Federal Register

Tuesday
May 20, 1986

Part III

Environmental Protection Agency

40 CFR Part 60

Review and Amendment of Standards of Performance for New Stationary Sources; Kraft Pulp Mills; Final Rule

18537

S-074999 0001(00)(19-MAY-86-09:50:12)
F4717.fmt...[16,30]...1-2-86

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[AD-FRL 2915-4]

Review and Amendment of Standards of Performance for New Stationary Sources; Kraft Pulp Mills

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Standards of performance for kraft pulp mills were proposed on September 24, 1976 (41 FR 42012), and promulgated on February 23, 1978 (43 FR 7568). On January 19, 1984, revisions to the standards of performance for kraft pulp mills were proposed in the **Federal Register** (49 FR 2448). Today's action promulgates these revisions and announces the Agency's decision on other elements of the standard which were reviewed. The revised standards apply to new, modified, and reconstructed kraft pulp mills, for which construction was commenced after September 24, 1976. These standards implement Section 111 of the Clean Air Act and are based on the Administrator's determination that kraft pulp mills cause, or contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. The intended effect of these standards is to require all new, modified, and reconstructed kraft pulp mills to achieve emission levels reflecting the best demonstrated system of continous emission reduction, considering costs, nonair quality health, and environmental and energy impact.

EFFECTIVE DATE: May 20, 1986.

Under section 307(b)(1) of the Clean Air Act, judicial review of the actions taken by this notice is available only by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: *Background Information Document.* The background information document (BID) for the promulgated standards may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Kraft Pulp Mills—Background Information for Promulgated Revisions to Standards" [EPA 450/3-85-020]. The BID contains: (1) A summary of all the public comments made on the proposed standards and the Administrator's response to the comments, (2) a summary of the changes made to the standards since proposal, and (3) the final Environmental Impact Statement which summarizes the impacts of the revisions.

Docket. A docket, number A-82-36, containing information considered by EPA in development of the promulgated standards, is available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (A-130), West Tower Lobby, Gallery 1, 401 M Street SW., Washington, DC 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT:

For Policy Questions: Mr. Doug Bell, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone number (919) 541-5578.

For Technical Questions: Mr. Kenneth Durkee or Mr. James Eddinger, Industrial Studies Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone number (919) 541-5601.

SUPPLEMENTARY INFORMATION:

I. The Standards

Standards of performance for new sources established under section 111 of the Clean Air Act reflect:

> . . . application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated [section 111(a)(1)].

For convenience, this will be referred to as "best demonstrated technology" or "BDT."

On September 24, 1976, new source performance standards (NSPS) were proposed for kraft pulp mills under section 111 of the Clean Air Act (41 FR 42012). These regulations were promulgated on February 23, 1978 (43 FR 7568). The standards limit emissions of particulate matter (PM) and total reduced sulfur (TRS) from new or modified recovery furnaces, smelt dissolving tanks, lime kilns, digester systems, multiple effect evaporator systems, black liquor oxidation systems, brown stock washer systems, and condensate stripper systems that have been constructed, modified, or reconstructed after September 24, 1976.

The PM emission limits are: 0.10 grams per dry standard cubic meter (g/dscm) at 8 percent oxygen for recovery furnaces: 0.10 grams per kilogram of black liquor solids (dry weight) (g/kg BLS) for smelt dissolving tanks; 0.15 g/dscm at 10 percent oxygen for lime kilns burning gas; and 0.30 g/dscm at 10 percent oxygen for lime kilns burning oil. Visible emissions from recovery furnaces are limited to 35 percent opacity.

The TRS emission limits are: 5 parts per million by volume (ppmv) at 8 percent oxygen from straight kraft recovery furnaces; 25 ppmv at 8 percent oxygen from cross recovery furnaces; 8 ppmv at 10 percent oxygen from lime kilns; and 5 ppmv at the actual oxygen content of the untreated gas stream from digester systems, multiple-effect evaporator systems, brown stock washer systems, black liquor oxidation systems, and condensate stripper systems. The TRS emissions from smelt dissolving tanks are limited to 0.0084 g/kg BLS.

The standards also require continuous monitoring, recordkeeping, and excess emission reporting. The opacity of recovery furnace exhaust gases must be monitored continuously, and a record of these measurements must be maintained. The concentration of TRS emissions from recovery boilers and lime kilns must be monitored continuously and a record of these measurements must be maintained. The incineration temperature of effluent gases from digesters, brown stock washers, multiple-effect evaporators, black liquor oxidizers, or condensate strippers must be monitored. Finally, the gas stream pressure drop and liquid supply pressure for any scrubber controlling emissions from lime kilns or smelt dissolving tanks must be continuously monitored. Records of 12-hour average TRS concentrations and 12-hour oxygen concentrations must be maintained on a daily basis. Quarterly reports of excess TRS emissions, excess opacities, and inadequate incineration temperatures are required as well.

