NMA
THE AMERICAN RESOURCE

November 21,2002

Mr. Marvin Nichols
Director
Office of Standards, Regulations, & Variances
1100 Wilson Boulevard, Room 2313
Arlington, VA 22209-3939

Dear. Mr. Nichols:

This letter is submitted on behalf of the members of the National Mining Association (NMA) in response to the Advance Notice of Proposed Rulemaking (ANPRM) that was published on September 25,2002 (67 FR 60199). We appreciate having the opportunity to comment on these issues that are central to implementing the Settlement Agreement reached among the industry, labor and government parties on July 15,2002.

While we appreciate the agency's decision to provide a 60-day rather than 30-day comment period on the ANPRM, we remain concerned that vital information required in advance of the agency's proposing a final exposure standard, predicated upon technologic and economic feasibility, have not been developed and may not be developed within the current regulatory schedule. This is supported by the very questions MSHA has included in the ANPRM for which we believe there is little, if any information available, making it clear that MSHA will most likely not have appropriate information required to determine if both the interim standard, let alone a final standard, are technologically and economically feasible. The reason that we were unable to answer many of MSHA's questions in the ANPRM regarding technologic and economic feasibility is because the information is just not available at this time.

We are aware that MSHA has embarked on a mine-specific study with a NMA member company to verify the efficiency of catalyzed ceramic DPM filters for reducing DPM emissions and identify site-specific, practical mine-worthy filter technology. This study was originally scheduled to begin the week of November 5th but has been delayed until the week of December 2nd due to testing equipment malfunctions. Therefore, there will be delays in obtaining information that maybe critical to answering MSHA's questions in the ANPRM on technologic and economic feasibility. NMA strongly supports

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collaborative studies like this and encourages MSHA to reach out to other mines to study mine-specific filter technology and its efficiency in reducing DPM emissions.

Given this anomaly, we believe the agency should consider a two-phased rulemaking process whereby all issues, other than the final exposure level, would be proposed and Completed by July, 2003 in keeping with the expedited rulemaking contemplated by the Settlement Agreement. Adoption of this approach would allow the necessary technologic and economic feasibility research to be completed prior to rulemaking on the final limit.

Irrespective of the collective desire to complete this rulemaking in as timely a manner as practicable, we do not believe the agency has, at this time, a sufficient legal or technical basis to proceed with the promulgation of a final standard. Clearly, the limited information garnered from the 31-mine study indicates that significant feasibility questions remain and the technologic information that does exist must be evaluated within the context of actual in-mine testing. These concerns are recognized by the parties who have formed a partnership, with NIOSH, to conduct in-mine feasibility testing of the current control technology. It is our hope and belief that the in-mine studies conducted under the partnership will provide the scientific basis upon which questions regarding economic and technologic feasibility can be resolved.

Again, we appreciate having the opportunity to provide these comments and look forward to working with MSHA as this rulemaking proceeds.

Sincerely,

Bruce Watzman

Responses of
The National Mining Association
To Specific Questions Contained in the ANPIUM

1. Section 57.5060(a) and (b), Limit on concentration of diesel particulate matter.

(a) *What are the appropriate interim and final limits if EC is the surrogate?*

Consistent with the Settlement Agreement the parties agreed that the interim level, for compliance purposes, would be the elemental carbon equivalent of the 400 microgram total carbon standard contained in the final rule, i.e. 320 micrograms of total carbon adjusted to reflect the applicable error factor.

We believe it is premature to comment on the final limit regardless of whether EC or TC is used as the surrogate. Significant questions remain regarding the economic and technologic feasibility of the application of after-treatment control technology on the fleet of equipment used in underground metal/nonmetal mines. Determination of a final limit is dependent upon on-going research studies that will resolve these feasibility concerns.

(b) *What **error** factor should MSHA use for determining noncompliance on an EC standard?*

During discussions which led to culmination of the Settlement Agreement and in subsequent discussions industry and government scientists and statisticians discussed the error factor that should be applied to sample determinations before compliance - noncompliance determinations are made. We are aware that the sampler manufacturer, SKC, has made, and continues to make, modifications to the sampling unit. For example, SKC has modified the device by adding a dynamic blank to the unit and modifying the sealant tape to address possible leakage concerns. Additionally, we are advised that changes to the orifice and impactor plate are under consideration.

