

Section 107(d)(1)(B)(i) of the Act requires that EPA promulgate the designations submitted by States as expeditiously as practicable, but not later than 2 years from the date of promulgation of the revised SO_2 NAAQS. This period may be extended for up to 1 year where EPA has insufficient information to promulgate the designations. The EPA may make any modifications deemed necessary to the areas (or portions thereof) submitted by the State (see generally section 107(d)(1)(B) of the Act). However, no later than 120 days before promulgating a modified area, EPA must notify the affected State and provide an opportunity for the State to demonstrate why any proposed modification is inappropriate.

The EPA expects in many cases to require the full extension of 1 year before promulgating the designations of many areas as allowed under section 107(d)(1)(B) of the Act. The full extension would be needed in these cases in order to allow States and EPA to respan or relocate monitors and collect complete ambient data to better ascertain the designation status of areas with monitors. Therefore, EPA

generally intends to promulgate the initial area designations within 3 years from the effective date of promulgation of the revised SO_2 NAAQS.

Designations promulgated pursuant to section 107(d)(1) of the Act are exempt from the Administrative Procedures Act requirements for notice-and-comment rulemaking (5 U.S.C. section 553-557) (see section 107(d)(2)(B) of the Act). Therefore, when EPA promulgates designations with respect to the revised SO_2 NAAQS, it may or may not promulgate the designations through notice-and-comment rulemaking.

6. Failing to Submit Designations

If the Governor of a State fails to submit the required SO_2 designations, in whole or in part, EPA is required to promulgate the designation that EPA deems appropriate for any area (or portion thereof) not designated by the State (see section 107(d)(1)(B)(ii) of the Act). The EPA will do so no later than 3 years after the date of promulgation of a new NAAQS.

C. State Implementation Plans (SIP's)

Section 110(a) establishes the general requirements for SIP's. In addition, subparts 1 and 5 of part D of title I of the Act establish additional requirements concerning SIP's for areas designated nonattainment for SO_2. These requirements concern the content of the SIP's, the applicable dates by which nonattainment areas must attain a

new SO_2 NAAQS, and the schedule for the submission of the SIP's.

1. General SIP Requirements - Section 110(a)

All SIP's, regardless of whether they concern areas designated nonattainment or not, must meet the general SIP requirements of section 110(a). Section 110(a)(1) provides that each state must submit a SIP to provide for the implementation, maintenance and enforcement of a primary NAAQS in each air quality control region within the State (hereinafter referred to as "statewide SIP's"). Section 110(a)(2) sets forth the elements that a SIP must contain in order to be fully approved. These elements are discussed in the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 (57 FR 13556-57).

2. General SIP Requirements - Section 110(a)(2).

(a) Statutory and Existing Regulatory Requirements. Regulations for the preparation, adoption, and submission of SIP's under section 110 of the Act were initially published November 25, 1971 (36 FR 22369) and codified as 40 CFR part 51. The 40 CFR part 51 has been modified from time to time since then. On November 7, 1986 (51 FR 40656), EPA restructured and consolidated the 40 CFR part 51 regulations to make them easier to follow and revise in the future.

The 1990 amended Act did not substantially change the SIP requirements in section 110(a)(2) of the Act. For the most part, EPA believes that the existing regulatory framework, i.e., 40 CFR part 51, defines the general section

110(a)(2) SIP requirements for SO_2. However, as a result of a revised SO_2 NAAQS, data handling practices, and specified SIP submittal timeframes in the Act, some revisions to 40 CFR part 51 are necessary. The specific revisions to 40 CFR part 51 are discussed in another section entitled "Regulatory Revisions." The EPA also notes that under section 193, anything in part 51 that is inconsistent with the 1990 Amendments is superseded even if EPA has not yet revised the regulations. A discussion of the statewide SIP requirements is provided below.

(b) Statewide SIP's for the Revised SO_2 NAAQS. For the most part, States have already adopted, as part of their overall SIP for current SO_2 NAAQS, rules or regulations which satisfy the majority of the general SIP requirements in section 110(a)(2) of the Act and the existing 40 CFR part 51. At this time, the EPA does not envision that States will have to develop substantial new general regulations for the statewide SIP's for the revised SO_2 NAAQS. The EPA will issue appropriate guidance in the future in the event that this assessment changes.

There are two requirements, in particular, under section 110(a)(2) that must be met by the States upon promulgation of a revised SO_2 NAAQS. Section 110(a)(2)(B) requires the establishment and operation of appropriate

ambient air monitoring systems, data from which must be made available to the Administrator upon request. Coupled with this is a requirement under section 110(a)(2)(E) that States have adequate resources and authority to implement the SIP.

(c) New Source Review Issues. Section 110(a)(2)(C) of the Act requires States to protect the NAAQS by providing for the regulation of the construction and modification of stationary sources. In areas that are designated as attaining the NAAQS, as well as areas that are designated as unclassifiable under section 107 of the Act, each implementation plan must contain legally-enforceable requirements which enable the State to determine whether the construction or modification of stationary sources will interfere with maintenance of the NAAQS (see section 161 of the Act). For major stationary sources that locate in attainment or unclassifiable areas, the Act requires that comprehensive preconstruction review requirements under PSD of the air quality program contained in part C, title I, of

the Act must be satisfied[1] (e.g., sections 160-169 of the Act).

The EPA has set forth SIP requirements at 40 CFR 51.166 containing the minimum requirements by which a State preconstruction review permit program will be considered to meet with the statutory requirements for PSD.[2] In very broad terms, these requirements provide for the imposition of best available control technology at new and modified major stationary sources for each pollutant subject to regulation under the Act, and provide for review of the potential air quality impacts of such sources and modifications (e.g., section 165(a) of the Act).

The current PSD program requirements under 40 CFR 51.166, which protect the existing primary and secondary NAAQS for SO_2, will also be protective of a new 5-minute SO_2 NAAQS in that the regulations prevent the issuance of a PSD

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[1]The statutory PSD requirements apply to new major stationary sources and modifications of existing major stationary sources. A "major stationary source" is: (1) Any source from a statutory list of 28 source categories that emits, or has the potential to emit, 100 tons per year (tpy) or more of a regulated pollutant; or (2) any other source that emits, or has the potential to emit, at least 250 tpy of a regulated pollutant (see section 169(1) of the Act).

[2]The EPA has also promulgated regulations for a Federal PSD program at 40 CFR 52.21. The Federal program applies to States that do not have EPA-approved PSD programs as part of their SIP.

permit to a major source that would cause or contribute to a violation of any NAAQS (51.166(k)). However, while no changes to the existing requirements are needed to ensure the new or modified PSD source must evaluate their ambient impacts against a new 5-minute standard for SO_2, EPA has reviewed certain existing PSD provisions at 51.166 (and corresponding provisions at 52.21) to determine whether changes may be needed to ensure that a new 5-minute SO_2 standard, as proposed in the part 50/53 document, would be adequately protected.

Several of the existing PSD provisions rely on Agency-prescribed significance levels to determine whether any pollutant that would be emitted by a new or modified major stationary source must undergo comprehensive permit review. First, EPA uses significant emissions rates (expressed in tons per year) to determine whether a regulated pollutant (other than a pollutant emitted in major amounts) to be emitted by a new or modified major stationary source must undergo PSD review[3] (e.g., 51.166(b)(23)(i)). Second, significant ambient impact concentrations are used to determine whether a source must undergo an impact analysis

[3]The PSD review requirements apply to any regulated pollutant which a new or modified major stationary source would emit in significant amounts. Thus, a source may be "major" for only one pollutant, but PSD review would apply to other pollutants emitted in "significant" amounts.

to show that it will not contribute to a violation of the NAAQS or PSD increments (51.165(b)). Finally, significant monitoring concentrations are used to determine whether the reviewing authority may exempt a source from the ambient monitoring requirements for a particular pollutant (e.g., 51.166(i)(8)).

As described below, the EPA examined each applicable significance level used for SO_2 in order to determine whether a 5-minute standard for SO_2 would necessitate any revisions to the existing levels. In each case, EPA has determined that sufficient information is not presently available to warrant any revision to the existing levels.

The significant emissions rate for SO_2 is currently defined as an emissions rate of 40 tpy or more under the PSD regulations. New or modified sources that would emit significant amounts of SO_2 must undergo PSD review for that pollutant. Conversely, de minimis amounts of SO_2 emissions are exempt from further review. The existing significance level for SO_2 is based on the premise that an emissions rate that would result in ambient concentrations equaling at least 4 percent of the 24-hour primary standard should be considered significant (45 FR 52676, 52707-52708 (August 7, 1980)). In order to help determine whether the existing significant emissions rate for SO_2 would be appropriate, based on the same criteria, for the proposed 5-minute

standard, EPA would need to predict the 5-minute concentration that results from a source emitting 40 tpy of SO_2. The absence of an approved methodology for either directly modeling 5-minute SO_2 concentrations or converting modeled concentrations of SO_2 from a given averaging period (e.g., 3-hour, 1-hour) to a 5-minute average precludes EPA from completing its analysis of the adequacy of the existing significant emissions rate. Should EPA adopt a 5-minute NAAQS for SO_2, EPA will further study the need for revisions of the significant emissions rate.

Because of the present difficulties associated with efforts to model 5-minute ambient concentrations of SO_2, EPA has also determined that it would be inappropriate to establish a significant ambient impact level for a 5-minute SO_2 NAAQS. In the event that adequate data and the appropriate performance evaluations become available to support the use of dispersion models to estimate 5-minute SO_2 concentrations in the future, EPA will consider the establishment of a 5-minute SO_2 significant ambient impact concentration.

Under the existing regulations, the reviewing authority may exempt a proposed major stationary source from the PSD pre-application monitoring requirements (40 CFR 51.166(m)) if either the air quality impacts resulting from the source, or the existing ambient concentrations of the particular

pollutant in the area of the source, are less than the prescribed significance level for that pollutant. For SO_2, the significance level is 13 μg/m^3 (24-hour average). Since models are not available for a source to project its ambient impact for 5-minute averaging periods, EPA believes that consideration of a new significance level for SO_2 based on a 5-minute averaging time is not practical at this time. Instead, EPA proposes to continue using the existing 24-hour significance level in conjunction with the pre-application monitoring requirement at 40 CFR 51.166(m). Thus, if a source finds that it must gather ambient data for SO_2, based on ambient impacts and existing air quality concentrations exceeding the SO_2 significance level, then the applicant will be required to gather 5-minute air quality data in addition to data for all other applicable averaging periods for SO_2.