Today's rulemaking promulgates six revisions and two corrections to the standards. These revisions will: (1) Exempt black liquor oxidation systems from the standards; (2) revise the existing TRS standard for smelt dissolving tanks from 0.0084 g TRS per kg of black liquor solids (g TRS/kg BLS) to 0.016 g TRS/kg BLS; (3) revise the units of the TRS standard for smelt dissolving tanks; (4) delete the requirement to monitor the combustion

temperature in lime kilns, power boilers, or recovery furnaces; (5) change the frequency of excess emission reports from quarterly to semiannually; and (6) exempt diffusion washers from the TRS standard for brown stock washer systems. The corrections would: (1) Require measurements of temperature, pressure drops and liquid feed rates for control devices which must be monitored must also be recorded; and (2) correct the reference in § 60.284(d)(3)(ii) from § 60.283(a)(1)(ii) to § 60.283(a)(1)(iii). In this second instance, the original standard erroneously referred to reporting of excess emissions when recovery boilers are used as incineration devices. The corrected standard refers to facilities where incineration devices not subject to Subpart BB are used for incineration of TRS emissions from facilities subject to the standard.

In the overall context of this source category, all of the changes to the existing standards of performance are minor. Nevertheless, they are appropriate because they change the numerical emission limit for smelt dissolving tanks to reflect the performance of BDT, improve the overall cost effectiveness of the existing standards with little increase in TRS emissions, and reduce reporting and recordkeeping requirements.

II. Summary of Environmental, Energy, and Economic Impacts

The revisions will not significantly affect nationwide particulate matter emissions, solid waste generation, water quality, or energy consumption. Deleting the TRS standard for black liquor oxidation (BLO) tanks may increase TRS emissions from the only affected kraft pulp mill by up to 16 tons per year in the fifth year following proposal. The full increase of 16 tons would be equivalent to 42 percent of the mill's controlled TRS emissions, or about 0.5 percent of its uncontrolled emissions. The exemption of diffusion washers from the TRS standard for brown stock washers will cause no increase in TRS emissions. Changing the smelt tank TRS standard will increase TRS emissions by about 6 tons annually in the fifth year following proposal. This projection is based on the assumptions that the affected facility which failed previous tests for compliance with the original NSPS will continue to perform as it has in the past and that one similar affected facility will be constructed in the future. This increase represents 8 percent of a mill's controlled TRS emissions, or about 0.2 percent of its uncontrolled TRS emissions.

There will be a maximum cost savings of $500,000 associated with the removal of the TRS standard for BLO tanks. This projection is based on our finding that one mill may stop controlling TRS emissions from its BLO tank at promulgation of the revised standards. The savings is in operating costs, and has no capital component. The savings in annual costs which will result from exempting diffusion washers from the NSPS is estimated to be $610,000 in the fifth year. There will be no significant cost impacts associated with any of the other revisions to the NSPS.

The environmental, energy, and economic impacts are discussed in greater detail in the BID for the promulgated standards, "Kraft Pulp Mills—Backgound Information for Promulgated Revisions to Standards" [EPA 450/3–85–020].

III. Public Participation

Prior to proposal of the standards, interested parties were advised by public notice in the **Federal Register** (48 FR 12825, March 28, 1983) of a meeting of the National Air Pollution Control Techniques Advisory Committee to discuss the revisions recommended for proposal. This meeting was held on April 27, 1983. The meeting was open to the public and each attendee was given an opportunity to comment on the revisions recommended for proposal. The proposed revisions were published in the **Federal Register** on January 19, 1984 (49 FR 2448). The preamble to the proposed revisions discussed the availability of the BID, "Review of New Source Performance Standards for Kraft Pulp Mills" [EPA 450/3–83–017], which described in detail the regulatory alternatives considered and the impacts of those alternatives. Public comments were solicited at the time of proposal and, when requested, copies of the BID were distributed to interested parties. To provide interested persons the opportunity for oral presentation of data, views, or arguments concerning the proposed standards, a public hearing was scheduled for February 21, 1984, at Research Triangle Park, North Carolina. A hearing was not held becasue one was not requested. The public comment period was from January 20, 1984, to March 9, 1984.

Twenty-eight (28) comment letters were received relative to the proposed standards of performance for kraft pulp mills. The comments have been carefully considered and, where determined to be appropriate by the Administrator, changes have been made in the proposed standards.

IV. Significant Comments and Changes to the Proposed Standards

Comments on the proposed standards were received from industry, Federal agencies, State and local air pollution control agencies, and trade associations. A detailed discussion of these comments and responses can be found in the BID, which is referred to in the **ADDRESSES** section of this preamble. The summary of comments and responses in the BID serve as the basis for the revisions which have been made to the standards between proposal and promulgation. The major comments and responses are summarized in this preamble. Most of the comment letters contained multiple comments. The comments have been divided into the following areas: Emission Control Technology and Selection of Emission Limits.

Emission Control Technology

Diffusion Washers

Two comments contain the findings and resulting recommendations of a study performed by an industry council to quantify TRS emissions from diffusion washers. That study examined 9 diffusion washer vents and the mean mass emission rate was found to be 0.001 lb., or less, TRS per ton of air dried pulp (TADP). Such emission levels are two orders of magnitude less than those from uncontrolled vacuum drum washer systems. Using the same cost estimating procedures employed by EPA for the case of vacuum drum washer systems, the industry calculated the cost effectiveness (C/E) of further controlling these emissions to be $240,000 per ton of TRS removed. Three commenters said that those findings preclude EPA from reasonably supporting the need to control diffusion washer vent gases on an emission significance or economic basis. They note that there would be no advantage to setting mass emission limits and that imposing measurement and reporting requirements would be burdensome. Too commenters support the above findings and conclusions. One commenter noted that diffusion washers may meet the existing standards without a control device.

