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Re: RIN 1219-AB29
Diesel Particulate Matter Exposure of Underground Metal & Nonmetal Miners
Limited reopening of comment period

Mr. Nichols:

You have recently announced a limited reopening of the comment period for the above listed rule making. This reopening is to allow comment on three new documents which have been entered into the rule making process. While it is unclear to me why Document 2 (Respirator Usage in Private Sector Firms, 2001) and Document 3, (Counsel of MARG Diesel Coalition) have been added to this reopening as neither are pertinent or timely to this proposed rule making. It is however clear that the third document which I will refer to as the Stillwater Study was completed after the closing of the comment period and is pertinent to the proposed rule making. It is for these reasons that my comments will be restricted to the Stillwater study.

While reading through this document I notice many references to the “normalization” of the ventilation to the MSHA ventilation plate quantity. While I can understand why NIOSH included this feature, I believe this “normalization” to be a disservice to the miners in the metal-nonmetal (M-NM) industry for the following reasons:

1. While the engines used in this testing were MSHA approved and did possess a vent plate this, as we all know, is not the case with all M-NM mines. These mines have the option of using engines that comply with the EPA requirements and have no ventilation plate quantity listed; therefore it would be impossible to “normalize” the concentration of exhaust gases or diesel particulate matter (DPM) for other mines. It is my understanding

that as many a 55-60% of the engines used in the M-NM mining industry are EPA compliant engines that have no vent plate quantity listed.

2. MSHA does not require any minimum ventilation for this industry. The only requirement is that the ambient concentrations of regulated gases meet the (ACGIH) requirements. If you take into consideration the number of engines with no vent plate and the fact that there is no ventilation requirement it is clear that the approach of normalizing the ventilation to the MSHA vent plate quantity is an injustice to the miners working in this industry.

While the results of this testing can be applied to the Stillwater, Nye Mine it is clear that the results can not be extended to all mines in the M-NM industry. This is very troubling to me and I will try to point out my areas of concern as I continue my comments.

The Effects of Control Technologies on Concentration of Total Particulate Matter (TPM) under 0.8ug (page 51)

In this section NIOSH reports on the reduction of total particulate matter (TPM) in the mine atmosphere. They state the reduction of TPM does not coincide with the reduction of EC. This difference between EC and TPM is explained by stating; *treated exhaust may contain higher concentrations of sulfates, bound water and other organic carbons*. It is important to note that both filters listed rely on a Platinum washcoat to achieve regeneration; it has long been known that the presence of platinum can cause a rise in TPM while reducing EC concentration. This was brought out in my previous comments when MSHA decided to use EC as a surrogate for TPM. It was my belief then (and now) that EC can not be used as an accurate measurement for TPM. I believe this round of testing reinforces my previous statement.

I would also like to mention the absence of test results, in this section, for the Donaldson Hi-temp paper filter. This filter's test results were not included in Table 9, The Donaldson Filter was apparently left out of this area of testing even though the MSHA web site lists this filter to be "*essentially identical to the to the standard paper filter*" which means it will reduce TPM emissions by about 95% (in cooled exhaust and about 83% in hot exhaust) which is comparable to or above any reported reductions given in Table 9 for the Platinum catalyzed filters. I do not understand why NIOSH chose not to include the test results of the Donaldson filter in this area of testing. I believe an opportunity to provide the Metal Non-metal industry with some valuable information as well as an alternative to the highly catalyzed Platinum filters has been missed by this omission.

There is one other detail I would like to mention about this section; there is also no reported testing for any base metal or non-catalyzed filters in Table 9. As you know these filters have the same substrates as the filters listed in Table 9 but because they do not have a Platinum washcoat they do not create sulfates (which NIOSH alludes to in their "speculation" on page 52), which means they will be more efficient in reducing the amount of TPM in the mine atmosphere. The non-catalyzed, base metal and paper

filtration systems are being use in the coal industry with very good success. I can only assume that these filters were not tested for control of TPM because the mine operators did not want to perform the maintenance associated with active DPF systems.

I would also like to remind you that when this rule was first proposed its intent was to reduce the TPM in the M-NM mines not just the EC fraction. Although I do understand the need to reduce EC, I do not believe we should ignore the other fractions of Diesel Particulate Matter in the process.