As indicated in the preceding discussion, for several different PSD program elements, EPA proposes to retain existing SO_2 significance levels instead of pursuing the possibility of revising the significance levels based on a new 5-minute SO_2 NAAQS. The EPA requests the public's views about this proposed use of existing significance levels.

The PSD program also includes specific air quality limitations, known as increments, which define maximum allowable increases in pollutant concentrations. These

increments prevent unlimited increases in ambient pollutant concentrations beyond a determined baseline concentration for a particular area.[4] Section 166 of the Act authorizes EPA to promulgate new increments within 2 years from the date of promulgation of new NAAQS. The existing PSD regulations include increments for SO_2 for the 3-hour, 24-hour and annual averaging periods. The EPA will determine the need for a 5-minute increment for SO_2, especially in light of the present difficulties which restrict the Agency's ability to use air quality dispersion models to determine the amount of increment that would be consumed by new and modified SO_2 sources for a 5-minute averaging period. The EPA will also investigate the feasibility of developing and implementing alternatives to numerical air

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[4]The PSD areas (areas designated as attainment or unclassifiable under section 107 of the Act) are further categorized as Class I, II, or III areas (section 162 of the Act). Each of these classifications determines the "maximum allowable increases" or increment of air quality deterioration permissible (section 163 of the Act). Only a relatively small increment of air quality deterioration is permissible in Class I areas and consequently these areas are afforded the greatest amount of air quality protection. An increasingly greater amount of air quality deterioration is allowed in Class II and III areas.

Air quality deterioration is measured from the date on which the first PSD application is submitted. This date becomes the baseline date after which any change in actual emissions affects the allowable increment. In all instances, however, the NAAQS represent the overarching air quality ceiling that may not be exceeded, notwithstanding any allowable increment.

quality increments (expressed in $\mu g/m^3$), as authorized under section 166(d) of the Act. In any event, EPA will not propose new increments for SO_2 until such time that a new 5-minute SO_2 NAAQS is first promulgated.

(d) Schedule for Submittal of Section 110(a)(1) SIP's. Section 110(a)(1) states that the SIP's required by that subsection are to be submitted to EPA "within 3 years (or such shorter period as the Administrator may prescribe) after the promulgation of a national primary ambient air quality standard (or any revision thereof) under section 109." Such SIP's are to provide for "implementation, maintenance and enforcement" of the new NAAQS. Section 110(a)(1), however, must be read in light of the timetable for designations of areas as nonattainment, attainment, or unclassifiable under section 107(d)(1) described above, and the explicit timetables for SIP submissions for nonattainment areas under part D of title I. Section 107(d)(1) provides that designations must occur within 3 years of the promulgation of a new NAAQS and the part D provisions (sections 172(b) and 191(a)) provide for the submission of SIP's meeting the requirements of section 172(c) within a specified time period following the designation of an area as nonattainment.

The EPA believes that these provisions can best be harmonized in the context of a new 5-minute SO_2 NAAQS by

interpreting the section 110(a)(1) deadline as being satisfied by the submission of SIP elements whose content does not depend on the designation of an area. In the case of SIP's concerning a new 5-minute SO_2 NAAQS, EPA believes that such submissions would be limited to SIP revisions concerning compliance with the monitoring requirements of section 110(a)(2)(B) and the resource requirements of section 110(a)(2)(E). The EPA believes that, until a problem with maintaining a new 5-minute NAAQS is identified, it is reasonable to view the already-existing substantive SIP provisions as adequate and that it would be absurd to require areas to adopt additional control requirements or emission limitations prior to the identification of particular problem sources. The EPA notes that any areas designated nonattainment will be subject to further SIP submission deadlines requiring the submission of nonattainment area SIP's under part D of title I that satisfy the substantive requirements of section 172(c).

Moreover, with respect to the monitoring and resource SIP elements, EPA believes that any changes to existing SIP's that would be needed will not be significant in terms of scope or effort. Indeed, some States may have to make minimal or no changes to their own rules in order to implement the new monitoring requirements. For this reason, and because the changes in monitoring requirements will

assist in developing information about ambient air quality that will be relevant to designations, EPA is proposing that all States submit any needed SIP revisions within 1 year of final action on today's proposal.

D. Nonattainment Area Requirements

Areas designated nonattainment must meet the SIP requirements of part D of title I as well as the requirements of section 110. The provisions of part D pertinent to SO_2 areas are those contained in subparts 1 and 5. These provisions have been described previously in the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 (57 FR 13498), and the following discussion will focus on the requirements of particular relevance to the implementation of a new NAAQS.

1. Attainment and SIP Submittal Dates

To determine the attainment dates and SIP submittal dates applicable to a new SO_2 NAAQS, it is necessary to analyze the relationship of the relevant provisions of both subpart 1 and subpart 5.

The starting point for the analysis is section 172(a) in subpart 1. Section 172(a)(2)(A) provides that the attainment date for attaining a primary NAAQS is the date by which attainment can be achieved as expeditiously as practicable, but not later than 5 years from the date of designation under section 107(d). It also provides that EPA

may extend the attainment date to the extent appropriate, for a period of up to 10 years after designation, considering the severity of the air quality problem and the feasibility and availability of pollution control measures. Section 172(a)(2)(D), however, provides that "[t]his paragraph (paragraph (2)) shall not apply with respect to nonattainment areas for which attainment dates are specifically provided under other provisions of this part." This language therefore leads to the question of whether areas designated nonattainment with respect to a new SO_2 NAAQS are areas for which attainment dates are provided elsewhere in part D of title I.

As subpart 5 establishes attainment dates for certain SO_2 nonattainment areas, the issue is whether those provisions establish attainment dates for areas designated nonattainment with respect to a new SO_2 NAAQS. Of particular relevance are sections 192(a) and 191(a). Section 192(a) provides that SIP's required under section 191(a) provide for attainment "as expeditiously as practicable but no later than 5 years from the date of the nonattainment designation." Section 191(a) requires that "[a]ny State containing an area designated or redesignated under section 107(d) as nonattainment with respect to the national primary ambient air quality standards for sulfur oxides, nitrogen dioxide, or lead subsequent to the date of

the enactment of the Clean Air Act Amendments of 1990 shall submit to the Administrator, within 18 months of the designation, an applicable implementation plan meeting the requirements of this part."

One possible interpretation of the Act is that the language of section 191(a) applies to areas designated nonattainment with respect to a new SO_2 NAAQS promulgated after the enactment of the 1990 Amendments. If that interpretation is followed, section 192(a), rather than section 172(a)(2), would determine the attainment date for those areas. This is due to the language in section 172(a)(2)(D) providing that section 172(a)(2) does not apply to areas for which attainment dates are specifically provided elsewhere in part D. The language of section 191(a), rather than section 172(b), would also apply to the establishment of the SIP submittal date for nonattainment SIP's required to implement the new NAAQS. The consequence of this interpretation for the attainment deadline is that the 5-year attainment deadline of section 192(a) would apply, rather than the 5-year deadline that can be extended to 10 years under certain conditions under section 172(a). As far as SIP submittal deadlines are concerned, section 191(a)'s 18-month deadline would apply rather than section 172(b)'s 3-year deadline.

An alternative interpretation is that the provisions of subpart 5 were intended to apply only to attainment dates and SIP submittal deadlines concerning a NAAQS in existence at the time of the enactment of the 1990 Clean Air Act Amendments. Under this view, the general provisions of subpart 1 (i.e., sections 172(a)(2)(A) and 172(b)) would apply to the determination of attainment dates and SIP submittal deadlines pertaining to a new SO_2 NAAQS promulgated after the 1990 Amendments. The EPA notes, however, that it believes that an 18-month SIP submittal deadline would provide adequate time for the States to develop and submit their SIP's regarding a new NAAQS. It would also provide more time to implement the control strategy adopted in the SIP, which EPA believes is preferable. If the maximum period of 3 years were allowed, there would only be 2 years between the date of the submittal of the SIP and the 5-year attainment date, and even less time between EPA's final action regarding the approvability of the SIP's and the attainment date. Consequently, even if the provisions of section 172(b) were to apply to SIP submittal deadlines for a new NAAQS, EPA would require States to submit their SIP's within an 18-month timeframe pursuant to section 172(b)'s authority to establish a shorter period than the maximum 3-year period.

The EPA requests comment on both of these interpretations and the consequences that they lead to regarding the establishment of attainment dates and SIP submittal deadlines for a new SO_2 NAAQS.

2. Classifications - Section 172(a)(1)

The classification provisions (section 172(a)(1)) give EPA the authority to classify nonattainment areas for the purposes of applying attainment dates (section 172(a)(2)(A)). In exercising this authority, EPA may consider such factors as the severity of the nonattainment problem or the availability and feasibility of the pollution control measures. Based upon the classification, EPA may set later attainment dates for areas with more severe air quality problems (section 172(a)(2)(A)).

At the present time, EPA does not intend to establish a classification scheme for areas which violate the new 5-minute SO_2 NAAQS. Currently the SO_2 program does not have a classification scheme since, typically, within the SO_2 program the severity of the SO_2 ambient air quality is not a factor in attaining the NAAQS once the needed control measures are put in place. The EPA believes that in most of the areas designated nonattainment for the new 5-minute NAAQS, the cause of the high SO_2 concentrations (usually a single source) will be obvious. While the method of

controlling these emissions may not be as obvious, the control measure should result, in most cases, in a single step correction of any future violations. Consequently, EPA does not believe a classification scheme is necessary or appropriate.

3. Nonattainment Plan Provision - Section 172(c)

Section 172(c) lists the requirements to be met by a nonattainment SIP. Some of those requirements are discussed below in the context of a SIP submittal for a SO_2 NAAQS nonattainment area.

a. Statutory and Existing Regulatory Requirements. As previously indicated, regulations for the preparation, adoption, and submission of SIP's were initially published November 25, 1971 and codified as 40 CFR part 51. The 40 CFR part 51 has been modified from time to time since then. However, the most current guidance on how EPA intends to interpret the 1990 Amendments is found in the General Preamble (57 FR 13498, April 16, 1992).