One commenter disagrees with the others and says that diffusion washers should not be exempted outright from having TRS controls. This commenter believes each individual source should be required to demonstrate that emissions from its uncontrolled diffusion washers can meet the same TRS standards as controlled vacuum washers.

The study submitted on TRS emissions from diffusion washers has

been reviewed by the Agency. The Agency agrees that uncontrolled TRS emissions from diffusion washers are less than 0.001 lb TRS/TADP. This level is orders of magnitude less than that of uncontrolled vacuum drum washers (0.3 lb TRS/TADP) and is also many times lower than the mass equivalent of the NSPS. The equivalent mass emission rate for the 5 ppm NSPS, based on the vacuum drum washer, is about 0.09 lb TRS/TADP. Because of the low mass of TRS emissions controlled and the low air volumes treated, requiring control of TRS emissions from diffusion washers to the 5 ppm TRS level would result in a C/E in the range of $240,000 per ton of TRS removed. Therefore, the Agency has determined that requiring diffusion washers to meet the 5 ppmv TRS standard would be unreasonable.

For several reasons, revision of the NSPS to a mass equivalent TRS standard would also be unreasonable. As the available data indicated, uncontrolled TRS emissions from diffusion washers are many times lower than the mass equivalent of the NSPS. As such, requiring diffusion washers to demonstrate compliance with a mass equivalent NSPS would impose unnecessary costs for testing and reporting requirements. In addition, an EPA reference sampling method would have to be developed and promulgated since the present EPA Reference Method 1 is insufficient for sampling the low velocity, low volume, and cyclic gas stream emitted from a diffusion washer.

Development of a separate standard for TRS emissions from diffusion washers would require a major commitment of Agency resources to study a process which produces very low mass emissions. Such a standard would have to include a control technology which, in this case, would undoubtedly be incineration and the cost has been estimated to be in the range of $240,000 per ton TRS removed. Because projected control costs are high and potential benefits are negligible, the Agency has concluded that development of an NSPS for TRS emissions from diffusion washers is not appropriate.

Noncontact Recovery Furnaces With Wet-Bottom Electrostatic Precipitators (ESP's)

At the time the NSPS were developed, use of the direct contact furnace system was prevalent in the industry and available information indicated that the contacting of furnace flue gases with unoxidized black liquor in direct contact evaporators was causing high levels of TRS emissions. Therefore, the Agency tested direct contact furnaces equipped with BLO systems. Particulate emissions from these sources were controlled by wet-bottom ESP's through which the oxidized black liquor was passed. Also, the Agency tested a noncontact recovery furnace system, which eliminates the contact of flue gas and black liquor altogether, which in turn eliminates the need for BLO equipment. This furnace system had a dry-bottom ESP for control of particulate emissions. As a result of these tests, the BDT for control of TRS emissions from noncontact furnace systems was determined to be maintenance of proper combustion conditions and black liquor firing rates and, for direct contact furnace systems, was determined to be maintenance of proper combustion conditions and oxidation of black liquor. For both furnace types, ESP's were determined to be BDT for achieving the required limits for PM emissions.

Since the development of the NSPS, the paper industry's National Council for Air and Stream Improvement (NCASI) in 1978 investigated the possible use of unoxidized black liquor in wet-bottom ESP's and concluded that use of unoxidized black liquor in wet-bottom ESP's would not cause violations of the TRS emission limit. In 1979, another industry study concluded the wet-bottom ESP's were more reliable and less costly to operate than dry-bottom ESP's that were in use at that time. Following these studies, wet-bottom ESP's utilizing unoxidized black liquor were installed on ten noncontact recovery furnaces subject to the NSPS. In 1982 it became apparent that some of them were having difficulty in achieving the 5 ppmv TRS standard. During the same time period, four noncontact recovery furnaces were installed with dry-bottom ESP's. Two recovery furnaces of the direct contact design were equipped with wet-bottom ESP's which used oxidized black liquor in the bottoms. All six recovery furnaces which installed the technology upon which the NSPS were based have achieved those standards.

In early 1984, when the revisions resulting from the 4-year review were proposed, the extent of the problems with the wet-bottom ESP's and potential corrective measures were not fully understood. The NCASI was then in the midst of a major study which was conducted to identify the causes of TRS release from unoxidized black liquor and to develop means of eliminating excess emissions from the ESP's. In the proposal, the Agency stated that it was reasonable to delay completion of the review of the TRS standard for recovery furnaces long enough to allow NCASI sufficient time to perform its study.

