summary of these requirements.

8.2 Summary of March 5, 2002 Comments

Pre-decisional Draft Rule Requirements

Kiln HCl Standard and Risk Assessment of HCl:

The SERs noted that they had revised their initial HCl risk assessment in accordance with comments EPA provided after the SERs. presentation on February 1, 2002. The SERs also provided a table comparing the its risk assessment with the HCl risk assessment conducted by EPA for sources in the pulp and paper industry.

The SERs reiterated that, to comply with the 400. F work practice standard, sources would need to operate below 350. F, due to process variability. The SERs stated that using water to cool the gas stream will increase the gas flow rate. The additional flow of the gas stream from water injection will require a new ID fan, which EPA agreed to include as a cost item. The cost of a fan to provide a 150,000 ACFM air-flow rate would be $150,000, with an annual increased energy cost of $93,000.

Materials Handling Operations PM and Opacity Standards:

The SERs expanded on their earlier comments: The SERs reiterated that since certain materials handling operations are not covered in the MACT standard for portland cement facilities, neither should they be covered under the Lime MACT. The SERs reviewed EPA.s rationale for this difference, that MPOs at portland cement plants may be covered under the NSPS Subpart F, whereas the MPOs at lime plants are covered under the NSPS Subpart OOO. The SERs noted that portland cement plants. MPOs may also be subject to Subpart OOO, but that rule.s requirements would end after the secondary crusher conveyor (the point at which subpart F applicability begins).

The SERs also clarified a point it made at the February 19, 2002, SER outreach meeting. If EPA had used the *mean* of the top 12 percent of performing facilities (instead of the *median*), the floor would be 3.25 times higher (i.e., less stringent) than the level of control currently under consideration. The SERs states that, without data on the entire top 12 percent of the sources, the appropriate measure of central tendency cannot be decided, and EPA cannot accurately establish the floor.

At least one SER is concerned that the use of water sprays to control fugitive PM from MPOs would create problems in the screening operations. They referred to problems that arise when heavy rains occur, such as blinding of the screens and the subsequent reduction in production capacity.

Kiln PM standard:

SERs offered process reasons for using a wet scrubber instead of a baghouse for PM control, as summarized below. The SERs offered these comments in support of their request that EPA create a subcategory for kilns equipped with wet scrubbers.

The SERs commented that scrubbers allow a kiln to produce a low-sulfur lime product through careful control of the kiln environment. They referenced a leading technical treatise on lime manufacturing (Oates, *Lime and Limestone* (1998)), which noted that a feature of rotary kilns is that sulfur from the fuel, and, to a lesser extent from the limestone, can be expelled from the kiln in the kiln gases, without over-burning the lime, by a combination of controlling the temperature and the percentage of CO in the calcining zone. As a result, a lime kiln burning high sulfur coal or coke can determine, by adjusting operational parameters, whether the sulfur will go out in the product or in the exhaust gases, and high reactivity, low sulfur limes can be produced using relatively inexpensive high sulfur fuels, subject to emission limits for SO_2 in the exhaust gases.

Hence, the SERs noted, scrubbers enable a kiln to produce a low-sulfur lime product (needed for the steel industry) when the only fuel reasonably available to a source is high sulfur coal. Kilns using high-sulfur coal can operate such that the sulfur is emitted through the stack, rather than incorporated into the product. A scrubber makes it possible for a kiln to burn high-sulfur coal, produce a low-sulfur product, and avoid adverse environmental impacts and non-compliance with SO_2 emission limits. The need to use locally available fuel is a key operational requirement for lime plants because of the freight costs involved in shipping fuel long distances. This is particularly so for small companies, the SERs noted, because they are less able to reduce freight costs through negotiations with carriers. Finally, the SERs observed that, in the Portland Cement MACT rule, EPA recognized it would be impractical to require facilities to switch from coal to natural gas, because there was insufficient natural gas infrastructure readily available to them. Requiring lime plants to switch from scrubbers to baghouses would effectively result in a similar fuel switching requirement, because these facilities would have to cease using locally available higher sulfur coal, and switch to lower sulfur coal. For many of these plants, however, lower sulfur coal would not be practically available because of the freight cost or other infrastructure limitations.

