



[Office of Advocacy](#)

Final Report
of the
Small Business Advocacy Review Panel

on EPA's Planned Proposed Rule
National Emission Standards for
Hazardous Air Pollutants
for Lime Manufacturing Plants

March 25, 2002

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1. Introduction

This report is presented by the Small Business Advocacy Review Panel (SBAR Panel or Panel) convened for the proposed rulemaking on the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Lime Manufacturing Plants that is currently being developed by the U.S. Environmental Protection Agency (EPA or the Agency). Under section 609(b) of the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), a Panel is required to be convened prior to publication of the initial regulatory flexibility analysis (IRFA) that an agency may be required to prepare under the RFA. In addition to EPA's Small Business Advocacy Chairperson, the Panel consists of the Director of EPA's Emission Standards Division (Office of Air and Radiation), the Administrator of the Office of Information and Regulatory Affairs within the Office of Management and Budget, and the Chief Counsel for Advocacy of the Small Business Administration.

This report includes the following:

- background information on the proposed rule under development;
- information on the types of small entities that would be subject to the proposed rule;
- a summary of the Panel's outreach activities; and
- the comments and recommendations of the Small Entity Representatives (SERs).

Section 609(b) of the RFA directs the Panel to report on the comments of small entity representatives and make findings on issues related to identified elements of an IRFA under section 603 of the RFA. Those elements of an IRFA are:

- a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- projected reporting, record keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record;
- identification, to the extent practicable, of all other relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule;
- any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities; and
- any impacts, on small entities, of the proposed rule or significant alternatives to the proposed rule.

Once completed, the Panel report is provided to the agency issuing the proposed rule and

included in the rulemaking record. In consideration of the Panel report, and where appropriate, the agency is to make changes to the draft proposed rule, the IRFA for the proposed rule, or the decision on whether an IRFA is required.

It is important to note that the Panel's findings and discussion will be based on the information available at the time the final Panel report is drafted. EPA will continue to conduct analyses relevant to the proposed rule, and additional information may be developed or obtained during the remainder of the rule development process. The Panel makes its report at a preliminary stage of rule development and its report should be considered in that light. At the same time, the report provides the Panel and the Agency with an opportunity to identify and explore potential ways of shaping the proposed rule to minimize the burden of the rule on small entities while achieving the rule's purposes.

Any options identified by the Panel for reducing the rule's regulatory impact on small entities may require further analysis and/or data collection to ensure that the options are practicable, enforceable, environmentally sound, and consistent with the Clean Air Act.

2. Background

2.1 Regulatory History

Under the Clean Air Act (CAA), as amended in 1990, EPA is required to regulate major sources of hazardous air pollutants (HAP). These pollutants are listed in the statute. Major sources are those that emit or have the potential to emit 10 tons per year (TPY) or more of a HAP or 25 TPY or more of a combination of HAP. On July 16, 1992, EPA, as required by statute, published a list of industry groups (known as source categories) that emit one or more of these air toxics. Lime manufacturing was on this list as a category of major sources. For listed categories of "major" sources the Clean Air Act (Section 112) directs EPA to develop emission standards that are based on the application of air pollution reduction measures known as maximum achievable control technology (MACT). The CAA requires EPA to complete all MACT standards for the listed source categories by November 15, 2000. Therefore, there is a mandatory duty to promulgate the MACT standard for the Lime source category, and a statutory deadline for doing so. If EPA fails to promulgate final standards by May 15, 2002, a so-called hammer falls, requiring sources to apply for individual permits where MACT for each lime manufacturing source would be developed on a case-by-case basis. However, this hammer process does not relieve EPA of its obligation to issue national standards for the Lime Manufacturing source category, and any case-by-case standard issued as part of the hammer process must be superseded if the eventual national MACT standard is more stringent.

The law requires that MACT not be less stringent than:

- the emission control that is achieved in practice by the best controlled similar source, for new sources; and
- the average emission limitation achieved by the best performing 12 percent of the sources in the source category, for existing sources.

This mandated minimum level of control is referred to as "the MACT floor."