Seven different commenters agreed with the EPA proposal to delay review of the existing TRS standards for recovery furnace systems as they pertain to facilities which have installed wet-bottom ESP's. All agreed that any possible changes which would take into consideration the performance of noncontact recovery furnaces equipped with wet-bottom ESP's using unoxidized black liquor should be delayed until NCASI completed its studies of these systems. One commenter noted that it has been demonstrated that wet-bottom ESP's can achieve the existing TRS standard. They conclude that any changes to the current TRS standard should pertain only to wet-bottom ESP's and that any possible changes should be delayed only until the NCASI study is complete. One commenter said that EPA should resist any change in the existing standards and that EPA should explore the use of non-TRS bearing water in the wet-bottom ESP's.

Since proposal, much work has been done by NCASI and by individual affected firms in an attempt to fully understand and correct the problem. The NCASI study has identified several factors which are contributing to the problem. These include inlet baffling design, liquor temperature, liquor level, degree of agitation, and liquor chemistry. To date, modifications to mitigate the first four factors have been made in most instances where they appeared feasible. The results of the modifications differed from mill to mill and were not always successful for reducing TRS emissions. Similarly, efforts by individual mills to control or modify the chemistry of liquors used in the wet ESP's have given mixed results. After making various combinations of modifications, some facilities have achieved, or have come very close to achieving, the 5 ppmv TRS standard. However, according to industry assessments, several furnaces appear unable to consistently achieve better than 15 ppmv and some appear unable to consistently achieve better than 25 ppmv while using unoxidized black liquor in the ESP.

The EPA has reviewed available data and the steps which industry have taken. It is clear from this that NCASI and individual firms have expended considerable resources in their attempts to identify and correct the causes of TRS release from unoxidized black liquor used in wet-bottom ESP's. The Agency agrees that the recovery furnace TRS standard is probably not consistently achievable at all sources when such liquor is used in the ESP's. However, based on its review of the industry

studies, the factors which are causing excess emissions, and of potential remedies, EPA has concluded that the standard for recovery furnace TRS emissions should not be revised. In reaching this conclusion, the Agency recognizes that the decisions to install the wet-bottom precipitators were made based on the available industry data which indicated that the TRS emission limit would not be violated. But, there were other options available and those options were employed at other facilities. Furthermore, retrofit options are available which will allow the sources with wet-bottom ESP's to achieve compliance with the TRS emission limit. For example, two mills have made piping changes which allow them to use fresh water in wet-bottom ESP's and the level of the NSPS for TRS has been achieved. In addition, mills have the option of converting the bottoms of their ESP's from the wet to the dry design. Although each of these options entails a retrofit with annualized costs ranging from $85,000 to $275,000 per mill and the associated TRS reduction could be small, EPA believes the costs of the retrofits are reasonable. When the annualized cost of installing and retrofitting a wet-bottom ESP are compared to the annualized costs of initially installing a dry-bottom ESP, the net difference in estimated annualized costs of retrofitting the wet-bottom ESP are reasonable and range from a savings of $40,000 to a cost of $100,000.

In conclusion, therefore, the Agency believes that changes to the NSPS for kraft recovery furnaces would be inappropriate and that those mills now out of compliance with the TRS standard should take the necessary steps to achieve compliance.

Degradation of Performance of ESP's

Three commenters disagree with the Agency's conclusion in the BID (EPA 450/3-93-017) that data from a 9-year-old ESP show that ESP's can reduce recovery furnace particulate emissions to NSPS levels over a long period of time when they are properly maintained. One commenter operates the ESP to which the three referred and this commenter says the data show that, even with maintenance, the ESP is not capable of achieving NSPS consistently. The commenter also said that it is inappropriate to draw conclusions about long-term performance of ESP's from data obtained from only one ESP.

A second commenter said that the data provided by the previous commenter clearly show an upward trend in emissions of PM with increasing age of the ESP and that EPA's judgment concerning the ability of ESP's to meet NSPS for particulate emissions over the long term is an inappropriate interpretation of data from a single location. The commenter presented long-term data from two other sources with ESP's designed to achieve emission levels similar or NSPS and said the data from all three sources showed an upward trend in particulate emissions with increasing age of the ESP's. The data from all three ESP's also showed that measured emissions, following major rebuilds of the ESP's were significantly higher than those achieved when the precipitators were new. The commenter attributed the increased emissions to such factors as buildups and corrosion in duct work, plenums and turning vanes, which can cause flow maldistributions.

The second commenter maintains that EPA has not thoroughly investigated the ESP degradation issue in its NSPS review. They also say that the Agency has not considered the costs of major rebuilds or lost production due to unscheduled repairs in the cost-effectiveness calculations.

The problem of gradual deterioration of ESP performance was investigated during the NSPS development and again during the NSPS review. During the NSPS development, the ESP vendors indicated that a properly maintained ESP should not deteriorate over the expected life of the unit. Problems encountered are usually due to operating the equipment at conditions for which it was not designed (i.e., higher gas volumes, higher inlet loadings, or lower inlet temperature). The main problem areas are corrosion and wire breakage.