The 1990 Amendments added section 172(c) which prescribes the nonattainment SIP requirements. To the extent that the existing SIP regulations that have been codified in 40 CFR parts 51 and 52 do not conflict with section 172(c), EPA will rely on them to carry out the requirements of section 172(c). As necessary EPA will adopt new or modify existing regulations to carry out other

provisions of section 172(c). For further information on potential changes to 40 CFR part 51 with respect to SO_2, see the separate section entitled "Regulation Revisions." Also, as noted earlier under section 193, anything in part 51 that is inconsistent with the 1990 Amendments is superseded even if EPA has not yet revised the regulations.

b. Reasonably Available Control Measures (Including Reasonably Available Control Technology). Section 172(c)(1) requires SIP's to "provide for the implementation of all reasonably available control measures (RACM) as expeditiously as practicable (including such reductions in emissions from existing sources as may be obtained through the adoption, at a minimum, of reasonably available control technology (RACT)) and shall provide for attainment of the national primary ambient air quality standards." Historically, EPA has defined RACT as "the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility (Strelow, 1976)." In the case of a new 5-minute SO_2 NAAQS, EPA believes that RACT should be interpreted in accordance with EPA's long-standing interpretation.

The EPA notes that, as the sources of any violations of a new SO_2 NAAQS should be readily identifiable, there should not be any questions about the identity of the sources to

which RACT should be applied. Thus, in the case of a new SO_2 NAAQS, compliance with EPA's general recommendation that available control technology be applied to those existing sources in the nonattainment area that are reasonable to control in light of the attainment needs of the area and the feasibility of such controls should be readily achieved (EPA 1992c, page 13541 n. 20).

While a plan must require the implementation of RACM needed to attain within the statutory timeframes, it need not require the adoption of all available control measures if it demonstrates attainment as expeditiously as practicable without the adoption of all measures. The EPA believes it would be unreasonable to require that a plan which demonstrates attainment include all technologically and economically available control measures if such measures would not expedite attainment. Thus, it is possible that some available control measures may not be "reasonably" available, and not required by RACM, because their implementation would not expedite attainment (EPA 1992c, page 13543).

In addition to available control technology that should be fully considered in identifying RACT for purposes of the current SO_2 NAAQS, RACT for purposes of a new 5-minute NAAQS would also include consideration of maintenance and process operating procedures at SO_2 sources that will achieve the

new NAAQS within the statutory timeframes. The EPA believes that such available control measures should be fully assessed, in light of the general guidance above, in determining RACM (including RACT) for purposes of implementing a 5-minute SO_2 NAAQS.

c. Emission Inventory. Section 172(c)(3) states that the SIP shall include a comprehensive, accurate, current inventory of actual emissions from all sources of SO_2 in the nonattainment area and that EPA may require periodic revisions of the inventory as determined necessary to assure that the requirements of part D are met. Typically for most nonattainment areas, determining the nature and extent of specific control strategies needed requires an emissions inventory. Also, typically, an emission inventory should be based on measured emissions or documented emission factors. The more comprehensive and accurate the inventory, the more effective the control evaluation.

However, in terms of a new 5-minute NAAQS, measured emissions or emission factors for the probable sources of 5-minute NAAQS exceedances, process upsets, equipment malfunctions, batch processes, startup/shutdown, and fugitive emissions, are almost nonexistent. It is anticipated that most nonattainment areas for the 5-minute SO_2 NAAQS will be defined by a single source as measured by a monitor or monitors close to the source. Thus, in most

cases, the part D SIP for a nonattainment area will fulfill the inventory requirements of section 172(c)(3) by identifying the source around which the monitors were located and which may have caused the monitored problem. In situations where it is technically feasible, emission estimates should be made using emission measurements or factors.

d. Control Strategy Demonstration. The EPA has historically required dispersion modeling for setting emission limits. However, because of the limitations of models in predicting 5-minute concentrations, other methods may have to be used. Control strategy demonstrations may have to rely on monitors as evidence of adequacy of the implemented emission reductions as being protective of the 5-minute NAAQS. In certain cases, the monitors may be used for setting the emission limits. The EPA intends to rely on section 11.2.2 of the Modeling Guideline which addresses requirements for using monitoring networks to set emission limits.

e. Reasonable Further Progress. As stated in the General Preamble (57 FR 13547), section 171(1) of the amended Act defines reasonable further progress as "such annual incremental reductions in emissions of the relevant air pollutant as are required by this part (part D) or may reasonably be required by EPA for the purpose of ensuring

attainment of the applicable national ambient air quality standard by the applicable date." This definition is most appropriate for pollutants which are emitted by numerous and diverse sources, where the relationship between any individual source and the overall air quality is not explicitly quantified, and where the emission reductions necessary to attain the NAAQS are inventorywide. The definition is generally less pertinent to pollutants such as SO_2, particularly for the proposed new NAAQS, which usually have a limited number of sources, relationships between individual sources and air quality which are relatively well defined, and emissions control measures which result in swift and dramatic improvement in air quality. That is, for SO_2, there is usually a single "step" between pre-control nonattainment and post-control attainment.

Therefore, for a new 5-minute SO_2 NAAQS, with its discernible relationship between emissions and air quality and significant and immediate air quality improvements, RFP will continue to be construed as "adherence to an ambitious compliance schedule."[5] The compliance schedule for a new 5-minute NAAQS could consist of implementation of a

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[5]U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, "Guidance Document for Correction of Part D SIP's for Nonattainment Areas," (Research Triangle Park, North Carolina, January 27, 1984), page 27.

maintenance program where the source of emissions is due to frequent malfunction of a control device. The SIP's which require RFP as just described for an SO_2 nonattainment area will be considered as meeting the requirements of section 172(c)(2).

f. Permits for New and Modified Major Stationary Sources. Section 172(c)(5) of the Act states that the SIP shall require permits for the construction and operation of new or modified major stationary sources (i.e., stationary sources which emit or have the potential to emit at least 100 tpy of any nonattainment pollutant or lesser amounts in certain nonattainment areas) anywhere in a nonattainment area, in accordance with section 173 of the Act.[6] In nonattainment areas, a presumption exists that emissions increases resulting from new and modified major stationary sources will adversely affect the area; thus, in lieu of a complete air quality impact analysis (including ambient monitoring), emissions reductions (offsets) from existing sources must be obtained in order to mitigate the ambient impacts resulting from the potential emissions from the

[6]For purposes of the nonattainment NSR requirements under part D of title I of the Act, "major stationary source" is defined as any stationary source which emits, or has the potential to emit, 100 tpy (or lesser amounts in certain nonattainment areas) of any nonattainment pollutant (see, e.g., sections 182(c-e), 189(b)(3), and 302(j) of the Act).

proposed new source, or net emissions increase from a proposed major modification to an existing source (e.g., section 173(c) of the Act).

Under the nonattainment NSR program (40 CFR part 51.165(a)), EPA uses significant emissions rates (expressed in tons per year) for pollutant applicability purposes to determine whether a modification of an existing major stationary source will result in a significant net emissions increase (51.165(a)(1)(x)). For the same reasons described in section V.C of this preamble, EPA does not now intend to propose to revise the significant emissions rate for SO_2 commensurate with the 5-minute SO_2 NAAQS proposed in the part 50/53 document. Public comment is requested as to whether the existing 40 tpy significant emissions rate needs to be revised if EPA promulgates the proposed 5-minute SO_2 standard.

Major new or modified sources locating in the nonattainment area will be required to meet the lowest achievable emission rate, obtain emissions offsets, and satisfy other applicable requirements under section 173 of the Act. With implementation of a new 5-minute NAAQS, these requirements may be addressed by existing permit programs for those areas already designated nonattainment for SO_2 and meeting the nonattainment NSR requirements under section 173 of the Act. However, for those States without the

appropriate nonattainment NSR program, the State would need to develop and implement such a program for any newly designated nonattainment areas resulting from a new 5-minute NAAQS for SO_2.

g. Contingency Measures. Section 172(c)(9) of the amended Act defines contingency measures as measures that become effective without further action by the State or EPA, upon determination by EPA that the area has failed to: (1) Make reasonable further progress, or (2) attain the SO_2 NAAQS by the applicable statutory deadline.

For current SO_2 programs, EPA interprets "contingency measures" to mean that the State agency has a comprehensive program to identify sources of violations of the SO_2 NAAQS and to undertake an aggressive followup for compliance and enforcement, including expedited procedures for establishing enforceable consent agreements pending the adoption of revised SIP's. The rationale for this interpretation as presented in the General Preamble (57 FR 13547) is the following. The EPA interprets the contingency measure provisions as primarily directed at general programs which can be undertaken on an areawide basis. First, for some criteria pollutants, the analytical tools for quantifying the relationship between reductions in emissions and resulting air quality improvements remain subject to significant uncertainties, in contrast with procedures for

pollutants such as SO_2 and its current NAAQS. Second, emission estimates and attainment analyses can be strongly influenced by overly optimistic assumptions about control efficiency and rates of compliance for many small sources. In contrast, controls for the current SO_2 NAAQS are well understood and are far less prone to uncertainty. Since SO_2 control measures are by definition based upon what is directly and quantifiably necessary to attain the SO_2 NAAQS, it would be unlikely for an area to implement the necessary emissions control yet fail to attain the NAAQS.

However, for the proposed 5-minute SO_2 NAAQS, EPA will need to interpret requirements for contingency measures different from those for the current NAAQS, due to the nature of sources and emissions that EPA considers likely to cause violations. As opposed to the current NAAQS, which can rely on dispersion models to predict attainment of the NAAQS, the State and Local agencies cannot reliably predict that attainment will be achieved even with proper implementation of a control program. It is possible that even with the control equipment operating properly, violations may persist. In other words, there may be overly optimistic assumptions about control efficiencies and emission rates. Therefore, contingency measures for the proposed 5-minute NAAQS will require more than aggressive follow-up for compliance and enforcement as allowed for the

current SO_2 NAAQS. As an example, if the cause of the SO_2 violations is due to control equipment failure, a SIP may require a more rigorous maintenance schedule. If further violations occur due to continued failures of the control equipment, then the contingency measures may need to invoke a more frequent inspection/maintenance program of the control equipment or even installation of backup control equipment.

E. SIP Processing Requirements

1. SIP Completeness

Section 110(k)(1) required EPA to promulgate minimum criteria that any SIP submittal must meet. The EPA proposed an initial set of completeness criteria at 56 FR 23826 (May 24, 1991) and finalized them at 56 FR 42216 (August 26, 1991). Those notices describe the procedures for assessing whether a SIP submittal is complete and, therefore, adequate to trigger the Act requirement that EPA review and take action on the submittal. The completeness criteria provide a procedure and criteria that enable States to prepare adequate SIP submittals and enable EPA reviewers to promptly screen SIP submittals, identify those that are incomplete, and return them to the State for corrective action without having to go through rulemaking. The EPA intends to use the completeness criteria as amended in 40 CFR part 51, appendix V, to determine completeness of SIP submittals as required under section 110(k)(1)(B).