In summary, the SERs believes a wet scrubber offers an operational advantage by allowing the kiln to burn fuels across a range of sulfur content and still produce a low-sulfur lime product while minimizing SO_2 emissions.

Another SER provided the following comments about the sulfur cycle in a kiln. Sulfur from the fuel is vaporized in the kiln flame at about 3,500. F. Kiln operators try to maintain the maximum feed material temperature in the burning zone of the kiln below 2,100. F, to ensure the product is reactive. This temperature range does not promote rapid vaporization of sulfur salts.

However, sulfur salts are emitted in the exhaust gas (*i.e.,* not incorporated into the lime product) when the exhaust gas temperature is maintained above approximately 1,800 . F. If the kiln gas temperature is below 1,800. F, kiln operational problems could result (*e.g.,* a .sticking. problem resulting from the liquid phase of sulfur salts in contact with a kiln.s refractory lining and duct work, and the limestone material).

Another SER stated that its wet scrubbers allow the plant to achieve zero-discharge status under the Clean Water Act, by using storm-water runoff as makeup water for the scrubber. This SER reiterated previous comments that the gaseous emissions of a scrubber would be less than those from a baghouse, and that the capital and operating costs of a wet scrubber are lower than for a baghouse.

This SER also said that the handling of solids from a wet scrubber is easier and renders less fugitive dust emission than those from a baghouse. Further, this SER stated that scrubber solids from its plant are now used in agriculture. But solids from a baghouse would have different characteristics (possibly characterizing them as hazardous waste) and prevent them from being used on farms. The SER remarked that the solids from a baghouse would need to be landfilled, and their firm only has 2 years of land-disposal capacity available to it.

The SERs said that scrubbers require less space than a baghouse at a lime plant, and a lot of lime plants do not have the space at their plant to replace the wet scrubber with a baghouse. One SER mentioned his plant uses a chamber from its underground mine as a wet scrubber, and this frees surface space for other operations.

The SERs indicated that EPA has underestimated the cost to replace wet scrubbers with baghouses by about a factor of two, according to a quote recently solicited by one SER. The SERs state that EPA.s cost estimates do not properly consider space constraints, dismantling of the scrubbers, and replacement of equipment such as stone bins and preheaters. One of the SERs provided a cost analysis which was prepared by an APCD vendor.

Monitoring and Testing Requirements:

The SERs referred to their previous comments to reiterate that EPA Method 9 should be allowed to monitor positive-pressure baghouses and that the rule should allow flexibility to monitor scrubber operating parameters other than flow rate.

The SERs provided reasons the draft pre-decisional rule should not require testing for organic HAPs in support of an area-source determination. They said that, since only limestone is processed in lime kilns, testing for a broad range of HAPs is unnecessary. By contrast, cement kilns emit organic HAP as a result of processing many other types of feed materials, some of which may contain petroleum or kerogens. Several States have confirmed that lime-kiln limestone does not contain kerogens.

Economic Impact Analysis

Overcapacity: In earlier comments, the SERs observed that lime manufacturers compete in markets where there is significant overcapacity. In their additional comments, they observed that, even with the shutdown of several kilns in the year 2000, significant overcapacity remains. Furthermore, the capacity levels reported by the USGS do not include deactivated plants, which represent potential capacity that could be reactivated if prices were to increase. The SERs believe this suggests even greater pressure to keep prices down.

Competition from Alternative Products: The SERs emphasized that lime is a basic industrial material, with limited value-added from manufacturing. It is easier to replace lime in some of these processes than complex materials, so lime faces competition from replacement materials in virtually all of its applications.

Lime Markets are Resistant to Price Increases: The SERs observed that lime prices have remained roughly static for the last five years. They point out further that the USGS Minerals Yearbook for 2000 notes that a large increase in natural gas prices led to the shutdown of several kilns throughout the U.S.