The unit for which EPA obtained long-term particulate data, at the time it was installed, employed a new design which minimized wire breakage. This unit was tested by EPA as part of the data base for the NSPS. Additional data supplied by the State agency during the NSPS development indicated that the unit consistently achieved the NSPS level. During the NSPS review, the operator of this unit was again contacted to obtain information on maintenance costs and ESP performance. The maintenance costs for this unit had increased from 240 man-hours per year to an average of 913 manhours per year. These maintenance costs are higher than the estimate used by the Agency. If it could be shown that all of these costs are attributable to the NSPS, the incremental C/E of the NSPS is $200–$300 per ton, which is still reasonable. However, as noted, it is not clear that the increased maintenance costs are in fact due to the NSPS. The data indicated that after 10 years of operation, the unit was still capable of achieving the NSPS level. It is true, as the one commenter pointed out, that test data indicate that at times the unit has had emissions above the NSPS level. It must be pointed out that this unit is not subject to the NSPS and is only required to achieve a State regulation which is double the NSPS level. Therefore, this unit is maintained to achieve the State level as opposed to the NSPS level. It is the Agency's judgment that this unit could consistently achieve the NSPS if the frequency of maintenance were increased. The Agency's judgment is supported by the data supplied by one commenter which shows the performance of an ESP which is not subject to the NSPS but which is subject to a State standard about 25 percent lower than the NSPS. This latter unit has been operating for 10 years and has consistently achieved the NSPS levels.

The Agency's cost estimates do not include the cost of major rebuilds as was suggested by the commenters. The ESP's were widely used in the kraft pulp industry for recovery of process chemicals prior to establishment of NSPS and none of the information which has been reviewed indicates that major rebuilds are needed more frequently because of NSPS for PM. As a result of NSPS, new ESP's are designed with more plate area and additional maintenance costs for such items as replacement of broken wires would be possible. However, the need for major rebuilds, to repair corrosion damage, for example, is most likely attributable to process parameters, such as the flue gas temperature, and not related to the sizing of the EPS's. Since the NSPS does not affect the frequency of major rebuilds, it would be inappropriate to include the costs of rebuilds in the calculation of control costs.

Selection of Emission Limits

Smelt Dissolving Tanks (SDT)

Five different commenters were in agreement with EPA's decision to raise the TRS standard for SDT. However, they said that the increase should be greater than the one which was proposed. One commenter said that preliminary data from a new mill indicated that the proposed level needed to be doubled. In a follow-up letter, the commenter described the liquids being used in their scrubbers and noted that they planned to try and redirect sulfide-containing recycle streams from the SDT and scrubbers. In a third letter, the commenter said that efforts to modify their piping system to redirect sulfide

bearing liquids away from the smelt tanks had been successful and that they had passed compliance tests. Thus, they withdrew their request for a higher TRS limit than that which was proposed.

A second commenter sent two letters describing experience at two of its mills. The commenter said that selection of the scrubbing liquid is the only known method of modifying TRS emissions associated with smelt tank vent gases. The commenter has examined the use of alternative scrubbing liquids and said that TRS emissions exceeded the standard even when fresh water was used in the scrubbers at one of the mills. They said their best results at the other mill were obtained when both the smelt tank scrubber and the lime kiln mud washer showers were operated on fresh water, which the commenter considers an artificial condition for that particular mill. The commenter submitted additional continuous monitoring data and said the new data showed variations similar to those in previously submitted information.

A third commenter said the proposed TRS level is a move in the right direction, but that two of its facilities cannot meet that level on a consistent basis. The commenter said that various scrubbing media had been tried but that no controllable process or control technology operating conditions had been identified which could limit TRS emissions from smelt tank vents. This commenter said its data (from 50 hours of continuous monitoring) supported a TRS limit well above the proposed level. Two comments by industry trade associations supported the first three commenters' observations and comments.

Emissions of TRS compounds are governed by the concentration of reduced sulfur compounds either in the smelt from the recovery furnace or in the water in the smelt tank. Additional TRS may be introduced if liquids contaminated with TRS compounds are introduced to the scrubbers used for control of PM. There is no means of controlling the introduction of reduced sulfur compounds via the smelt from the recovery furnace. However, the introduction of additional TRS compounds to the vent gases can be prevented, substantially reduced, by the selection of liquids to be used in the tanks and scrubbers. Preventing the introduction of TRS-contaminated liquids to the SDT system is the basis of BDT, which is, "to use a liquid that is low in sulfides and TRS compounds—such as fresh water or recycled water from the lime mud washer—in the smelt tank and particulate control device" (49 FR 2448). The date base used in the review to revise NSPS for TRS from 0.0084 g/kg BLS to 0.016 g/kg BLS includes two test reports from one mill which failed to comply with the 0.0084 g/kg emission limit. The operators of the mill indicated that they had used fresh water in their mud washers and that the weak wash had been used in both the smelt tank and scrubbers. Use of these types of liquids is considered to be BDT for reducing TRS emissions. They then experimented with various liquids in the scrubber, including fresh water. Since no reasons for the higher TRS emissions could be identified, and since the sources were applying BDT, the emission limit for TRS emissions was proposed to be raised to 0.016 g/kg BLS to reflect the results of these compliance tests.

Information supplied by the first commenter showed that relatively small flows of TRS-contaminated recycle streams were being introduced to the weak wash storage tanks and subsequently to the SDT's and scrubbers. The operators of the mill were reluctant to remove the recycle streams because they did not want to increase either water usage or the amount of wastewater to be treated. When the mill used BDT and removed the TRS contaminated liquids from the smelt dissolving system, they did pass tests for compliance with the current TRS standard. After passing the test, the commenter withdrew his initial comment that the TRS limit should be greater than 0.016 g/kg BLS.