2. Approval/Disapproval of Plan

The Act as amended in 1990 allows for EPA to make full and partial approvals and disapprovals under section 110(k)(3) and conditional approvals under section 110(k)(4) of SIP submittals. In meeting the requirements under section 110(k)(3) and (4), EPA intends to follow the guidance for processing SIP submittals issued in the memo

from Calcagni to the Regional Air Division Directors dated July 9, 1992.

3. Sanctions and Other Consequences of SIP Deficiencies

The EPA intends to use sanctions consistent with the following stated policies and regulations as provided for by the Act in sections 110(m) and 179 for the imposition of sanctions in the event that EPA finds that a State did not make a required SIP submission (in whole or in part), finds that a State did not submit a complete submission, disapproves in whole or in part a required submission, or finds that any part of an approved SIP is not being implemented. Section 179(a) provides for the imposition of mandatory sanctions unless the deficiency identified by EPA (e.g., the failure to submit or disapproval) is corrected within 18 months. Moreover, section 110(m) provides EPA with the discretionary authority to impose sanctions at any time after a finding, disapproval or determination under section 179(a).

With respect to mandatory sanctions, section 179(a) provides that unless the State corrects the deficiency within 18 months, one of the two sanctions referred to in section 179(b) (i.e., highway or offset sanctions) shall be selected by EPA and will apply until EPA determines that the State has come into compliance. (In the case of a finding

of failure to submit a required SIP revision, the sanctions would not be lifted until EPA determines that the State has submitted a SIP revision that satisfies the completeness criteria.) If 6 months after the imposition of the first sanction the State still has not corrected the deficiency, then the second sanction shall apply as well. If EPA finds a lack of good faith on the part of the State, then both the highway and offset sanctions are applied 18 months after the finding or disapproval.

The EPA has discussed in detail issues concerning the imposition of sanctions in a number of Federal Register notices. The criteria for imposing discretionary sanctions on a statewide basis are discussed in a February 11, 1994 Federal Register notice, Criteria for Exercising Discretionary Sanctions Under Title I of the Clean Air Act (59 FR 1476), and are codified at 40 CFR 52.30. The preamble to this notice also sets forth EPA's policy with respect to section 110(m) sanctions. Mandatory sanctions were discussed in a October 1, 1993 proposal (58 FR 51270) and in the August 4, 1994 final rule (59 FR 39832) selecting the order of mandatory sanctions under section 179. That final rule does not apply to State failures to respond to SIP calls. The EPA intends to address sanctions for such failures in a future rulemaking.

Apart from sanctions under sections 110(m) and 179(b), other consequences may also attach to a failure to comply with the Act's SIP submission or implementation requirements. First, section 179(a) authorizes EPA to withhold all or part of section 105 grants for air pollution control planning and control programs. Second, section 110(c)(1)(B) provides that within 2 years of a finding that a State has failed to make a required submittal, a finding that a required submittal was not complete, or a disapproval of a submission (in whole or in part), EPA shall promulgate a FIP unless EPA approves a submitted SIP that corrects the deficiency. In support of this requirement, EPA intends to use its authority to withhold all or part of section 105 grants to develop and implement FIP's where a State fails to comply with the Act's SIP submission or implementation requirements.

VI. Significant Harm Levels and Episode Criteria

In a notice published in the Federal Register on April 26, 1988 (53 FR 14926), in which the EPA proposed not to revise the SO_2 NAAQS, the EPA at the same time proposed to revise the significant harm levels for SO_2. Since final action was never taken on that proposal, EPA is reproposing to revise the 24-hour significant harm levels.

Section 303 of the Act authorizes the Administrator to take certain emergency actions if pollution levels in an

area constitute "an imminent and substantial endangerment to public health or welfare, or the environment." The Act and EPA's regulations governing adoption and submittal of SIP's (section 110(a)(2)(G) and 40 CFR 51.16 and subpart H of part 51) require States to adopt contingency plans to prevent ambient pollutant concentrations from reaching specified significant harm levels and to take additional abatement actions if such levels are reached. The existing significant harm levels (40 CFR 51.16a) for SO_2 were established in 1971 (36 FR 24002, November 21, 1971) at the following levels: SO_2 alone - 1.00 ppm (2620 $\mu g/m^3$) 24-hour average of SO_2; and SO_2 x tsp - 490 x 103 ($\mu g/m^3$) 2 - 24-hour average product of SO_2 and tsp concentrations.

On the basis of EPA's reassessment of the data upon which these levels were based and its assessment of more recent scientific evidence on sulfur oxides and particulate matter, EPA proposes to revise the significant harm levels for SO_2.

In actions related to the revisions of the particulate matter standards, EPA has already eliminated the combined tsp/SO_2 significant harm level (52 FR 24672, July 1, 1987). In doing so, EPA left open the possibility of reinstating an SO_2/PM-10 significant harm level, if necessary for additional protection against SO_2 effects, at the conclusion of the SO_2 review. The scientific data suggest that SO_2 in

combination with high levels of particulate matter have been associated with increases in daily mortality. The final 24-hour PM-10 significant harm level of 600 μg/m^3 takes this potential interaction into account. Addition of a combined SO_2/PM-10 significant harm level therefore appears unnecessary.

Removal of the combined significant harm level raises the question as to whether the remaining SO_2 significant harm level is sufficient. The possibility that SO_2 alone or in combination with other pollutant or fog droplets may be in part responsible for the effects associated with 24-hour exposures suggests the need to continue a 24-hour significant harm level for SO_2 alone at a substantially lower concentration. The EPA's assessment of studies of daily mortality (EPA, 1986a, Table 1 and EPA, 1986b Table 4-2) indicates greatest certainty of some increased daily mortality associated with high particle concentrations in combination with SO_2 levels at or above 750 μg/m^3 (0.29 ppm) for 24-hours. Accordingly, EPA proposes to revise the 24-hour SO_2 significant harm level from 1.0 (2,620 μg/m^3) to 0.29 ppm (750 μg/m^3).

Appendix L to part 51 contains example air pollution episode levels and example contingency plans for the purpose of preventing air pollution from reaching the significant harm levels prescribed in section 51.151. The examples in

appendix L serve as guides to States for the development of their own contingency plans. To conform with the proposed revisions to the significant harm level for SO_2, certain changes to appendix L are required. The EPA proposes the following revisions to the example 24-hour episode levels for SO_2:

(1) That the example alert level for SO_2 be changed from 800 $\mu g/m^3$ to 0.19 ppm (500 $\mu g/m^3$), 24-hour average.

(2) That the example warning level for SO_2 be changed from 1600 $\mu g/m^3$ to 0.23 ppm (600 $\mu g/m^3$), 24-hour average.

(3) That the example emergency level for SO_2 be changed from 2100 $\mu g/m^3$ to 0.26 ppm (675 $\mu g/m^3$), 24-hour average.

The basis for changing the episode levels for SO_2 is the same as discussed above for the revisions to the significant harm level. With respect to example episode levels, the proposed alert level reflects the upper bound of the 24-hour range of interest for the NAAQS presented in the staff paper addendum (EPA, 1986b, Table 2). The staff paper concludes that at or above 0.19 ppm (500 $\mu g/m^3$) for 24 hours, health effects are likely to occur in certain sensitive population groups (EPA, 1982a, page 72). Therefore, it would be appropriate under the episode criteria to initiate first stage control action when this ambient level of SO_2 occurs. The proposed 24-hour warning

and emergency levels are set at increments between the proposed alert level and the proposed significant harm level. This approach would provide opportunity for the control actions associated with each episode level to take effect before the next stage is triggered and additional control actions become necessary. This proposal, if adopted, would change the 24-hour significant harm level. Therefore, States would be required to adopt the new numerical level, to evaluate the emergency episode provisions, in their current SIP's and any permits containing such provisions and to make any revisions necessary to assure their adequacy.

All public comments on the proposed significant harm level and episode criteria will be considered by the Agency as it makes a decision on the final significant harm level.

VII. Proposed Revisions to Part 58 Monitoring Regulations

The proposed revisions to 40 CFR part 58 are needed to allow States to reduce in most cases the number of NAMS SO_2 monitors in the metropolitan areas. This, in turn, will free up monitors and resources that can be used toward the SO_2 targeted implementation strategy. The following preamble details requirements which will be implemented regardless of the regulatory alternative that is ultimately selected for part 50.

A. Section 58.1 Definitions

The number of SO_2 monitors in the revised NAMS network for major metropolitan areas will be based on factors including population, historical ambient concentration measurements, and total SO_2 emissions. The SO_2 emissions data are available from the AIRS for each county and for each consolidated metropolitan statistical area/metropolitan statistical area (CMSA/MSA). Therefore, the requirements for NAMS SO_2 stations have been determined on a CMSA/MSA basis, and the requirements for SLAMS SO_2 stations have been determined on a county basis. Definitions are added for CMSA and MSA as provided by the U.S. Census Bureau.

B. Appendix C--Ambient Air Quality Monitoring Methodology

As explained in a related notice in this issue of the Federal Register that proposes amendments to part 53, continuous ambient air monitoring analyzers designed to obtain 1-hour average SO_2 concentration measurements may not provide accurate 5-minute average concentration measurements. That notice proposes special supplemental performance specifications applicable to continuous SO_2 analyzers that would be used for 5-minute monitoring so that the average SO_2 concentration measurements would be accurate. A companion amendment to appendix C of part 58 is needed to specifically require the use of these specially-

approved analyzers for 5-minute monitoring in SLAMS monitoring networks. Accordingly, a new section 2.4 is proposed to require that monitoring methods used for 5-minute average SO_2 measurements meet the special supplemental specifications proposed to be added to part 53.

C. Appendix D--Network Design for State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS)

Appendix D is being revised to change the NAMS requirements for SO_2 monitors. The present requirements are based on measuring population exposure over a large area without being unduly influenced by point sources. Because concentrations at a significant number of these sites have decreased over time and many are measuring concentrations well below the current SO_2 NAAQS, EPA believes that they may be put to better use if relocated. The monitors which may be moved could be used to complete the minimum NAMS and SLAMS requirements or to implement the targeted monitoring strategy for point sources of SO_2 emissions described earlier in this notice (section II: Targeted Implementation Strategy). Up to three SO_2 monitors would be required for each metropolitan area for trends purposes and general urban air quality analyses. The new number of NAMS monitors required for each metropolitan area would be based on the combination of population and SO_2 emissions, as defined in the Air Facility Subsystem of AIRS and other information. The EPA solicits comments on reducing the requirements for the number of population-oriented NAMS SO_2 monitors in the metropolitan areas.