2.2 Description of Proposed Rule Under Development and Its Scope

The rule would apply only to lime plants that are major sources of HAP. In addition, lime manufacturing operations at pulp and paper production facilities, and beet sugar plants would not be subject to the rule. (Beet sugar plants typically operate only seasonally, and our analysis indicates that beet sugar plants are not major sources of HAP.) Further, lime hydration units and facilities that do not produce lime in a kiln would not be subject to the rule (There are some lime plants that are depot facilities only or produce lime hydrate only and thus would not be subject to the rule.) With respect to the emission points which would be regulated, emission limits would

apply to the lime kilns/coolers, as well as to feed materials handling operations. Materials handling operations for the lime product would not be subject to the predecisional draft proposed rule. The emission limitations selected are all based on the MACT **floor**, as opposed to more costly beyond the MACT floor options. The pollutants for which emission limitations have been established include particulate matter (PM; a surrogate for HAP metals in the particulate phase) and hydrogen chloride (HCl). See the summary of the outreach meeting for the potential SERs (Appendix B) for more details on the draft proposed rule requirements.

There are about 110 lime manufacturing plants in the U.S. Thirty of these are captive plants located at beet sugar manufacturing plants, and would not be subject to the rule. EPA believes that about 70 percent of the sources in this source category are major sources. These facilities emit approximately 11,000 tons per year (TPY) of HAP. The primary HAP are hydrogen chloride and toxic metals.

2.3 Related Federal Rules

Currently the Federal air emissions regulations that cover this industry are the New Source Performance Standards for Lime Manufacturing Plants (40 CFR Part 60, Subpart HH) and Non-Metallic Minerals Processing Plants (40 CFR Part 60, Subpart OOO). Some facilities have been regulated by State air emission regulations as part of a State Implementation Plan.

3. Overview of Proposal Under Consideration

3.1 Potential Requirements and Guidelines of the Proposal Considered by the Panel

Under the predecisional draft rule proposal EPA presented to the Panel, the Agency would propose MACT floors for new and existing lime kilns/coolers and limestone and lime kiln dust materials processing operations. For existing kilns/coolers, the PM emission limit would be 0.12 pounds PM/ton feed material; for new kilns/coolers, the PM emission limit would be 0.10 pounds PM/ton feed. The HCl emission limitation for both new and existing kilns equipped with baghouses or electrostatic precipitators would be a work practice standard: EPA would require that the PM control device inlet gas temperature be below 400 F. Opacity and PM emission limits would apply to the various materials processing operations (*e.g.*, crushers, mills, storage bins, conveyor transfer points, etc.).

The proposal would require performance testing (*i.e.*, testing to determine compliance with the emission standards) for PM initially and every 5 years thereafter, and continuous and/or periodic monitoring of the PM control devices to ensure compliance with the PM and HCl emission limitations. Sources wishing to claim area source status would need to measure HCl emissions using either EPA Method 320 or 321. Further details of the predecisional draft of the rule can be found in Attachment 1 of the summary of the potential SER outreach meeting of December 20, 2001, attached hereto as Appendix B.

3.2 Options Presented to the Panel

Prior to the convening of the SBAR Panel, one SER developed and presented to EPA the following issues for the Panel's consideration:

- Possible exemption of a hydrogen chloride (HCl) standard, under authority of Clean Air Act Section 112(d)(4), pending the outcome of a risk assessment being conducted by the NLA.
- A different approach than the one EPA planned to propose for determining the MACT floor for PM, based upon the highest actual emission level from a well-designed and operated source, using the MACT control technology in use by the best 12 percent of sources for which EPA has data.
- Possible use of a bubble approach.
- Possible exemption of limestone materials processing operations (MPOs) in the

quarry.

- Possible use of continuous opacity monitors, as an alternative to bag leak detectors and the monitoring of PM control device operating parameters - since some kilns already have COMs in place.
- Possible use of an alternative method, recently developed under the ASTM consensus process, for measuring HCl (for area source determinations).

In addition, EPA developed a number of provisions in developing the pre-decisional draft proposed rule for Panel review that, if adopted in the final rule, will reduce the rule's burden on small entities:

- Lime manufacturing operations at beet sugar plants, of which three are small businesses, would not be subject to the rule.
- Lime hydration units and facilities would not be subject to the rule.
- Materials handling operations for the lime product would not be subject to the rule.
- The emission limitations selected are all based on the MACT **floor**, as opposed to more costly beyond the MACT floor options that EPA considered.
- Compliance demonstrations for materials processing operations would be conducted monthly, rather than on a daily basis.
- The minimum performance testing frequency (every 5 years), monitoring, recordkeeping, and reporting requirements specified in the general provisions (40 CFR part 63, subpart A) would be required.
- The rule would not apply to area source lime plants.
- The rule would not require PM continuous emission monitors (CEMS), but EPA will seek comment on their use.