The data supplied by the second commenter for one of their mills showed that they had been using contaminated condensate in their SDT scrubber recycle system. When the condensate was replaced with fresh water, TRS emissions began to drop. Later data from the same source showed that use of boiler blowdown (which is very low in residual sulfides) in the system reduced TRS emissions to NSPS levels. The commenter said that the best results were obtained when lime mud shower (which produces the weak wash used in the SDT) and SDT scrubber were operated on fresh water, but that this represents an artificial condition established solely to minimize TRS emissions. They say that operating in this manner causes an unusually high hydraulic loading on the effluent treatment system. The artificial condition described for the plant is what the Agency considers to be BDT. While the plant may not operate this way now, the Agency has concluded that using fresh water, or other liquids low in TRS compounds, to reduce TRS emissions is technically feasible and reasonable from a cost standpoint. The Agency continues to believe that if BDT is implemented, the TRS limit of 0.016 g TRS/kg BLS can be met.

The EPA disagrees with the second commenter's statement that selection of scrubbing liquid is the only known method of modifying TRS emissions associated with SDT vent gases. The mill which they were discussing had problems with excess TRS emissions and began testing different scrubbing liquids. Initially, they had been using weak white liquor, which is known to remove some polar compounds, such as H_2S. Thus, it is not surprising that TRS emissions increased when water, and various other liquids were substituted. However, the scrubber was installed for removal of PM, not TRS. The key point is that BDT for TRS is aimed at preventing introduction of TRS to vent gases by the dissolving liquid or scrubbing medium.

Both the second and third commenters said that the ranges in their TRS monitoring data were indicative that the proposed standard cannot be met on a consistent basis. The third commenter did not submit enough information for the Agency to draw any conclusions. It is noted that the two tanks to which they referred are not subject to NSPS and the comment letter suggested that water used in the SDT's was not of the quality required by BDT. The second commenter's data showed variation in TRS concentrations for individual samples, but when the data points were averaged, as they would be for a compliance test report, the emission levels were below the proposed TRS limitations.

Two commenters object to relaxing the existing TRS standard for SDT because of one or two failures to achieve compliance. One commenter suggests an alternative of allowing exemptions based upon site-specific studies and a requirement that Best Available Control Technology be employed.

These suggestions are inconsistent with the basis of the NSPS. An emission limit must be set at such a level that any facility which employs BDT can achieve that emission level during a performance test. A facility which was employing BDT failed two performance tests. In selecting an emission limit, variability of available test data must be taken into consideration. The Agency proposed to revise the TRS standard from 0.0084 g/kg BLS to 0.016 g/kg BLS in order that all facilities using BDT can meet the TRS standard.

Lime Kilns

Five different commenters suggest the current TRS standard for lime kilns needs to be revised to reflect the results of continuous monitoring. One commenter says the monitoring data from two of its NSPS facilities indicate that the standard needs to be revised to allow for exceedance of the TRS limit 3 percent of the reporting time to allow for normal variations in operating conditions. The commenter lists four factors which can influence TRS emissions from the kiln stack: (1) Kiln firing conditions; (2) treatment of noncondensable gases; (3) source of water used at the particulate scrubber; and (4) porosity of the mud at the filter (which controls oxidation of the residual sulfide content). This commenter stated that TRS emissions associated with the first three factors are straightforward and the control options are understood, but that the control of mud porosity at the filter is not completely understood.

One commenter stated that the current TRS standard can be met when the kiln and associated systems are operating normally, but that the nature of the process is such that unavoidable irregularities which can affect TRS emissions will occur 10 percent or less of the total operating time. He says that short-term "blips" or "spikes" are adequately reckoned by the averaging time, but that a 4 percent allowance for excess emissions appears reasonable for those infrequent, medium-term TRS excursions which are beyond the control of the operators. The commenter stated he is unaware of any evidence that the use of caustic soda (to control excess emissions) is effective and/or cost effective. He also doubts that lime mud oxidation is a cost-effective technique for controlling excess TRS emissions.

One commenter has been unable to explain variations in data from a certified continuous monitoring system. The commenter stated that 12-hour averages from this particular facility range from 2 to 30 ppmv TRS and the commenter is concerned that it may not be possible to meet the 8 ppmv limit continuously.

One commenter says that as more TRS monitoring systems come on-line, there will be additional information which will be useful in determining whether or not the current standard is appropriate. The commenter suggests that EPA should evaluate available continuous monitoring data from lime kilns equipped with wet scrubbers before making any final decisions on an NSPS.

Many of the comments were prompted by the requirement that lime kilns subject to the NSPS install and operate continuous emission monitors (CEM's) to measure TRS emission by July 20, 1984. After considering the comments, the Agency determined that it would be appropriate to obtain additional data. Subsequently, the first 6 months' CEM data for all 19 lime kilns subject to the NSPS were requested along with associated operational data and design parameters for the lime kilns and lime mud washing systems. The Agency has received additional information for 14 of the 19 lime kilns subject to the NSPS. Of the 14 submitting data, 3 were judged to be using BDT and had CEM data which were accompanied by information needed to ascertain the accuracy of the certification reports. The data from these 3 facilities indicate that the NSPS can be achieved when BDT is implemented.