It is imperative that all parties have the opportunity to review the impact of the sampler changes on the filter efficiency and sampler accuracy. The error factor which is a derivative of these and other factors should be the subject of notice and comment rulemaking and we encourage MSHA to include this as a part of the proposed rule.

(c) *Are there any interferences in the environment of an underground metal and nonmetal mine that would preclude personal sampling with the impactor when EC is used as the surrogate for DPM?*

The *3* 1- Mine Study conducted by MSHA and the industry documented the interferences that arise if TC is used as the surrogate, regardless of whether or not an impactor is used. These interferences, environmental tobacco smoke and oil mist, are eliminated if EC is used as the surrogate. Concerns still remain regarding carbonaceous materials that are naturally occurring in the host rock materials. M i l e the impactor is designed to prevent sample contamination from such materials, we remain concerned that carbonaceous particles that are smaller in diameter than the impactor cut-point may contaminate the sample.

(d) *Is a field blank required if EC is used as the surrogate?*

While a field blank should not be required if EC is used as the surrogate, standard industrial hygiene practice suggests that the use of field blanks should be continued. The sampling conducted as part of the 31 mine study was not all-inclusive and while it satisfactorily addressed the contamination potential from ETS and oil mist, questions regarding weight gain from other potential sources remain. Use of a field blank provides some measure of assurance that the sampling and analytic process is, indeed, analyzing the agreed upon surrogate.

2. Section 57.5060(c) addresses application and approval requirements for an extension of time in which to reduce the concentration of DPM to the final limit.

(a) *What circumstances would necessitate an extension of time to come into compliance?*

An extension of time is appropriate where a mine operator encounters either technologic or economic feasibility constraints that preclude them from complying with the standard. The 31-mine study, while not representative of all operations that utilize diesel-powered equipment underground, demonstrated that even within that group there exist operations that will face severe challenges in coming into compliance. The regulations must recognize this and provide a mechanism for operators to continue their normal production activities while providing alternative means to protect miners.

(b) *What should be the duration of the extension?*

We believe it appropriate that an extension be granted for a one-year period that is renewable, subject to review by the Secretary or his designee.

(c) *Should MSHA allow more than one extension?*

It is imperative that operators be afforded maximum flexibility in complying with the applicable exposure limitation. Limited studies have found that in-mine after-treatment control technology application differs dramatically from that experienced in a laboratory or test-chamber setting. Moreover, engine manufacturers understandably remain focused on developing new engine technology to comply with new EPA on-and-off-road engine standards. While the mining community will be the beneficiary of this new technology, it must be recognized that the diminished mining market no longer warrants significant engine research expenditures. Because of these factors MSHA must have a mechanism, upon a showing of good cause, to grant more than one extension.

MSHA has retained the discretion to take appropriate enforcement actions against operators who refuse either to cooperate in good faith with MSHA's compliance assistance, or to take good faith steps to develop and implement written compliance strategies for their mines. This enforcement discretion would carry through any extension(s) of time granted by MSHA to an operator to demonstrate economic and/or technologic feasibility of DPM controls.

(d) *What actions should mine operators be required to take to minimize DPM exposures if they are operating under an extension?*

In those instances where an extension has been granted, MSHA should ensure that operators are using, to the extent feasible, agreed upon accepted administrative practices and that they are making available to affected miners respiratory protective devices sufficient to protect miners.

3. Section 57.5060(d) addresses certain exceptions to the concentration limit.

(a) *Would this provision be necessary if MSHA includes in the final rule its current hierarchy of controls for its other exposure-based health standards for metal and nonmetal mines?*

We do not believe this provision would be necessary if the current hierarchy of controls is applied to all affected miners. The provision, as drafted, is limited to inspection, maintenance or repair activities. Implicit in the settlement agreement was recognition that all miners, regardless of the activity they are involved in, must be protected. As such, the settlement agreement recognized that with advanced approval miners would be permitted to work in concentrations of DPM exceeding allowable limits, so long as alternative protective means are made available and employed.

(b) *What would be the impact of removing this provision?*

Consistent with the response above, we believe that the provision should be amended so that its application is not limited to only those activities related to inspection, maintenance or repair removal of this provision, contingent upon the imposition of a hierarchy of controls, would extend protection to all miners potentially affected by over-exposures.