Lime industry profit margins: The SERs accept EPA.s estimate of industry profit margins, even though they are probably on the high side, especially for small businesses. The SERs believe that profit margins do not indicate the ability of a firm to pass on cost increases. Small businesses need to generate cash and guard their access to credit and capital so they can grow and maintain/replace existing equipment. It is extremely difficult for a small business to obtain credit for a project, such as the installation of a new APCD, that will not increase the revenues and profits of the business.

Elasticity estimates for the lime industry: The SERs did not know of any documentation to support an estimate for the price elasticity of demand for the lime industry that differed from that contained in EPA's draft EIA.

9. Panel Findings and Discussion

The Panel considered a wide range of options that would enable EPA to mitigate impacts on small businesses. The Panel arrived at these options through consideration of the comments of the SERs and its findings based on the assembled record. The Panel believes that the following options would minimize the burden on small entities without compromising the human health and environmental benefits of the regulation or the requirements of the Clean Air Act.

9.1 Kiln HCl Standard

The NLA conducted a risk assessment of HCl emissions from lime kilns, with the purpose of demonstrating there would be an ample margin of safety with respect to HCl levels in the atmosphere without the work practice standard under consideration for HCl. Section 112(d)(4) of Clean Air Act would allow EPA to forego setting an emission standard, or to set a standard which is less stringent than the MACT floor, for HCl if this is the case. The EPA has reviewed the risk assessment report, approves of the methodology and model inputs used by the NLA.s consultant, and believes, based on the risk assessment, there would be an ample margin of safety. Thus, the Panel recommends that the proposed rule should not include the HCl work practice standard. On the basis of the Agency.s findings, EPA will not include an HCl work practice standard in the proposal.

9.2 Materials Handling Operations (MHOs)

The Panel recommends that the MHOs in limestone quarries should not be considered affected sources under the proposed rule. In other words, the first affected source in the sequence of kiln feed MHOs would be the raw material storage. This is consistent with what is required under the Portland Cement MACT standard. In addition, MHOs pertaining to lime kiln dust would not be an affected source, consistent with the NSPS subpart OOO. The EPA intends to adopt these recommendations in its proposed rule.

9.3 Kiln PM/Metals Standard

(a)Bubbling Provision

The Panel recommends including, in the proposed rule, a bubbling provision for the kiln PM emission limit, such that the sum of all kilns. and coolers. PM emissions at a lime plant would be subject to the PM emission limit, rather than each individual kiln and cooler. In this approach, kilns that over-comply could compensate for kilns not meeting the emission limit. The affected source would encompass all the lime kilns and coolers at the lime plant. A weighted average approach would be used for determining compliance with the PM emission limit*, i.e.,* the sum of the PM emissions from all the kilns and coolers at the plant, measured during the Method 5 performance test, would be divided by the sum of the limestone feed rates to all the kilns at the plant during the test, resulting in emission rate units of pounds PM per ton of limestone feed. The EPA intends to adopt these recommendations in the proposed rule.

(b) Establishment of Subcategories

About 20 percent of the lime produced in the US is from kilns equipped with wet scrubbers. Many of these wet scrubbers would be replaced with electrostatic precipitators (ESPs) or baghouses in order to meet the PM standard currently being contemplated. (The rule does not

apply to plants that are area sources, and does not dictate how the PM standard would be met, and some plants may elect to upgrade their wet scrubbers to meet the PM standard, but most likely major source lime plants would replace them with baghouses, and incur additional cost.) Because scrubbers are more effective than dry PM controls at removing SO_2 (and HCl), the Panel is concerned that such an approach would result in increases in SO_2 emissions from these sources. The Panel, therefore, recommends that EPA undertake an analysis of the costs and emissions impacts of replacing scrubbers with dry APCDs and present the results of that analysis in the preamble. The Panel also recommends that EPA consider and request comment on establishing a subcategory because of the potential increase in SO_2 and HCl emissions that may result in complying with the PM standard. The Panel further recommends that EPA specifically request comment on any operational, process, product, or other technical and/or spatial constraints that would preclude installation of a dry APCD.