4. Applicable Small Entity Definitions

There are approximately 39 lime manufacturing companies operating about 80 lime plants in the U.S. that would potentially be subject to the proposed rule. (These numbers do not include lime plants at beet sugar facilities which would not be subject to the rule.) Of these 39 companies, 12 are classified as small businesses according to the SBA definition and would potentially be subject to the rule. These small businesses operate 14 of the 80 facilities. Small businesses within the lime industry are defined by SBA as any company with a total employment of 500 or less.

5. Small Entities That May Be Subject to this Regulation

Some of the 12 small businesses potentially subject to the rule will likely be exempt from the rule because they are not major sources of HAP. EPA estimates that 70 percent of all lime plants are major sources (i.e., 30 percent would be area sources and not subject to the rule). Note that there are a few lime small businesses (not included in the 12 that are potentially subject to the rule) that would not be subject to the rule, because they do not produce lime in a kiln, **e.g.**, they are depot (storage) facilities and/or produce hydrated lime from lime imported from another lime plant.

6. Summary of Small Entity Outreach

EPA staff have communicated with a number of small firms. Some of these communications were documented in the formal notification for this Panel. An outreach meeting with potential small entity representatives was held on December 20, 2001, in Washington, D.C. A summary of this meeting, including meeting materials, is found in the Convening Document and Appendix B. During this meeting, the planned requirements of the proposed rule were presented, and comments were solicited.

In addition, EPA staff have communicated with, and provided information to, the National Lime Association from time-to-time since the lime NESHAP development project began in 1995. The

NLA represents commercial lime production companies, both small and large. (7 out of the 12 small businesses are members of NLA.) Communication with the NLA has occurred via formal meetings in person, formal teleconferences, informal telephone calls, electronic mail exchanges, and formal correspondence.

7. List of Small Entity Representatives

Table 1 presents the list of Small Entity Representatives solicited to advise the Small Business Advocacy Review Panel convened for this rule. This list was developed in consultation with SBA. It should be noted that of the companies in Table 1, Mercer Lime and Huron Lime are not members of the NLA. (There are 2 other non-NLA member small businesses potentially affected by the rule, but these companies declined to participate on the Panel.)

TABLE 1. LIST OF SMALL ENTITY REPRESENTATIVES

Edward Soloman III President, Mercer Lime Company	(412) 220 - 0316 Slippery Rock, PA
Anthony J. Paris President, Huron Lime Company	(419) 433-2141 Huron, OH
Arline Seeger Executive Director, National Lime Association	703-243-5463 Arlington, Virginia
Fred Nast CEO, Western Lime Corporation	262-334-3005 West Bend, WI
Mr. Timothy W. Byrne CEO, United States Lime & Minerals, Inc.	(972) 991-8400 Dallas, TX
Frank McCarthy President, Linwood Mining and Minerals Corporation	(563) 359-8251 Davenport, IA
Dana Stone VP - Operations, CLM Corporation	(218) 722-3981 Duluth, MN
Oscar Robinson General Partner Austin White Lime Company	(512) 255-3646 Austin, TX

8. Summary of Comments from Small Entity Representatives

This section summarizes comments received during the Panel. (EPA received an initial set of comments from potential SERs during the pre-Panel phase, which are attached to this Report in Appendix B.) During the Panel, SERs provided comments (in the form of a detailed presentation, around which there was extensive discussion) during a face-to-face outreach meeting (held February 19, 2002). Subsequently, the NLA, Huron Lime Company, and Mercer Lime and Stone provided supplemental written comments on March 5, 2002. The points offered at the SER outreach meeting are summarized below; the entire meeting summary, with a copy of the SER presentations, can be found in Appendix C. The comments filed March 5, 2002, are found in Appendix D. It should be noted that most of the March 5, 2002, comments repeat the main

themes discussed in the comments received previously, and so the discussion at 8.2 below includes a summary only of new issues and information provided.

8.1 Summary of Comments Presented at SER Outreach Meeting (February 19, 2002)

Removal of the HCl Standard Via Section 112(d)(4) of Clean Air Act

The SERs presented an overview of the risk assessment the NLA commissioned to determine whether there would be an ample margin of safety with respect to HCl levels in the atmosphere without an emission standard for HCl. The study concluded that an ample margin of safety exists without a standard for HCl. Section 112(d)(4) of Clean Air Act would allow EPA to forego setting an emission standard for HCl if this is the case.