In addition to changing the criteria for the required number of NAMS monitors as noted above, new criteria are being included for a minimum number of SLAMS SO_2 monitors for those counties (or parts of counties) not a part of any CMSA/MSA but with significant SO_2 emissions. These counties with SO_2 emissions greater than 20,000 tons/year, as defined in the Air Facility Subsystem of AIRS, would be required to have one to two monitors. However, EPA is proposing a provision which would allow for a waiver of all (or part of) these monitoring requirements after a 2-year monitoring period in accordance with EPA guidelines for network review for source-oriented SO_2 monitoring in nonurban areas. Although these guidelines have not been developed at this time, EPA solicits comments on the waiver provision criteria to be established and included in the guideline as well as the minimum number of years for data collection. The EPA also solicits comments on the requirement for SO_2 SLAMS monitors in these areas.

As discussed earlier in this notice, EPA believes there are a significant number of sources of SO_2 emissions which can produce high 5-minute ambient concentrations of SO_2. These 5-minute concentrations have the potential to exceed the level for a proposed 5-minute SO_2 NAAQS or the trigger level which may be established under the authority of section 303 of the Act. The sources which are believed to

provide these high concentrations would be targeted for monitoring as discussed earlier in this notice. States will be required to prepare a targeted SO_2 monitoring plan containing a listing of sources to be monitored, the schedule for monitoring, and the rationale for selecting the sources. The schedule for monitoring should be as expeditious as practicable. It is expected that the resources which are made available by the reconfiguration of the NAMS and SLAMS networks will be used to implement the targeting strategy around selected SO_2 sources. The targeted SO_2 monitoring plan will be reviewed as part of the annual network review.

The number of SO_2 monitors to be used around the targeted sources depends on several diverse factors, i.e. quantity of SO_2 emissions, meteorology, terrain, stack height and diameter of stack, temperature and velocity of stack emissions, distance from point of emissions to fence line and populated areas, batch operations, etc. To capture high peak 5-minute concentrations may require many monitors around the sources (Sonoma Technology Inc., 1994). However, it is not economically feasible to place enough monitors around the source to capture all potential exceedances of the NAAQS or trigger level. Therefore, EPA is using a more moderate approach on the number of monitors required.

The EPA is proposing a minimum requirement of four SO_2 monitors to measure 5-minute, 3-hour, 24-hour, and annual average SO_2 concentrations around the targeted sources. These monitors could be point SO_2 monitors, open path SO_2 analyzers, or a combination of both. If open path analyzers with multiple monitoring paths are used, each monitoring path could potentially be substituted for one point SO_2 monitor. Modeling, and perhaps saturation monitoring (a short term study involving the use of portable monitors deployed around the source), could be used to determine the area of expected maximum concentration based on the most predominant wind direction. One monitor would be placed at the fence line downwind of the predominant wind direction. A second monitor would be placed in the modeled maximum concentration area based on the predominant wind direction. Since wind directions around an SO_2 source may be significantly different from one season to another, this same procedure would be repeated for the second most frequent wind direction. For some cases, two or more of these locations may coincide and thereby reduce the number of monitors, or allow for a State or local agency to locate sites in alternative locations. In other cases, additional monitors would probably be needed for situations of complex terrain and/or meteorology. The EPA also encourages the use of open path SO_2 analyzers in combination with point SO_2

monitors to obtain better spatial coverage around the targeted sources. One open path SO_2 analyzer using multiple monitoring paths could potentially replace several of the point SO_2 monitors, depending on factors such as meteorology, terrain, and obstructions. Open path analyzers may be particularly useful in assessing ambient SO_2 concentrations over large populated areas, such as parks and recreation centers, where people are expected to jog/exercise. The EPA solicits comments on the location, number and type of SO_2 monitors, the various available monitoring technologies, and the need to waive minimum monitoring requirements.

The concentration gradients are expected to be sharper around these targeted sources of SO_2 emissions. As a result, the SO_2 monitors located to measure population exposures over a wide area are unlikely to adequately characterize these peaks. Therefore, appendix D is being revised to allow the use of microscale SO_2 sites for SLAMS monitors, and to encourage middle/neighborhood scale measurements as appropriate in populated areas near these targeted sources. The microscale measurements for SO_2 would represent concentrations over an area ranging from several meters to up to about 100 meters. The EPA solicits comments on the use of micro, middle, and neighborhood scale

monitors, both point monitors and/or open path analyzers, around point sources of SO_2 emissions.

The EPA is also proposing that the SO_2 monitors around these targeted sources of SO_2 emissions be classified as SLAMS monitors. Section 2.3 requires that monitoring be performed for a minimum of 2 years. After that time, a decision should be made during the annual network review as to whether the monitoring should be continued around the targeted source, or the monitors redeployed around a different targeted source based on measured concentration levels, changes in plant process operations, etc. The EPA solicits comments on the SLAMS classification of the SO_2 monitors around the targeted sources and a waiver provision to relocate the monitors before the full 2 years based on a review of the data.

With this proposal, EPA is also requiring the collection of 5-minute SO_2 concentrations at the targeted sites. The EPA solicits comment on the need to require 5-minute concentrations at NAMS or other SLAMS sites, and if supplementary criteria should be considered for this additional request (e.g., require 5-minute SO_2 monitor data if 1-hour concentration exceeds some level).

D. Appendix F--Annual SLAMS Report

A proposed revision to section 2.1.1 of appendix F would reword this section to provide greater clarity and add

a requirement to report the number of 5-minute hourly maximum observations. Section 2.1.2 would similarly be reworded for clarity and to require that the 24-hour averages reported in the annual report for SO_2 be based on block (midnight to midnight) averaging periods and the 3-hour averages also to be based on block averaging periods. Reporting of the number of values in specified ranges of 24-hour average concentrations would be deleted because of new revisions to 40 CFR 58 data reporting requirements. Reporting of 5-minute hourly maximums would also be added. The EPA solicits comments on the need for reporting additional summary data if a multiple exceedance form of the standard is adopted.

E. Appendix G--Air Quality Index Reporting and Daily Reporting

The EPA proposes to revise the SO_2 ambient concentrations contained in Tables 1 and 2 and in Figure 3 to correspond to the proposed new episode criteria and significant harm levels.

VIII. Transition Issues

Since the existing NAAQS would be retained even if a 5-minute NAAQS is promulgated, all existing requirements and attainment dates will remain in place as to the existing NAAQS.

IX. Other Clean Air Act Amendment Authorities Affecting SO_2 Sources

The EPA is also developing a voluntary program as part of the acid rain program to encourage nonutility sources to reduce their emissions of SO_2. The voluntary entry into the acid rain program, known as the opt-in program, allows nonaffected sources (nonaffected under title IV), the opportunity to receive their own allowances, undertake emission reductions and trade the extra allowances they would no longer need for compliance with the acid rain program. Again, such participating sources would be under the same obligations to meet all other air regulatory requirements.

These nonutility sources that could participate in the opt-in program are the same group of sources of concern for establishing a 5-minute SO_2 NAAQS. Assuming entry occurred prior to the imposition of the 5-minute standard, the source could accelerate its emissions reductions and offset the cost of such reductions through participation in the opt-in program. The EPA believes the development of options for a 5-minute SO_2 standard and the opt-in program protects public health and provides an opportunity for cost reduction.

X. Public Participation

A. Comments and the Public Docket

The EPA welcomes comments on all aspects of this proposed rulemaking. Commenters are especially encouraged to give suggestions for changing any aspects of the proposal that they find objectionable. All comments, with the exception of proprietary information, should be directed to Docket No. A-94-55 with regard to part 51 and Docket No. A-94-56 with regard to part 58 (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.

B. Public Hearing

Anyone who wants to present testimony about this proposal at the public hearing (see "DATES") should, if possible, notify the contact person (see "FOR FURTHER INFORMATION CONTACT") at least 7 days prior to the day of the hearing. The contact person should be given an estimate of the time required for the presentation of testimony and notification of any need for audio/visual equipment. A sign-up sheet will be available at the registration table the morning of the hearing for scheduling those who have not notified the contact earlier. This testimony will be scheduled on a first-come, first-serve basis to follow previously scheduled testimony.

The EPA requests that approximately 50 copies of the statement or material to be presented be brought to the hearing for distribution to the audience. In addition, EPA would find it helpful to receive an advance copy of any statement or material to be presented at the hearing at least 1 week before the scheduled hearing date. This is to give EPA staff adequate time to review such material before the hearing. Such advance copies should be submitted to the contact person listed.

The official records of the hearing will be kept open for 30 days following the hearing to allow submission of rebuttal and supplementary testimony. All such submissions should be directed to Docket No. A-94-55 with regard to part 51 and Docket No. A-94-56 with regard to part 58 (see "ADDRESSES").

Joseph W. Paisie is hereby designated Presiding Officer of the hearing. The hearing will be conducted informally, and technical rules of evidence will apply. A written transcript of the hearing will be placed in the above docket for review. Anyone desiring to purchase a copy of the transcript should make individual arrangements with the court reporter recording the proceeding.

XI. Administrative Requirements

A. Regulatory Impact Analysis

Under Executive Order 12866, (58 FR 51735 (October 4, 1993)) the Agency must determine whether the regulatory action is "significant" and therefore subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule 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 of recipients thereof.

(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.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action" because of its potential to have an annual effect on

the economy of $100 million or more as discussed in the related SO_2 NAAQS proposal package on November 15, 1994 (59 FR 58958). As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

The EPA has prepared a draft regulatory impact analysis (RIA) based on information developed by several EPA contractors. It includes estimates of costs, benefits, and net benefits associated with alternative SO_2 NAAQS. The draft analysis, entitled Regulatory Impact Analysis of the National Ambient Air Quality Standards for SO_2-Draft, is available from the address given above. The draft RIA estimates the cost for the short-term SO_2 NAAQS regulatory alternative. The cost estimate for the short-term SO_2 NAAQS alternative represent a snapshot of the estimated total industry costs that could be incurred at some unspecified time in the future following full implementation of a short-term SO_2 NAAQS. The costs are based on the use of add-on control devices and fuel switching to lower-sulfur fuels. Given that EPA believes that many sources will be able to reduce their peaks through other, nontechnological means, this assumption may result in overstating costs. With this caveat in mind, nonutility annualized costs are estimated to be approximately $250 million for an ambient SO_2 concentration for a 0.06 ppm, 5 annual exceedance

concentration levels are estimated to be approximately $160 million. It is estimated that SO_2 will be reduced by approximately 910,000 tons, and 560,000 tons for 1 and 5 exceedance cases, respectively. Incremental to the title IV requirements and attainment of the existing SO_2 NAAQS, total utility annualized costs in 2005 are estimated to be an additional $1.5 billion for the 0.06 ppm, 1 expected exceedance case, and $400 million for the 5 expected exceedance case. Estimated total utility SO_2 emissions in 2005 are not expected to change given the title IV emissions trading program.