4. Section 57.5060(e) prohibits use of personal protective equipment to comply with the concentration limits; and See. 57.5060(0 prohibits use of administrative controls to comply with the concentration limits.

(a) *Currently, there is no approved respirator for use in protecting miners exposed to DPM atmospheres. If MSHA includes requirements for some form of respiratory protection, what type of respirators would be protective of miners? What are their specifications?*

We are advised that 3M Corporation will be filing comments regarding the availability of respirators sufficient to protect miners fkom DPM. More specifically, we have been advised that 3M series P Filtering Facepiece Respirators and Series P Elastomeric Facepiece Respirators have been approved for applications similar to those encountered in the mining environment. Depending upon the particular type chosen, these devices have proven efficiencies in excess of 95 percent in filtering particles smaller than those emitted from diesel-powered engines. With regard to the type of respirators chosen we believe operators should be afforded flexibility to offer a suite of devices for use by the miner's depending upon the intended application. In so doing miners are afforded protection while providing them the opportunity and ability to choose a device that meets their particular comfort and use requirements.

Should questions remain regarding filter efficiency, we would welcome MSHA's participation in a joint industry MSHA research program to validate the effectiveness of these devices in the underground mining environment.

(b) *Should MSHA propose to require mine operators* to *implement a written respiratory protection program when miners must wear respiratory protection?*

No, existing regulations governing the use of respiratory equipment should be sufficient. If it is determined that the existing regulations are insufficient, consideration should be given to revising them rather than crafting regulations requiring a written plan specific to the use of respiratory protection in DPM environments.

(c) *Should MSHA require mine operators to apply to the Secretary for approval to use respiratory protection? Should the application be in writing? What conditions should MSHA require mine operators to meet before approval is granted to use respirators?*

No, see (b) above.

(d) *Should MSHA propose to require mine operators to implement a written administrative control plan when they use administrative controls to reduce miners' exposures to the required limit?*

In those situations where operators use administrative controls to reduce miners' exposure, such controls should be documented and posted in a location accessible to all miners.

5. Section 57.5061(b) addresses how MSHA will collect and analyze samples for compliance purposes.

We support the change from TC to EC as the sampling surrogate for DPM. This is consistent with the Settlement Agreement.

6. Section 57.5061(c) provides for MSHA to conduct personal, area, and occupational sampling for compliance determinations.

(a) *What would be the cost implications for mine operators to conduct personal sampling of miners' DPM exposures if EC is the surrogate?*

Under the final rule, § 57.5071 operators are required to conduct environmental monitoring to determine "whether the concentration of diesel particulate matter in any area of the mine where the miners normally work or travel exceeds the applicable limit…" The existing rule envisions a scheme utilizing personal, area or occupational samples. Consistent with the Settlement Agreement, an amendment to the rule will be required so that only personal samples will be allowed for compliance determinations.

Operator costs will be reduced through the use of an environmental monitoring protocol that requires only personal sampling of EC as the surrogate for DPM. Not only will the results of such sampling be more reliable and indicative of the exposure levels to which miners are exposed

but also sampling for EC, as opposed to TC, reduces the likelihood of sample contamination and eliminates the necessity to re-sample.

(bj *What experience do mine operators have with DPM sampling and analysis?*

As MSHA is aware, several mine operators have, either through involvement with MSHA or for other purposes, extensive experience with DPM sampling. However, this should not and cannot however be viewed as consistent across the metal/nonmetal sector or indicative of the experience of other mines or other mineral sectors. Moreover, in many instances the sampling took place prior to the introduction of the impactor plate in the sampling device. We are advised the SKC has further modified the sampling cassette, thus further reducing operator experience with the sampling device.

(cj *Is there experience with DPM sampling in other industries and other countries?*

We are aware that DPM sampling occurs in other industries and other countries but are unaware of the details of the sampling and analytic methodology employed. MSHA is an active participant in the Canadian DEEP activities where various sampling schemes have been employed. It is our understanding that most parties are currently utilizing a system that employs analysis via the NIOSH 5040 process. While some questions remain regarding the proper surrogate, we believe the 31-mine study correctly documents and supports the Settlement Agreement conclusion to use EC rather than TC as the sampling surrogate.