Economic Impact of the Standard on Small Businesses

The SERs presented their comments on EPA=s draft economic impacts assessment (EIA). The main point the SERs conveyed is that, because the industry is subject to intense competition (due to declining markets, pressure from non-lime product substitutes, foreign producers, and potentially unregulated captive lime producers that may start to sell commercially), and there is an excess of capacity, the costs of the rule cannot be passed through to customers. EPA=s EIA model should reflect this. Many of the SERs presented additional comments, with emphasis on how the pre-decisional draft rule would impact individual companies. Their primary comment was that the pre-decisional draft rule would disproportionately affect small businesses because lime prices for SERs are generally lower than the industry average, economies of scale will make it easier for large companies to absorb the costs of this rule than small companies, and it will be difficult or impossible for small businesses to obtain capital for new APCDs. The SERs also discussed the low cost and high availability of Chinese magnesia as a substitute for lime in the steel production process. A number of SERs stated they have not been able to raise prices in the past few years, and that some of their customers have instead requested that they lower their price for lime. They all agreed that once a customer is lost due to a price disadvantage (or any other reason), it is difficult to get that customer back.

Technical Issues

The SERs provided comments on the following technical issues via a detailed slide presentation. That presentation is included in Appendix D to this report. Highlights of comments provided outside the formal presentation are as follows.

HCl Work-Practice Standard

SERs believe EPA has overestimated the HCl emissions reductions from lowering APCD inlet temperature. SERs indicated that replacing wet scrubbers to meet the PM limit increases HCl emissions. They also indicated that complying with a 400 degree inlet temperature limit over a 3 hour averaging period would require them to operate at a 350 degree APCD inlet temperature (in order to account for temperature variability) which would diminish ESP efficiency and may damage dry PM control devices. They also indicated that a larger ID fan would be needed to handle the increased air mass flow associated with water injection or air tempering that may be used to reduce temperature and that this would increase costs beyond EPA=s current estimate.

Materials-Handling Operations(MHO) in Quarries

The SERs do not believe that the MHOs in limestone quarries should be regulated. They suggest regulation of limestone MHOs begin with the raw material storage in the production sequence. This is what is required under the Portland Cement NESHAP, and they believe EPA should follow that example. They also state that, if the **mean** of the top 12 percent, instead of the **median** of the top 12 percent, is used to establish the MACT floor, then NSPS subpart OOO could not be the basis for that floor because not all of the MHO=s in the top 12 percent are currently subject

to subpart 000. One SER stated that its plant has MHOs (e.g., a crusher) which process limestone for the kiln as well as other non-lime plant uses such as limestone sales, which would not be regulated under the Lime Manufacturing NESHAP.

PM Standard for Wet Air Pollution Control Devices

One SER stated that his firm recently replaced a wet scrubber with a fabric filter and triggered New Source Review because of an increase in SO₂ emissions. SERs stated that this may happen with other plants that replace their wet scrubbers with a dry PM control device to meet the new PM standard. The SERs suggested that EPA create a subcategory that would set an alternative standard for kilns employing a wet PM-control device, because scrubbers allow sources to comply with any SO₂ limitations while manufacturing low-sulfur lime (a necessary characteristic for use in steel manufacture) from high-sulfur fuels. SERs also stated that replacing a wet control device with a dry control device would reduce PM and metals emissions but increase SO₂ and HCl emissions.

The SERs also suggested EPA allow bubbling of PM emissions from the kiln (*i.e.*, allowing compliance to be demonstrated by summing PM emissions from various regulated sources) as the least burdensome way to achieve the desired emissions reduction. One SER stated that his firm currently sells its de-watered scrubber sludge, and if it were to remove its wet scrubbers (and replace them with fabric filters), it would lose this market. Another SER stated that, based on a vendor quote, it would cost his firm twice as much as EPA estimated to replace its wet scrubbers with fabric filters.