Administrative costs are estimated to be approximately $18 million for the short-term NAAQS regulatory alternative. Monitoring costs are estimated to be minimal.

However, EPA has not completed its cost analysis of the section 303 regulatory alternative which EPA believes will be less than the SO_2 NAAQS regulatory alternative. The EPA intends to complete this analysis and make it available to the public by the end of January 1995. The EPA will announce the availability of this analysis in the Federal Register as soon as it is available. A final RIA will be issued at the time of promulgation of final standards. Neither the draft RIA nor the other contractor reports have been considered in issuing this proposal.

The regulations, implementation of the revised SO_2 NAAQS, the retained existing NAAQS, and the section 303 program, have been submitted to OMB for review under Executive Order 12866. Any written comments from OMB and any EPA responses to those comments are in the public docket for this rulemaking.

B. Impact on Reporting Requirements

Air quality monitoring activities that would occur as a result of the SO_2 NAAQS proposal could increase the costs and man-hour burdens to State and local agencies for conducting ambient SO_2 surveillance required by 40 CFR part 58 and currently approved under OMB Control Number 2060-0084. Temporarily-increased costs could result from the relocation of some monitors currently operated as part of the SLAMS networks and from the purchase and operation of additional monitors in a small number of agencies. However, some or all of these costs could be offset by savings in existing monitoring networks. As a result, to the extent that additional monitoring costs will be incurred at all, EPA expects that these costs will be minimal.

The information collection requirements in this proposed rule have been submitted for approval to OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. An Information Collection Request document has been prepared by EPA (ICR No.0940.11) and a copy may be obtained from Sandy

Farmer, Information Policy Branch, EPA, 401 M St., S.W. (Mail Code 2136), Washington, DC 20460, or by calling (202) 260-2740.

Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Chief, Information Policy Branch, EPA, 401 M St., S.W. (Mail Code 2136), Washington, DC 20460, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked "Attention: Desk Officer for EPA." The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

C. Impact on Small Entities

Under the Regulatory Flexibility Act, 5 U.S.C., 600 et seq, the Agency must prepare a regulatory flexibility analysis assessing the impact of any proposed or final rule on small entities. 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 revise the current NAAQS for SO_2 or set a trigger level for implementation of a section 303 program

would impose no new major requirements. It is expected that following the promulgation of a revised SO_2 NAAQS, additional nonattainment areas will be designated and will thus have to submit SIP revisions imposing additional control requirements on affected sources.

Furthermore, the control measures necessary to attain and maintain the NAAQS or implement a section 303 program are developed by the respective States as part of their SIP's. In selecting such measures, the States have considerable discretion so long as the mix of controls selected is adequate to attain and maintain the NAAQS or not exceed the section 303 trigger level. Whether a particular NAAQS would have a significant effect on a substantial number of small entities, therefore, depends on how the States would choose to implement it. For these reasons, any assessment performed by EPA on the costs of additional SIP requirements at this time would necessarily be speculative. On the basis of the above considerations and findings, and as required by section 605 of the Regulatory Flexibility Act, 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. Reduction of Governmental Burden

Executive Order 12875 ("Enhancing the Intergovernmental Partnership") is designed to reduce the burden to State,

local, and tribal governments of the cumulative effect of unfunded Federal mandates. The Order recognizes the need for these entities to be free from unnecessary Federal regulation to enhance their ability to address problems they face and provides for Federal agencies to grant waivers to these entities from discretionary Federal requirements. The Order applies to any regulation that is not required by statute and that creates a mandate upon a State, local, or tribal government. The EPA is required by statute to review periodically and, as necessary, revise the national ambient air quality standards, and to call on States to develop plans to attain and maintain these standards. However, this action also includes a request for comment on the adoption of a section 303 program, as well as a proposal to establish a targeted monitoring network, neither of these actions is explicitly mandated by statute. Therefore, in accordance with the purposes of Executive Order 12875, EPA will consult with representatives of State, local, and tribal governments to inform them of the requirements for implementing the alternative regulatory measures being proposed to address short-term peak SO_2 exposures. The EPA will summarize the concerns of the governmental entities and respond to their comments prior to taking final action.

The EPA anticipates that there will be no additional cost burden imposed on States in order to implement the

monitoring requirements proposed in this notice. In general, costs incurred for relocating monitors will be offset by operating costs saved from discontinuing SLAMS and NAMS monitors. For more detail the reader is referred to the section on resource concerns for relocating monitors under the targeted implementation strategy section discussed earlier in this notice or to the supporting statement for the information collection request.

E. 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 RIA cited above.

On average, approximately 25 percent of the total population and 14 percent of total households residing in geographic areas that are potentially impacted by short-term SO_2 peaks of 0.60 ppm or greater are nonwhite and below the poverty level, respectively. These estimates exceed the national averages of 19.7 percent and 12.7 percent, respectively. It also follows that, on average, 25 percent of the asthmatics potentially exposed to short-term SO_2

peaks of 0.60 ppm or greater are nonwhite. Upon closer examination, 44 percent of these potentially SO_2-impacted areas have a nonwhite population greater than the national average with 24 percent between 1 and 2 times greater, 10 percent between 2 and 3 times greater, 7 percent between 3 and 4 times greater, and 3 percent between 4 and 5 times greater.

List of Subjects in 40 CFR Parts 51 and 58

Environmental protection, Administrative practices and procedure, Air pollution control, Intergovernmental relations, SO_2, Reporting and recordkeeping requirements, State implementation plans.

Feb 15 1995

_____	_____
Date	Carol M. Browner Administrator

APPENDIX A - REFERENCES

Bennett, K.M. (1982), US EPA, Assistant Administrator for Air, Noise and Radiation, Policy on Excess Emissions During Startup, Shutdown, Maintenance, and Malfunctions, Memorandum to Regional Administrators, Regions I-X, September 28, 1982.

Burton, C.S.; Stoeckenius, T.E.; Stocking, T.S.; Carr, E.L.; Austin, B.S.; Roberson, R.L. (1987), Assessment of exposures of exercising asthmatics to short-term SO_2 levels as a result of emissions from U.S. fossil-fueled power plant, Systems Applications, Inc., San Rafael, CA., Pub. No. 87/176, September 23, 1987.

Calcagni, J. (1992), Director of Air Quality Management Division, Processing of State Implementation Plan (SIP) Submittals, Memorandum to Air Division Directors, Regions I-X, July 9, 1992.

EPA (1982a), 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.

EPA (1986c), Guideline on Air Quality Models (Revised), Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-450/2-78-027R. (Codified in 40 CFR 51, appendix W.)

EPA (1992a), National Air Pollutant Emission Estimates, 1900-1991, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA-454/R-92-013.

EPA (1992b), National Air Quality and Emissions Trends Report, 1991, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA/450-R-92-001.

EPA (1992c), General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, April 16, 1992, 57 FR 13498.

EPA (1994b), Review of the Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information, Supplement to the 1986 OAQPS Staff Paper Addendum, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA/452/R-94-013.

Polkowsky, B. (1991), U.S. EPA, Standards Development Section, Analysis of Utility Emissions Limits for Short-term SO_2 NAAQS, Memorandum to John Haines, Chief, Standards Development Section, Augus

t 2, 1991.

Rosenbaum, A.S.; Hudischewskyj, A.B.; Roberson, R.L.; Burton, C.S. (1992), Estimates of Future Exposures of Exercising Asthmatics to Short-term Elevated SO_2 Concentrations Resulting from Emissions of U.S. Fossil-fueled Power Plants: Effects of the 1990 Amend

ments to the Clean Air Act and a 5-minute Average Ambient SO_2 Standard, Pub. No. SYSAPP-92/016, April 23, 1992.

Sonoma Technology Inc. (January 1994), Recommendations for the Use of Open-Path and Fixed-Point Monitors for Determining Ambient SO_2 Concentrations, Final Report STI-94021-1402-FR, Prepared for U. S. Environmental Protection Agency, Research Triangle Park, NC.

Strelow, R. (1976), U.S. EPA, Assistant Administrator, Air and Waste Management, Guidance for Determining Acceptability of SIP Regulations in Non-attainment Areas, Memorandum to Regional Administrators, Regions I-X, December 9, 1976.

Stoeckenius, T.E.; Garelick, B.; Austin, B.S.; O'Connor, K.; Pehling, J.R. (1990), Estimates of Nationwide Asthmatic Exposures to Short-term Sulfur Dioxide Concentrations in the Vicinity of Nonutility Sources. Systems Application Inc., San Rafael, CA, Publication Number SYSAPP-90/129, December 6, 1990.

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. In §51.151 of subpart H, the entry for "Sulfur dioxide" is revised to read as follows:

§51.151 Significant harm levels.

* * * * *

Sulfur dioxide--0.29 parts per million (750 micrograms/cubic meter), 24-hour average.

* * * * *

3. In appendix L, paragraphs 1.1(b), (c), and (d) are amended by revising the entries for "SO_2" to read as follows:

Appendix L to Part 51--Example Regulations for Prevention of Air Pollution Emergency Episodes.

* * * * *

1.1 * * *

(b) * * *

SO_2 --0.19 ppm (500 μg/m^3), 24-hour average.

* * * * *

(c) * * *

SO_2 --0.23 ppm (600 μg/m^3), 24-hour average.

* * * * *

(d) * * *

SO_2 --0.26 ppm (675 μg/m^3), 24-hour average.

* * * * *

4. Section 51.465 is added to Subpart T to read as follows:

Subpart T--Abatement of 5-Minute Sulfur Dioxide Air Pollution Episodes.

§51.465 Contingency Plans

(a) Each plan must include a contingency plan which must, as a minimum, provide for taking action necessary to prevent further violations of the 5-minute trigger level for sulfur dioxide (SO_2) attributable to emissions from a source once one exceedance has occurred. The 5-minute trigger level is 0.60 parts per million (ppm), not to be exceeded more than once per calendar year, as determined in accordance with appendix Y to this part.