7. Section 57.5062 addresses the diesel particulate control plan.

(a) How should the control plan be changed?
(b) What is an appropriate duration for a control plan?
(c) Should a single violation trigger implementation of a control plan? If not, what is an appropriate trigger?
(d) What roles should respiratory protection and administrative controls have under a control plan?
(e) Are there regulatory alternatives to the existing control plan requirement that are at least as protective of miners, such as requiring a written administrative control plan and/or a written respiratory protection plan?
(f) Since MSHA is proposing to include its long-standing hierarchy of controls for compliance with the revised standard, is there any benefit from retaining the control plan?
(g) Should MSHA delete the control plan requirements--why or why not?

We do not believe that a diesel control plan is necessary nor should it be required. Operator performance is determined by compliance sampling. Consistent with other agency programs, operators are required, if not in compliance, to take the necessary steps to come into compliance when valid sampling determines that such is not the case. Abatement sampling is then conducted to determine if the steps implemented are sufficient to achieve compliance.

While it is advisable for the agency to obtain an inventory of diesel-powered equipment in use and any control technology employed, this can be accomplished through means other than a formal diesel control plan.

A fundamental question must be resolved: namely, is the rationale behind purpose of the control plan to prevent chronic excursions above the allowable standard or to serve as an enforcement sanction when an isolated excursion occurs? If a DPM control plan is required, we believe a control plan should be viewed in terms of the former rather than the latter. If, as we believe, the former is the one MSHA intends, mechanisms can be developed to ensure, to the extent feasible, that the controls in place are sufficient to protect miners from over-exposure without introducing a cumbersome plan approval process. This, we believe, can be accomplished through existing mechanisms. For example, section 104(b) of the Act authorizes a failure to abate sanction when an operator has been cited for a violation of the Act but has exhibited intransigence in rectifying the violative conditions.

8. Technological and economic feasibility.

(a) What experience do you have modifying ventilation systems to reduce miners' exposure to DPM?

Operator experience modifying ventilation systems to reduce miners' exposure to DPM is, at this point, extremely limited, if not non-existent. Understandably, most if not all operators awaited the outcome of the industry's challenge of the final regulations before initiating compliance strategy programs. Now that an Interim Standard has been decided upon operators are examining ventilation upgrades as one possible compliance approach. MSHA is well aware that modifications to ventilation systems can be as simple as installing duct-tubing to remote areas, or as complex as replacing existing main fans with more powerful models, or sinking new ventilation shafts. While modification of ventilation systems may afford some operators a means of compliance it must be recognized that because of inherent design configurations, space limitations or other external prohibitions many mines cannot increase their ventilation capacity to reduce DPM concentrations beyond those currently documented.

We are aware that there are severe physical limitations due to a specific mine's geometry and configuration e.g. drift size and shape, together with economic considerations related to power requirements and availability that make modifying ventilation systems to meet the DPM standards technically and economically infeasible. Most existing mines cannot simply retrofit existing configurations to meet the DPM standards due to technical and economic considerations. It would be more feasible for a new mine to plan systems from the start to address meeting the DPM standards, not retrofitting an existing mine.

(b) What were the costs to mine operators for auxiliary fans, booster fans, flexible ducts, or major ventilation upgrades necessary to meet the interim concentration limit?

The projected costs varied from minimal to extreme, depending on the mine's current ventilation system, configuration and ability to supply larger horsepower fans. Most metal mines could not provide the required ventilation to meet the interim concentration limit and it is questionable if they will be able to. Thus meeting the interim standard is solely dependant upon identifying and implementing practical mine-worthy filter technology, which is the subject of further testing on a mine-specific basis.

We do not have specific cost information beyond that provided by John Head is his report on the 31-mine study that has been provided to MSHA.

(c) What has been the experience of mine operators with retrofitting existing diesel-powered equipment, especially in the range with less than 50 hp, as well as equipment that has greater than 250 hp, with DPM control devices? What adjustment did mine operators have to make to DPM control devices before there were reductions in DPM levels?