9.4 Area Source Determinations

(a) Measuring HCl Emissions

The current draft of the rule would require a source to measure its HCl emissions using EPA Method 320 to claim it is an area source (assuming its HCl emissions were below 10 tons per year). The Panel recommends that the recently-developed American Society of Testing and Materials (ASTM) HCl manual method be allowed as well for the measurement of HCl for area source determinations. The National Technology Transfer and Advancement Act directs agencies to use voluntary consensus standards unless to do so would be inconsistent with applicable law, or would be impractical. An agency.s decision not to use a voluntary consensus standard must be explained in a letter by the agency to both Congress and OMB. Here, the EPA intends to adopt the Panel recommendation and propose to use the recently-developed ASTM method.

(b) Other HAPs

The Panel recommends that EPA clarify in the preamble to the proposed rule that it is not specifically requiring sources to test for all HAPs to make a determination of whether the lime plant is a major or area source. Since EPA believes that HCl is most likely to be the only HAP that would cause a lime plant to be a major source, it is only requiring that sources test for HCl if they wish to claim area source status. EPA will further investigate the potential to emit other HAPs at lime plants, and based on its analysis, EPA will (1) consider allowing the use of a HAP metals emission factor, expressed as a ratio of metals:PM, to allow sources to test for PM and then calculate HAP metals emissions rather than to employ the costly and complex direct test for each HAP metal; and (2) EPA will consider stating in the preamble that sources would not be required to test for organic HAPs in making a major source determination, as lime kilns are not expected to emit significant quantities of organic HAPs. The Panel recommends that, in addition to further investigating these issues, EPA solicit public comment on the issues.

9.5 Monitoring Requirements

(a) Bag Leak Detectors, COMS, and Other Monitoring

EPA is currently contemplating proposing that kilns equipped with baghouses monitor ongoing compliance through the use of bag leak detectors (BLDs). The Panel recommends that EPA consider providing the option of using continuous opacity monitoring systems (COMS) in place of BLDs.

The proposal preamble and/or associated docket materials will discuss the applicability, advantages, and disadvantages of using COMS and BLDs (such as each method.s sensitivity or lack of sensitivity, availability and quality of promulgated or approved specifications and procedures to verify initial performance, potential interferences or other quality assurance problems, inapplicability to certain APCD designs or configurations, cost, and precision and accuracy relative to the operating system to be monitored and the standards to be proposed); request comment on whether and how opacity could be used as a limit or an operating parameter, and what would be an appropriate MACT floor opacity limit for COMS; and request data on the foregoing issues.

The Panel recommends that EPA consider and request comment on using a COMS to monitor compliance with an opacity limit (a surrogate for HAP metals emissions). The Panel also recommends that EPA discuss in the preamble that it is considering a range of opacity levels between 10 and 15 percent as the MACT floor opacity limit. A 10 percent opacity level represents what EPA currently believes is a minimum level of sensitivity for COMS. A 15 percent opacity level is the opacity limit under the NSPS for lime kilns (subpart HH), and based on a preliminary analysis may also be the median opacity permit limit for the top 6 performing lime kilns. Opacity data from one of these top performing kilns indicates that an opacity value lower than 15 percent may not be continuously achievable.

\Another approach to using a COMS would be to use it in a way similar to how a BLD would be used to indicate the need for inspection and maintenance of the PM control device. Under this approach, EPA could specify a time period over which a significant increase in opacity level would trigger inspection of the PM control device for leaks or other malfunctions, and maintenance (if needed). EPA believes that COMS have limited sensitivity at opacities below 10 percent and that the relevant range of opacities for the aforementioned application would be below 10 percent. If COMS were allowed under the rule, EPA would prefer to set an opacity limit because of the COMS. ability to directly measure opacity, instead of using the COMS in the aforementioned way similar to how a BLD would be used. However, the Panel recommends that EPA solicit comment on this option, specifically including comments regarding the opacity levels expected from a kiln in compliance with the PM limit and the sensitivity of COMS at those levels.