(b) Each contingency plan must provide that:

(1) Within 30 days of determination of a violation of the trigger level, the State shall carry out a compliance

inspection of any source whose emissions may have resulted in or contributed to the violation of the trigger level.

(2) If the source is out of compliance with applicable SO_2 emission limits then, within 30 days of completing the compliance inspection in paragrph (b)(1) of this section, the State shall take enforcement action to bring the source into compliance.

(3) If the source is in compliance with applicable SO_2 emission limits then, within 60 days of completing the compliance inspection in paragraph (b)(1) of this section, the State shall develop and implement an enforceable emission reduction plan with a compliance schedule to address the cause of the emissions producing the trigger level violation. The schedule shall provide for implementation of all actions necessary to prevent further violations of the trigger level as expeditiously as practicable. This emission reduction plan must be submitted to EPA as a revision to their State implementation plan within 1 year of completing the compliance inspection in paragraph (b)(1) of this section.

(4) If in carrying out the compliance inspection referred to in paragraph (b)(1) of this section, the State determines that the source is out of compliance with its applicable SO_2 emission limits but also determines that bringing the source into compliance with its applicable emission limits would not be likely to prevent further exceedances of the trigger level, then the State and source

shall develop and implement an emission reduction plan as described in paragraph (b)(3) of this section.

5. Appendix Y is added to read as follows:

Appendix Y to Part 51--Interpretation of the 5-Minute Trigger Level for Sulfur Dioxide.

1.0 General

This appendix explains the computations necessary for analyzing sulfur dioxide data to determine whether the 5-minute trigger level specified in 40 CFR 51.400(a), subpart T, has been exceeded and whether the 5-minute trigger level has been violated. Sulfur dioxide is measured in the ambient air by the reference method specified in appendix A of this part or an equivalent method designated in accordance with part 53 of this chapter.

Several terms used in this appendix must be defined. A "5-minute hourly maximum" for SO_2 refers to the highest of the 12 possible nonoverlapping 5-minute SO_2 averages calculated or measured during a clock hour. The term "exceedance" of the 5-minute trigger level concentration means a 5-minute hourly maximum value that is greater than the 5-minute trigger level after rounding to the nearest hundredth ppm (i.e., values ending in or greater than 0.005 ppm are rounded up; e.g., a value of 0.605 would be rounded to 0.61, which is the smallest value for an exceedance). The term "year" refers to a calendar year. The term

"quarter" refers to a calendar quarter. The 5-minute SO_2 trigger level is expressed in terms of the number of expected exceedances per year by adjusting for missing data (if required) and by averaging over a 2-year period.

2.0 Trigger Level Determination

The 5-minute trigger level is not violated when the number of expected exceedances per year is less than or equal to one. In general, this determination is to be made by recording the number of 5-minute hourly maximum exceedances at a monitoring site for each year, using the calculations in section 3.2 to compensate for missing data (if required), averaging the number of exceedances over a 2-year period, and comparing the number of exceedances (rounded to the nearest integer) to the number of allowable exceedances.

Although it is necessary to meet the minimum data completeness requirements to use the computational formula described in section 3.2, this criterion does not apply when there are obvious exceedance situations which contribute to a violation. For example, when a site fails to meet the completeness criteria, violation of the 5-minute trigger level can still be established on the basis of the observed number of exceedances in a year (e.g., three observed exceedances in a single year).

3.0 Calculations for the 5-minute Trigger level

3.1 Calculating a 5-Minute Hourly Maximum

A 5-minute hourly maximum value for SO_2 is the highest of the 5-minute averages from the 12 possible nonoverlapping periods during a clock hour. These 5-minute values shall be rounded to the nearest hundredth ppm (fractional values equal to or greater than 0.005 ppm are rounded up). A 5-minute maximum shall be considered valid if: (1) 5-minute averages were available for at least 9 of the 12 5-minute periods during the clock hour, or (2) the value of the 5-minute average exceeds the level of the 5-minute trigger level.

3.2 Calculating Expected Exceedances for a Year

Because of practical considerations, a 5-minute maximum SO_2 value may not be available for each hour of the year. To account for the possible effect of incomplete data, an adjustment must be made to the data collected at a particular monitoring location to estimate the number of exceedances in a year. The adjustment is made on a quarterly basis to ensure that the entire year is adequately represented. In this adjustment, the assumption is made that the fraction of missing values that would have exceeded the trigger level is identical to the fraction of measured values above this level.

For all NAMS and SLAMS sites that report 5-minute SO_2 data, the computation for incomplete data is to be made for

all sites with 50 to 90 percent complete data in each quarter. If a site has more than 90 percent complete data in a quarter, no adjustment for missing data is required. If a site has less than 50 percent complete data in a quarter, no adjustment for missing data is required and the observed exceedances are used.

The estimate of the expected number of exceedances for the quarter is equal to the observed number of exceedances plus an increment associated with the missing data. The following formula must be used for these computations:

$$e_q = v_q + [(v_q/n_q) \times (N_q - n_q] = v_q \times N_q/n_q \quad [1]$$

where

e_q = the expected number of exceedances for quarter q,

v_q = the observed number of exceedances for quarter q,

N_q = the number of hours in quarter q, and

n_q = the number of hours in the quarter with valid 5-minute hourly SO_2 maximums

q = the index for each quarter, q = 1, 2, 3 or 4.

The expected number of exceedances for the quarter must be rounded to the nearest hundredth (fractional values equal to or greater than 0.005 are rounded up).

The expected number of exceedances for the year, e, is the sum of the estimates for each quarter.

$$e = \sum_{q}^{4} e_q \quad [2]$$

$$q=1$$

The expected number of exceedances for a single year must be rounded to one decimal place (fractional values equal to or greater than 0.05 are rounded up).

The number of exceedances is then estimated by averaging the individual annual estimates over a 2-year period, rounding to the nearest integer, and comparing with the allowable exceedance rate of one per year (fractional values equal to or greater than 0.5 are rounded up; e.g., an expected number of exceedances of 1.5 would be rounded to 2, which is the lowest value for violating the trigger level.

Example

During the most recent quarter, 1210 out of a possible 2208 5-minute hourly maximums were recorded, with one observed exceedance of the 5-minute trigger level. Using formula [1], the expected number of exceedances for the quarter is:

$$e_q = 1 \times 2208/1210 = 1.825 \text{ or } 1.83$$

If the expected exceedances for the other 4 quarters were 0.0, then using formula [2], the expected number of exceedances for the year is:

$$1.83 + 0.0 + 0.0 + 0.0 = 1.83 \text{ or } 1.8$$

If the expected number of exceedances for the previous year was 0.0, then the expected number of exceedances is estimated by:

(1.8 + 0.0)/2 = 0.9 or 1

Since 1 is not greater than the allowable number of exceedances, this monitoring site would not violate the trigger level.

PART 58--AMBIENT AIR QUALITY SURVEILLANCE

1. The authority citation for part 58 continues to read as follows:

Authority: Sections 110, 301(a), and of the Clean Air Act as amended (42 U.S.C. 7410, 7601(a), 7618.

2. Section 58.1 is amended by adding the following definitions:

* * * * *

(ii) "Metropolitan Statistical Area" means the most recent area as designated by the U.S. Office of Management and Budget and population figures from the U.S. Bureau of the Census. The Department of Commerce defines a metropolitan area as "one of a large population nucleus, together with adjacent communities which have a high degree of economic and social integration with that nucleus." (1)

(jj) "Consolidated Metropolitan Statistical Area" means the most recent area as designated by the U.S. Office of Management and Budget and population figures from the Bureau of the Census. The Department of Commerce provides "that within metropolitan complexes of 1 million or more population, separate component areas are defined if specified criteria are met. Such areas are designated primary metropolitan statistical areas (PMSA's); and any area containing PMSA's is designated a consolidated metropolitan statistical area (CMSA)." (1)

* * * * *

3. Reference 1 is added at the end of the part 58 regulations.

* * * * *

(1) U. S. Bureau of the Census, "Statistical Abstract of the United States: 1993", (113th Edition), Washington, DC (1993).

* * * * *

4. In appendix C, section 2.4 is added to read as follows:

* * * * *

2.4 A monitoring method for SO_2 used for obtaining 5-minute average concentrations in connection with targeted monitoring of an SO_2 source likely to produce short-duration, high-level concentration peaks must be a designated reference or equivalent method as defined in §50.1 of this chapter and must meet the supplemental specifications for 5-minute monitoring given in table B-1 of part 53 of this chapter.

2.5 (Reserved)

* * * * *

5. In appendix D, section 1, the last two sentences of the third paragraph are deleted, and replaced by text as follows:

* * * * *

It should be noted that this appendix contains no criteria for determining the total number of stations in SLAMS networks. A minimum number of lead SLAMS is prescribed as well as a minimum required number of SO_2 SLAMS for those counties not within the boundaries of any CMSA/MSA. Also, a minimum required number of SO_2 SLAMS is listed for targeted sources of SO_2 emissions. The optimum size of a particular SLAMS network involves trade-offs among data needs and available resources which EPA believes can best be resolved during the annual network design review process.

* * * * *

6. In appendix D, the first paragraph of section 2.3 is revised to read as follows, and a new paragraph is added between the first and second paragraph:

* * * * *

The spatial scales for SO_2 SLAMS monitoring are the micro, middle, neighborhood, urban, and regional scales. The most important spatial scales to effectively characterize the emissions of SO_2 from stationary sources are the micro, middle, and neighborhood scales. Because of the nature of SO_2 emissions and the nature of distributions over metropolitan areas, the neighborhood scale is the most likely scale to be represented by a single measurement in the metropolitan area where the concentration gradients are

less steep, but only if the undue effects from local sources (minor or major point sources) can be eliminated. Urban scales would represent areas where the concentrations are uniform over a larger geographical area. Regional scale measurements would be associated with rural areas and urban background measurements.

Microscale: Emissions from stationary sources may, under certain plume conditions, result in high 5-minute and 24-hour ground level concentrations at the microscale level. The microscale measurements would represent an area impacted by the plume with dimensions extending up to approximately 100 meters.

* * * * *

7. In appendix D, section 2.3, the following is added to the end of the paragraph titled "Middle Scale":

* * * * *

Emissions from stationary sources that cover larger geographic areas may also result in high 5-minute and 24-hour SO_2 concentrations.

* * * * *

8. In appendix D, section 2.3, the following is added to the last paragraph:

* * * * *

The use of SO_2 saturation monitors is encouraged to determine the areas of maximum concentration from sources of

SO_2 emissions as an aid to locating reference or equivalent SO_2 monitors.