We are not aware of any work being conducted by member companies pertaining to retrofitting existing diesel powered equipment of small horsepower e.g. 50 hp. There has been mixed results in retrofitting larger horsepower engines e.g. >300 hp with DPM filters. The greatest success in controlling DPM, although not quantified and very limited, has been with large horsepower engines e.g. 475 hp under heavy duty cycles using passive platinum-based catalyzed filters. Nevertheless, the filter efficiencies are not known nor are the production of potentially harmful quantities of N02. Both of these unknowns are the subjects of future test work with MSHA and NIOSH. Experience to date at one member mine has been garnered only for engines greater than 200 **HP.** Results have been encouraging but there have also been failures. In one specific case the mine had specified a brand new 300HP truck complete with a ceramic soot trap as part of the purchase agreement. The truck manufacturer worked in concert with the engine manufacturer and the filter manufacturer to provide the mine with an industry based solution to the mine specifications. The manufacturing industry solution was a failure and the filter needed to be removed from service before engine damage occurred. The experience highlighted the disparities between theoretical solutions and practical applications of those solutions in real world situations.

(d) What are the engineering costs associated with retrofitting?

Engineering costs associated with the retrofitting of diesel after-treatment systems vary greatly. In some instances the costs are minimal, requiring only the replacement of one system with a similar sized, but more efficient replacement filter. In other applications the engineering costs can include, but are not limited to, the replacement or relocation of exhaust systems, relocation of fuel or hydraulic lines, or the design and installation of protective enclosures. The costs associated with these vary greatly and are machine and engine specific. Experience in the coal sector has ranged from several hundred to several thousand dollars per machine.

(e) What technical assistance should MSHA provide to mine operators in retrofitting DPM control devices or evaluating a mine's ventilation system, or filtration systems in environmental cabs?

MSHA should make available technical support personnel to work with operators to address all of the circumstances envisioned by the question. This should include providing personnel to assist operators in conducting pre-compliance sampling to ascertain the extent of the problem and the development of a comprehensive compliance strategy. Moreover, **MSHA** should make available on its website the results of any and all non-proprietary pre-compliance study work so that all operators can gain insight into potential solutions.

(f) Are there circumstances where mine operators have had to change an engine model to accommodate DPM control devices? What were the costs of the engine models?

We are not aware at this time of any operators in the m/nm sector that have had to replace engines for DPM compliance purposes. We understand that some coal operators have had to do so because emission control packages were not available for specific applications. If this is the case, MSHA should be able to obtain this information and consider its application to the m/nm sector.

It should be recognized that metal/nonmetal mine operator experience with these devices is limited, at best. As more experience is gained through system testing, information will become available to respond to this question.

(g) How much did control devices cost for different horse-powered engines?

One mining company has reported capital expenditures $8,500 and $1,500 for a platinum based catalyst for a 475 hp engine. This same company incurred expenditures of $5,800 and $1,500 respectively, for the purchase and installation of a platinum catalyzed filter on a 225 h.p. engine.

(h) Did mine operators have to modify the exhaust system to apply the DPM control? What were the costs for doing so?

See (g) above

(i) What are the advantages, disadvantages, and relative costs of different DPM control devices?

See responses to (b), above.

(j) What types of DPM control devices are commercially available and how much do these devices cost?

Two types of controls are currently commercially available to control DPM in underground mining. The first is a passive ceramic trap filter which, depending upon engine operating conditions may or may not be capable of regenerating. The second category of devices (active regeneration) require some type of external assistance for the ceramic trap to regenerate. This can be either through on-board electrical regeneration or off-board regeneration in an oven. We are advised that passive filters cost approximately $6,000, while active, off-board systems range from $13,000 to $17,000 depending on the product specifications. It is important to note that operators have little, if any, experience using off-board systems and, as such, have yet to define the operational problems arising from the use of such systems.

(k) What are the engineering costs of the DPM control devices?

See (b) above

(l) What current reductions in EC levels are mine operators experiencing from having installed DPM control devices? What is the experience with filtration efficiencies?

(m) What has been the experience of mine operators with the useful life of DPM filters?

While some operators in the m/nm sector have experience with platinum catalyzed filters and can document their useful life, it must be recognized that their experience pre-dated the agency's recognition of the NO2 problems encountered with such devices. The use of non-platinum catalyzed filters and non-catalyzed filters is much more limited and, as such, useful life data are not reliable.