During the data period, one of the three mills had only one excess emission and the excursion occurred when the addition of caustic was discontinued for testing of the CEM. A second mill, which previously achieved the NSPS TRS limit a high percentage of the time through good mud washing and process contol, began using caustic in recent months. The most recent excess emission reports show no excess emissions. The Agency considers this information to be indicative that caustic addition reduces excess TRS emissions.

Approximately half of the remaining data could not be used in making a decision because either data needed to determine if the CEM's had been properly certified was missing or the information provided showed that the CEM's had histories indicative of maintenance problems. The data from the rest of the mills were suggestive of failure to follow all of the practices which constitute BDT.

In general, the mills that have employed CEM'S on lime kilns for an extended period have been the most successful in continually achieving the NSPS. The EPA believes this shows that the ability to reliably operate CEM's and use the CEM's for process control plays a central role in identifying and preventing those process variations and upsets that cause excess emissions and that such ability is learned over time. The learning time is necessary to allow the owner/operator to identify the process variables that are leading to the periods of excess emissions. These process variables and their impacts on periods of excess emissions will be specific to each mill. The industry continues to believe it is possible in some cases that, even with experience and the use of BDT, there could continue to be periods of excess emissions. Although such a possibility may not be ruled out, the Agency has not received any data which would indicate that such is the case. The Agency expects that, as the operators of these facilities learn to use their CEM's to aid in controlling their processes, the periods of excess emissions caused by process upsets should be significantly reduced when BDT is fully implemented.

Industry representatives have expressed concern that reported excess emissions may be construed as violations of the Clean Air Act. Compliance or noncompliance with the Act is determined by performance testing. A detailed description of the Agency's intended use of CEM data was previously published in the **Federal Register** (43 FR 7568). The overall intent of the requirement to continuously monitor TRS emissions is to provide enforcement agencies with an instrument to determine that BDT has been implemented and is being practiced.

Two comments were received concerning the lime kiln controlled with an ESP which was described in the Proposed Rules. The commenters emphasized the uniqueness of this particular facility, at which an ESP was installed to meet local and State particulate limits that are site specific, and that an exemption should be granted for this facility. One commenter requested that the NSPS TRS limit be revised to require this particular facility to meet a TRS emission limit of 20 ppmv corrected to 10 percent oxygen, on a 12-hour basis, and not to be exceeded more than 2 percent of the time on a quarterly basis. The commenter also said that the stack gases from the ESP would disperse better than those from a venturi scrubber because the gases from the ESP are approximately 180° hotter.

The Agency has reviewed information on the lime kiln which is controlled with an ESP instead of a wet scrubber. Information reviewed by the Agency suggests that this particular facility can control TRS emissions to NSPS levels by making additional improvements in process controls and by raising the temperature of the cold end of the lime kiln by 100° F. During the review, the costs of implementing BDT were examined. These costs included the costs to increase cold end temperatures, and the Agency continues to believe these costs are reasonable.

V. Administrative

The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a

dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to readily identify and locate documents so that they can intelligently and effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated standards and EPA responses to significant comments, the contents of the docket will serve as the record in case of judicial review [section 307(d)(7)(A)].

The effective date of this regulation is May 20, 1986. Section 111 of the Clean Air Act provides that standards of performance or revisions thereof become effective upon promulgation.

As prescribed by Section 111, the promulgation of these standards was preceded by the Administrator's determination (41 FR 42028, dated September 24, 1976) that kraft pulp mills contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare. In accordance with Section 117 of the Act, publication of these promulgated standards was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies.

This regulation will be reviewed 4 years from the date of promulgation as required by the Clean Air Act. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology, and reporting requirements. The reporting requirements in this regulation will be reviewed as required under EPA's sunset policy for reporting requirements in regulations.

Section 317 of the Clean Air Act requires the Administrator to prepare an economic impact assessment for any new source standard of performance promulgated under section 111(b) of the Act. An economic impact assessment was prepared for this regulation and for other regulatory alternatives. All aspects of the assessment were considered in the formulation of the standards to insure that cost was carefully considered in determining BDT.

This review was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291 (OMB Control No. 2060-0021). Any comments from OMB to EPA and any EPA response to those comments are available for inspection at EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW., Washington, DC 20460.

Under Executive Order 12291, EPA is required to judge whether a regulation is a "major rule" and therefore subject to the requirements of a regulatory impact analysis (RIA). The Agency has determined that this regulation would result in none of the adverse economic effects set forth in Section 1 of the Order as grounds for finding a regulation to be a "major rule." The Agency has, therefore, concluded that this regulation is not a "major rule" under Executive Order 12291.