Monitoring

The SERs discussed the difficulties and drawbacks of monitoring with bag-leak detectors (BLDs), and in particular the absence of promulgated specifications and procedures to install, calibrate, and conduct QA/QC for BLDs. They recommended that, in addition to BLDs, EPA should allow the use of continuous opacity monitors (COMs) because the Agency has previously determined that COMs constitute enhanced monitoring and provide reasonable assurance of compliance with PM standards. The SERs agreed that continuous opacity monitors should be allowed because, for several of them, COMs are required under other Federal and state requirements, and cannot legally be removed. A couple of SERs described the substantial resources their companies have already invested to install COMs and to train their personnel to operate them.

Another SER suggested that, because the PM limit is based on PM limits for the 6 top-performing kilns, likewise, the opacity limit should be permit-based, based on these same top-performers' opacity limits. All top-performing kilns have opacity limits of 15 percent, except for one (Cutler Magners' kiln #3), which has a 20 percent opacity limit. The SER said that another basis for the suggested 15 percent opacity limit is that data from one of the top performing kilns (Black River, kiln #4) shows that the kiln's opacity may range between 10 to 15 percent. The SER believes that promulgating an opacity limit lower than 15 percent would be inappropriate because the standard could not be achieved by one of the best-performing kilns used to establish the MACT floor.

Other SERs mentioned problems associated with monitoring PM control-device parameters, such as ESP voltage and scrubber flow rate and supply pressure. They requested EPA to allow flexibility in choosing scrubber operating parameters. One SER mentioned that his permit requires monitoring of scrubber water-pump amperage, and that they also monitor gas temperature at the outlet of the scrubber.

A SER also described the SERs' concerns about how violations of the PM standard are defined in the draft rule. In contrast to the Pulp and Paper MACT standard for lime kilns, which allows operating parameters (*e.g.*, opacity) to be exceeded for up to 6 percent of the reporting period before a violation is deemed to have occurred, the Lime MACT standard specifies that a

single exceedance of a 3-hour reading of certain operating parameters (*e.g.*, air pressure drop) would constitute a violation. He suggested that, like the Pulp and Paper MACT standard, as well as the Compliance Assurance Monitoring (CAM) rule, the Lime MACT standard should prescribe maximum periods of time during which, if operating parameters deviate from prescribed levels, this would require that the kiln's air pollution control device be investigated to ensure it is operating properly (*i.e.*, so-called corrective action triggers). He stated that the rule should specify separate, longer time periods during which deviations from prescribed parameter levels would have to occur before constituting a violation.

The SERs stated that the incorporation by reference of chapters 3 and 5 of the American Conference of Governmental Industrial Hygienists (ACGIH) **Industrial Ventilation** manual is unduly prescriptive, and that these requirements are highly complex. The SERs suggested EPA refer to the requirements as guidance only.

Area Source Determinations

The SERs stated that EPA should not require the use of the Fourier Transform Infrared (FTIR) spectroscopy method (EPA Method 320) for the measurement of HCl for area source determinations, since the American Society of Testing and Materials (ASTM) HCl method has been approved and EPA is required to use this consensus-based standard under the National Technology Transfer and Advancement Act. They also suggested that EPA allow the use of a HAP metals emission factor so firms could avoid testing for individual HAP metals in making area-source determinations (testing for PM instead and applying an agreed-upon factor for the amount of HAP metal in the PM), and that sources should not be required to test for organic HAPs, since they believe these are inherently low.

Comparison with the Pulp and Paper MACT

The SERs suggested that, in general, EPA should follow the model of the requirements imposed on lime kilns under the Pulp and Paper MACT standards, and they provided the Panel a 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 their 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 400E F work practice standard, sources would need to operate below 350E 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 SO₂ 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 SO₂ 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 SO₂ 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 3,500E F. Kiln operators try to maintain the

maximum feed material temperature in the burning zone of the kiln below 2,100E 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 E F. If the kiln gas temperature is below 1,800E F, kiln operational problems could result (*e.g.*, a Asticking@ 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 SO₂ (and HCl), the Panel is concerned that such an approach would result in increases in SO₂ 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 SO₂ 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's 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.

The Panel also recommends that EPA take comment on whether the rule should specify separate, longer averaging time periods (or greater frequencies of occurrence) for demonstrating compliance with parameter limits, or other alternative approaches for demonstrating compliance with operating parameter limits.

The Panel recommends that EPA request comment on an approach for demonstrating compliance involving two tiers of standards for monitoring operating parameters whereby, if the conditions of the first monitoring tier are exceeded, the facility operator would be required to implement corrective actions specified in an established plan to bring the operating parameter levels back to established levels, and if the conditions of the second tier are exceeded, the exceedance would constitute a violation of the standard in question.