9. In appendix D, section 2.3, the following text is added at the end of this section:

* * * * *

The required number of sites needed to measure SO_2 concentrations for population exposure in the metropolitan areas of the counties are discussed in section 3.2 of this appendix. However, there may be significant point source emissions in other counties which are not within the geographic boundaries of any CMSA/MSA. To determine the SO_2 concentrations and exposures for these counties, a minimum number of SLAMS SO_2 monitors will be required. Table 2 shows the minimum required number of SLAMS SO_2 monitors for those counties which are not a part of any CMSA/MSA and also have SO_2 emissions greater than 20,000 tons/year as defined in the Air Facility Subsystem of AIRS.

Table 2. State and Local Air Monitoring Stations Criteria

Area	SO_2 Emissions (tons/year)	Minimum Number of SO_2 Stations
Counties (or parts of counties) not included in any CMSA/MSA	>100,000	2
	20,000-100,000	1
	<20,000	0

Monitors located to meet this requirement would generally be either middle or neighborhood scale of representativeness to measure population exposure. The monitors are not necessarily required to be located in the county where the SO_2 emissions originate, but should be located in the maximum concentration area. The maximum concentration area may be determined by modeling the SO_2 emission sources and/or in combination with SO_2 saturation monitoring studies.

The EPA will consider a request to waive all or part of these requirements for these areas. If monitoring has been conducted for a minimum of 2 years and the measured concentrations were low, then EPA will consider a request to waive all or part of the monitoring requirement in accordance with EPA guidelines.

In addition to the above requirement for SO_2 monitors, SLAMS monitors are required to be deployed around targeted sources of SO_2 emissions in order to produce 5-minute, 3-hour, 24-hour, and annual average concentration measurements. A listing of which sources are to be monitored, the schedule for monitoring, and the rationale for selecting the sources shall be prepared by the State in a targeted SO_2 monitoring plan to be reviewed as part of the annual SLAMS network review. The implementation of this plan will be as expeditious as practicable.

To adequately monitor and characterize air quality around point sources of SO_2 emissions would require multiple point monitors or open path analyzers (or a combination of both). Financial and practical constraints may prohibit the deployment of large numbers of SO_2 monitors around these targeted sources. Therefore, a modest network with a minimum requirement of four SO_2 monitors around each targeted source will be used. If open path analyzers with multiple paths are used, each monitoring path could potentially be substituted for one point SO_2 monitor. Modeling and/or saturation sampling may be used to determine the general area(s) of expected maximum SO_2 concentrations based on the most predominant wind direction. One monitor will be located at the fence line downwind of the most predominant wind direction, and a second monitor will be located in the modeled maximum concentration area based on the most predominant wind direction. Since wind directions frequently change from one season to another, the second most predominant wind direction will be used to locate the second pair of monitors. The third monitor will be located at the fence line downwind of the second most predominant wind direction, and the fourth monitor will be located in the modeled maximum concentration area based on the second most predominant wind direction. However, for situations where there is complex terrain and/or meteorology,

additional monitors may be required to adequately monitor the emissions.

In some cases, it is simply not practical to place monitors at the indicated modeled locations of maximum concentrations. Some examples may include locations over open bodies of water, on rivers, swamps, cliffs, etc. The EPA Regional Offices and the State or local air pollution control agencies should determine alternative locations and alternative network designs on a case-by-case basis.

The use of SO_2 monitoring around targeted sources of SO_2 emissions is intended to capture high 5-minute peak concentrations as well as exceedances of the 3-hour, 24-hour, and annual mean standards for SO_2. However, there will be cases where this monitoring strategy will be implemented around the targeted sources of SO_2 emissions, and the resulting measured SO_2 concentrations will be low. Therefore, SO_2 monitoring around a targeted source must be conducted for a minimum of 2 years to account for factors such as year-to-year variability in meteorology, change of plant processes, etc. If monitoring has been conducted for a minimum of 2 years, and the concentrations were low, then a decision could be made in the annual SLAMS network review between the EPA Regional Office and the State or local air pollution control agency to move the SO_2 monitors to another targeted source of SO_2 emissions. In general, it is more

important to monitor around another targeted source of SO_2 emissions than to retain monitors around a source with demonstrated low SO_2 concentrations.

10. In appendix D, the first two sentences of the first paragraph of section 3 are removed and the following two sentences are added:

* * * * *

The NAMS must be stations selected from the SLAMS network with emphasis given to urban and multisource areas. Areas to be monitored must be selected based on the CMSA/MSA population and pollutant emission concentration levels as defined in the Air Facility Subsystem of AIRS.

* * * * *

11. In appendix D, section 3.2 and Table 3 are revised to read as follows:

It is desirable to have several NAMS in the more polluted and densely populated urban and multisource areas to characterize the national and regional SO_2 air quality trends and geographical patterns. Table 3 shows the required number of NAMS monitors in the metropolitan areas to accomplish this purpose. These neighborhood scale monitoring stations (which would be located within the boundaries of the CMSA/MSA) would normally be classified as category (a) or (b) as discussed in section 3. The actual number and location of the NAMS must be determined by the

EPA Regional Office and the State agency, subject to the approval of EPA Headquarters (OAR).

Table 3. National Air Monitoring Station Criteria

CMSA/MSA Population	SO_2 Emissions (tons/year)	Minimum Required Number SO_2 Stations
> 1,000,000	> 200,000	3
	100,000-200,000	2
	0-100,000	1
200,000-1,000,000	> 200,000	3
	100,000-200,000	2
	20,000-100,000	1
	< 20,000	0
50,000-200,000	> 100,000	2
	20,000-100,000	1
	< 20,000	0

* * * * *

12. In appendix D, section 4, Table 5 is revised as follows:

For SO_2, add microscale for scale applicable for SLAMS.

13. In appendix E, section 3.1, the third sentence in paragraph is revised to read as follows:

* * * * *

Therefore, the probe or at least 80 percent of the monitoring path must be located 2 to 15 meters above ground level for all scales of measurements.

* * * * *

14. In appendix F, by revising section 2.1 to read as follows:

* * * * *

2.1 Sulfur Dioxide (SO_2)

2.1.1 Site and Monitoring Information. City name (when applicable), county name and street address of site location. AIRS site code. AIRS monitoring method code. Number of 5-minute hourly maximum observations. Number of hourly observations.

2.1.2 Annual Summary Statistics. Annual arithmetic mean (ppm). Highest and second highest 24-hour averages (ppm) (block averages measured midnight to midnight) and dates of occurrence. Highest and second highest 5-minute hourly maximums (ppm) (block averages) and dates and times (hour) of occurrence when 5-minute measurements are required. Highest and second highest 3-hour averages (ppm) (block averages beginning at midnight) and dates and times (ending hour) of occurrence. Number of exceedances of the 24-hour primary NAAQS. Number of exceedances of the 5-minute primary NAAQS (if a 5-minute primary NAAQS is promulgated) when 5-minute measurements are required. Number of exceedances of the 3-hour secondary NAAQS.

* * * * *

15. Appendix G is amended as follows:

a. In Table 1, the second column entitled 24-hour SO_2 $\mu g/m^3$ is revised to read as follows:

Table 1. Breakpoint for PSI in Metric Units[1]

24-hr SO_2 $\mu g/m^3$
80[3]
365[3]
500[3]
600[3]
675[3]
750[3]

[1]At 25°C and 760 mm Hg.

[3]All the concentration levels are used for illustrative purposes only. The actual levels will be determined at the time of the promulgation of the standard.

b. In Table 2, the first column entitled 24-hour SO_2 ppm is revised to read as follows:

Table 2. Breakpoints for PSI

(Parts per million)

24-hour SO_2
0.03[2]
0.14[2]
0.19[2]
0.23[2]
0.26[2]
0.29[2]

[2] All the concentration levels are used for illustrative purposes only. The actual levels will be determined at the time of the promulgation of the standard.

c. Figure 3 (PSI function for sulfur dioxide) is revised to read as follows:

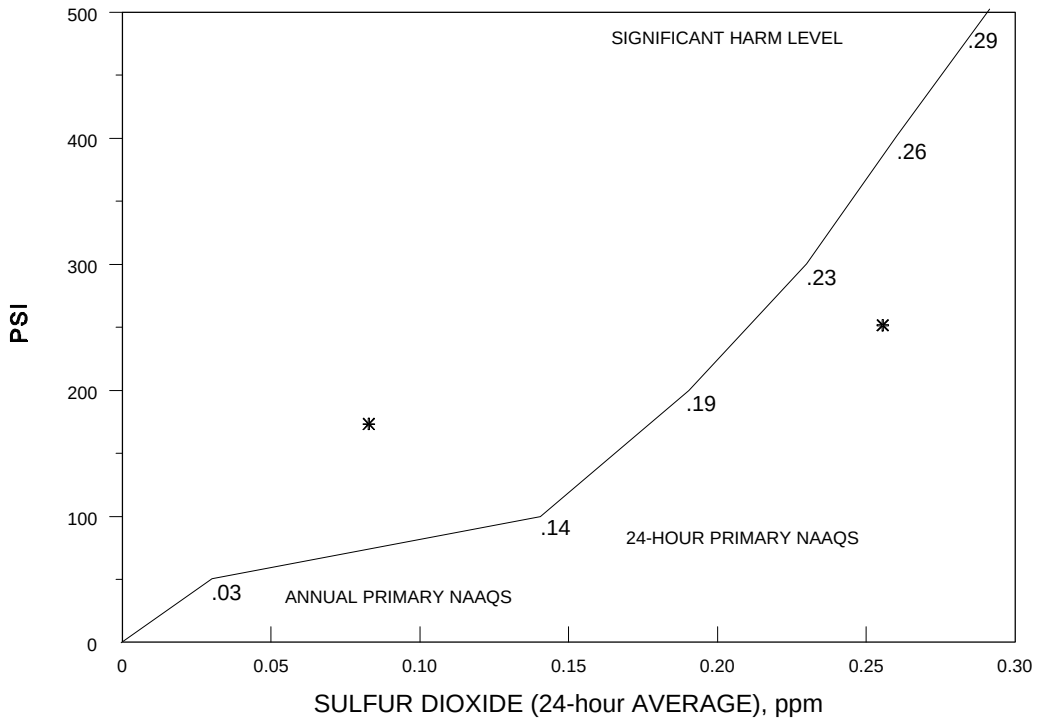

Figure 3. PSI function for sulfur dioxide.