The Regulatory Flexibility Act of 1980 requires the identification of potentially adverse impacts of Federal regulations upon small business entities. The Act specifically requires the completion of a Regulatory Flexibility Analysis in those instances where small business impacts are possible. Since it is possible that some kraft pulp mills qualify as small businesses, the impacts of the standards on small businesses were considered. None of the four criteria which would signify significant impact were met. Because these standards impose no adverse economic impacts, a Regulatory Flexibility Analysis has not been conducted.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that the proposed rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 60

Air pollution control, Reporting and recordkeeping requirements, Incorporation by reference, Intergovernmental relations, and Paper and paper products industry.

Dated: May 9, 1986.

Lee M. Thomas,

Administrator.

PART 60—[AMENDED]

40 CFR Part 60 is amended as follows:

1. The authority citation for Part 60 continues to read as follows:

Authority: Secs. 101, 111, 114, 301(a), Clean Air Act as amended (42 U.S.C. 7401, 7411, 7414, 7416, 7601).

2. In § 60.280, paragraphs (a) and (b) are revised to read as follows:

§ 60.280 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities in kraft pulp mills: Digester system, brown stock washer system, multiple-effect evaporator system, recovery furnace, smelt dissolving tank, lime kiln, and condensate stripper system. In pulp mills where kraft pulping is combined with neutral sulfite semichemical pulping, the provisions of this subpart are applicable when any portion of the material charged to an affected facility is produced by the kraft pulping operation.

(b) Except as noted in § 60.283(a)(1)(iv), any facility under paragraph (a) of this section that commences construction or modification after September 24, 1976, is subject to the requirements of this subpart.

* * * * *

3. In § 60.281, paragraph (e) is revised to read as follows:

§ 60.281 Definitions.

* * * * *

(e) "Brown stock washer system" means brown stock washers and associated knotters, vacuum pumps, and filtrate tanks used to wash the pulp following the digestion system. Diffusion washers are excluded from this definition.

* * * * *

4. In § 60.283, the introductory text of paragraph (a)(1) is revised and paragraphs (a)(1)(iv), (a)(1)(v), and (a)(4) are revised to read as indicated below:

§ 60.283 Standard for total reduced sulfur (TRS).

(a) * * *

(1) From any digester system, brown stock washer system, multiple-effect evaporator system, or condensate stripper system any gases which contain TRS in excess of 5 ppm by volume on a dry basis, corrected to 10 percent oxygen, unless the following conditions are met:

* * * * *

(iv) It has been demonstrated to the Administrator's satisfaction by the owner or operator that incinerating the exhaust gases from a new, modified, or reconstructed brown stock washer system is technologically or economically unfeasible. Any exempt system will become subject to the provisions of this subpart if the facility is changed so that the gases can be incinerated.

(v) The gases from the digester system, brown stock washer system, or condensate stripper system are controlled by a means other than combustion. In this case, this system shall not discharge any gases to the atmosphere which contain TRS in excess of 5 ppm by volume on a dry basis, corrected to the actual oxygen content of the untreated gas stream.

* * * * *

(4) From any smelt dissolving tank any gases which contain TRS in excess

of 0.016 g/kg black liquor solids as H_2S (0.033 lb/ton black liquor solids as H_2S).

* * * * *

5. In § 60.284, both the introductory text of paragraph (a)(2) and (b)(1) are revised to read as indicated below and paragraph (c)(4) is added. Additionally, the introductory text of paragraph (d) is revised, paragraph (d)(3) is revised, and paragraph (d)(3)(ii) is revised and add OMB number at the end of the section to read as follows:

§ 60.284 Monitoring of emissions and operations.

(a) * * *

(2) Continuous monitoring systems to monitor and record the concentration of TRS emissions on a dry basis and the percent of oxygen by volume on a dry basis in the gases discharged into the atmosphere from any lime kiln, recovery furnace, digester system, brown stock washer system, multiple-effect evaporator system, or condensate stripper system, except where the provisions of § 60.283(a)(1) (iii) or (iv) apply. These systems shall be located downstream of the control device(s) and the spans of these continuous monitoring system(s) shall be set:

* * * * *

(b) * * *

(1) For any incinerator, a monitoring device which measures and records the combustion temperature at the point of incineration of effluent gases which are emitted from any digester system, brown stock washer system, multiple-effect evaporator system, black liquor oxidation system, or condensate stripper system where the provisions of § 60.283(a)(1)(iii) apply. The monitoring device is to be certified by the manufacturer to be accurate within ±1 percent of the temperature being measured.

* * * * *

(c) * * *

(4) Record once per shift measurements obtained from the continuous monitoring devices installed under paragraph (b)(2) of this section.

* * * * *

(d) For the purpose of reports required under § 60.7(c), any owner or operator subject to the provisions of this subpart shall report semiannually periods of excess emissions as follows:

* * * * *

(3) For emissions from any digester system, brown stock washer system, multiple-effect evaporator system, or condensate stripper system periods of excess emissions are:

(i) * * *

(ii) All periods in excess of 5 minutes and their duration during which the combustion temperature at the point of incineration is less than 1200 °F, where the provisions of § 60.283(a)(1)(iii) apply.

* * * * *

(Reporting and recordkeeping requirements are approved by the Office of Management and Budget under Control No. 2060-0021)

[FR Doc. 86-11293 Filed 5-19-86; 8:45 am]

BILLING CODE 6560-50-M