The EPA will request comment in the proposal preamble about the technical feasibility or appropriateness of using a bag leak detector on a positive pressure, multi-stack baghouse, and whether EPA Method 9 (manual observation of opacity) should be allowed in lieu of bag leak detectors for this type of PM control device.

(b) ACGIH *Industrial Ventilation* manual

The Panel recommends that the incorporation by reference of Chapters 3 and 5 of the American Conference of Governmental Industrial Hygienists (ACGIH) **Industrial Ventilation** manual be removed from the rule. The Panel believes these requirements are highly complex and unnecessary, and that EPA should not dictate how to design and operate a source's industrial ventilation system, as long as the source is in compliance. The EPA intends to adopt these recommendations.

(c) Other PM Control Device Operating Parameters

The Panel recommends that EPA take comment in the preamble about the suitability of other PM control device operating parameters that can be monitored to demonstrate compliance with the PM emission limits, in lieu of or in addition to the parameters currently required in the draft rule. For example, for scrubber-equipped kilns, EPA should consider modifying the proposal preamble language to discuss allowing the use of operating parameters other than scrubber liquid flow rate (*e.g.*, wet scrubber water pump amperage and wet scrubber exhaust gas outlet temperature). This approach would potentially offer sources some flexibility in choosing which parameters to monitor. The EPA intends to adopt these recommendations.

9.6 Economic Impacts Analyses

The Panel recommends that EPA reevaluate the assumptions used in modeling the economic impacts of the standard, taking into consideration the inputs provided by the NLA and other SERs. Given that the NLA and other SERs have stated there is little ability to pass on control costs to their customers and there is considerable opportunity for product substitution in a number of the lime industry's markets, EPA will conduct a sensitivity analysis using different price and supply elasticities reflective of such conditions to provide a broader picture of the potential impact of this regulation on the lime industry.

Appendix A: List of Materials SBAR Panel sent to SERs

- Seven-page detailed summary of draft proposed rule - sent December 11, 2001.
- Technical memorandum detailing how cost and economic impacts were estimated - sent December 12, 2001.
- Draft Economic Impacts Assessment Report - sent December 13, 2001.
- A detailed breakdown of EPA's estimate of annual costs to comply with rule for each small business - sent December 11, 2001.
- A detailed breakdown of EPA's estimate of cost/sales to potential SERs, with the sources of information used for the sales figures - sent January 8, 2002.
- One page summary of draft proposed rule - sent December, 2000.
- Pre-decisional draft preamble language which included sections on the monitoring requirements, area source determination, and the rationale for selection of all of the rule's requirements. - sent January 30, 2002.
- In conjunction with this draft preamble language, various technical memoranda that support the MACT standards determinations.
- A detailed breakdown of EPA's estimate of capital costs to comply with rule for Austin White Lime Company - sent December 11, 2001.

In addition to the above items sent to the SERs, the docket for this rulemaking has been established for over a year, and all items, reports, and memoranda that have been finalized have been added to docket and have been available to all interested parties through the Air Docket office in Washington, D.C.. A list of all items in the docket was sent to the NLA and has been available to anyone requesting one. There are over 500 items in the docket currently, and over 100 technical memoranda. Docket items can be requested of the Air Docket Office over the phone and sent to interested parties for a small fee.

In addition to all the materials in the docket, numerous draft memoranda not yet in the docket have been sent to the NLA for their review. These include all of our draft cost memoranda and analyses, which were sent to the NLA in the 1st quarter of 2001. The NLA has scrutinized these cost analyses, and EPA has revised some of its memoranda in consideration of their comments. These memoranda have since been put into the docket. Other pertinent memoranda that have been sent to the NLA (in addition to the aforementioned cost-related memoranda) include, but are not limited to, the following:

- Memorandum related to baseline emissions estimates - sent December 28, 2001.
- Memorandum related to lime cooler exhaust - sent December 28, 2001.
- Memorandum related to the MACT for HCl - sent December 28, 2001.

**Appendix B: Summary of the Potential SER Outreach Meeting
Held on December 20, 2001**

**Appendix C: Pre-Panel Written Comments Submitted
by Potential SERs on January 15, 2002**

**Appendix D: Summary of the SBAR Panel's Outreach Meeting
with SERs on February 19, 2002**

Appendix E: Written Comments Submitted by SERs on March 5, 2002