(n) Is there any information available regarding DPM controlfilters in non-mining industries or in other countries?

Results have been obtained in testing conducted under the DEEP and VERT Programs. Such information is available to MSHA.

(o) What has been the experience of mine operators with DPM filters? Didfiltersfail or did they perform as the manufacturerpredicted? If theyfailed, what were the causes of filterfailure? What could be done toprolong the life of DPM filters?

Mine operator experience using the filter systems available today is extremely limited. While some operators have used platinum-based filters, the experience with either non-platinum based passive filters or active filters is much more limited. Significant experience has been gained under the auspices of the DEEP program. The results gained through the DEEP/Brunswick Mine field evaluation, the DEEP/INCO Stobie Mine field evaluation and DEEP/Noranda Post-Field Evaluation show generally positive yet mixed results. While some filter efficiencies met manufacturer projections, others fell far short.

It must be recognized that filter failure is a somewhat subjective determination. For some the inability to work an entire shift before having to change or regenerate a filter represents failure. For others failure only occurs when the device has to be replaced with a new model. Failure comes in many forms and has been documented in both the m/nm and coal sectors, i.e. excessive NO2 generation, filter fires, the loss of engines due to operating beyond back-pressure limitations, the inability to use a piece of equipment for an entire shift or having to remove a piece of production equipment to conduct on-or off-board regeneration.

(p) Do mine operators have any technical data on their experience with using cabs with filtered breathing air?

Not for DPM purposes specifically. Information is available regarding the use of enclosed cabs for respirable coal dust and silica protection purposes. Both MSHA and NIOSH have documented these experiences.

(q) Have you experienced increases in NO2 when using any of thefollowing? (1) A base-metal catalyzedfilter; (2) a non- catalyzedfilter; or (3) platinum-based catalyzedfilter?

Questions regarding the generation of increased NO2 levels are now well understood and well documented. This phenomenon occurs when platinum-based catalyzed filters are used in an underground environment. This occurrence has not been experienced when base-metal or non-catalyzed filters have been used. It is important to note that levels of CO, HC and DPM

encountered when using either base-metal or non-catalyzed filters are higher than those experienced when platinum-based catalyzed filters are used. It must be recognized that non-platinum based filters do not, in most instances, reach sufficient temperatures for passive regeneration to take place and thus are of limited use for compliance control purposes. Moreover, it should be noted, as documented by NIOSH in their evaluation of diesel particulate filter systems at the INCO Stobie Mine, in tests conducted in May 2002, some filter systems have resulted in excessive engine back-pressure readings that would result in a voiding of the engine warranty and significant engine damage.

(r) *What effect do high altitudes have on the ability of the DPM control device to reduce DPM exposures?*

Extensive experience has been gained through significant testing of DPM control devices at high altitude in Utah coal mines. MSHA has been actively involved in the Utah tests and has available the detailed results.

(s) What costs did mine operators incur for filters that were regenerated off board?

To the best of our knowledge m/nm operator experience with off-board systems is virtually nonexistent. While some installations are underway there is not sufficient experience to respond with any detail or certainty.

(t) What costs did mine operators incur for filters that were regenerated on board?

See (j) above.

(u) Would active regeneration be feasible for your mine; such as off-board filter regeneration in an oven, ***or*** *on-board electrical regeneration?*

We are not in a position to provide this operator specific information.

(v) What are the costs to mine operators for new engines and venting for filter ovens?

See (b) above regarding the cost for new engines. With regard to venting for filter ovens, we are not aware of any operators who have, at this time, introduced such installations; therefore, no cost data is available.

(w) Would fuel additives used to facilitate regeneration be feasible?

The addition of fuel additives to facilitate regeneration is an option that operators can, and will, explore on a case-by-case basis. While they may have application in certain settings, they cannot be used with all systems.

(x) *Are there any significant technologies for controlling DPM when EC is the surrogate?*

We are no aware of any technologies specific to the control of elemental carbon.

9. Paperwork Burden Issues.

Whatpaperwork and other costs will you incur ifchanges are made to the DPM standard, particularly development of a writtenprogram for use of administrative controls, use of respiratory protection, and for development of a controlplan?

Response to this question is dependent upon to outcome of MSHA's regulatory activity.