The Effects of Control Technologies on Count and Size Distribution of Particles (Page 53)

It is reported in this section that the Platinum based filters did reduce the mass concentration of TPM however there was an increase in ultra-fine particles in the mine atmosphere. We have to ask ourselves once again; are we only concerned with the reduction of EC in the mine atmosphere or is the reduction of TPM our main goal. It is important to note that the Donaldson paper filter was not included in this area of testing either.

There is one other concern I would like to bring out at this time, which is, the use of a diesel oxidation catalyst (DOC) as a “stand alone” control technology. The DOC is without a doubt is a very useful tool in reducing diesel exhaust emissions in the mine atmosphere. The Pennsylvania diesel rule, which does protect the health of miners, requires a DOC on all equipment however this requirement is for the DOC to be one part of a complete emission control system; I do not believe the DOC is a good “stand alone” technology, as this round of testing shows. While the DOC does work quite well in reducing CO concentrations and some hydrocarbon particulates it does, as a result of this reduction, create ultra-fine particles (as evident in Table 10) and should only be used in conjunction with a diesel particulate filter. I would ask that MSHA review these test results as well as other test of a DOC as a “stand alone” technology. If you are honest with your assessment of the facts, it will be clear that the use of a DOC without a particulate filter is not the best approach for this industry to take if miners are to be protected.

The Effects of Control Technologies of Ambient Concentrations of CO, CO₂, NO, NO₂. (Page 61-68)

Here again I have concerns with the results reported in this section;

NIOSH states the reported results were “normalized” with respect to the MSHA vent plate quantities. As I have stated earlier, this process of “normalization” assumes that all engines are equipped with an MSHA vent plate quantity; this as we know is not the case in the M-NM industry. NIOSH goes on to state that even with this “normalization” the average concentration of NO₂ had approximately doubled and that

during testing the peak concentration of NO₂ did exceed the ACGIH short term exposure limit of 5 ppm on several occasions.

Couple the above information with the statement made on page 68 that states; ***"The concentration of measured gases at the downstream and vehicle stations were found to be comparable, and in the majority of cases, slightly higher peaks were observed by the instrument used at the vehicle sampling station. This indicates that the equipment operator might have been exposed to concentrations that are somewhat higher than those shown in Table 11"*** This information on the production of NO₂ by platinum based particulate filters is not new as we in the coal mining industry can attest. It is imperative that MSHA take an approach that will greatly curtail, if not completely eliminate to use of these Platinum washcoated filters. You can see from the results of this testing that "if" there were a vent plate quantity on every engine and "if" that vent plate quantity was maintained the equipment operator could still be in danger from the concentration of NO₂. It is important to bring out that equipment operators will not have an instrument giving constant readouts of the concentration of the regulated gases, as was present in this test. Even in this test where constant readouts were being taken NIOSH can only speculate as to how high these concentrations were for the operator. A rational person would conclude that these platinum washcoated filters have no place in the mining industry.

Summation

I would like to sum up my comments with following statement;

I do not believe the Donaldson paper filter, base metal, or non-catalyzed filters were given a chance to prove what they could do in the curtailment of TPM. This lack of testing information on the above mentioned filters is explained away with the following statements taken from page 84 of this study:

Donaldson filter;

NIOSH states that the systems did work as expected during the short trials but due to maintenance requirements and filter life of 100 hr. duration ***"The Stillwater mine operators do not consider this system to be practical for Stillwater's applications"***.

DCL Blue Sky System;

NIOSH states, during the short trial at the Stillwater Nye Mine this system worked as designed. However after a short statement on the downtime required for the filter to regenerate they go on to say, ***the mine operators deemed it as unpractical.***

While the statements made above may hold true for Stillwater Mining the testing was to be for the M-NM industry and not solely for the Stillwater Mine. I would also like to state that the Coal industry is using both disposable paper filters and base metal filters with very good success. This study's lack of test information on these filters will undoubtedly tilt the scales toward the use of highly catalyzed Platinum filters. It is apparent that this industry is only interested in a control technology that does not require any maintenance during its lifespan. It is my opinion; the mining industry looks upon these highly catalyzed filters as a "Magic Bullet" you simply install these filters and it is business as usual, there is no emphasis put on maintenance of the diesel engine or the after-treatment system. This approach could severely affect the health of the miners in this industry. I

submit to you that this proposed rule can be met without jeopardizing the health of the miners; this can be done with the use of the above mentioned filters. These “untested” filters are as efficient as the platinum catalyzed filters but do not create any secondary emissions. However because they do require a regiment of maintenance they are simply deemed to be unpractical. MSHA must look upon these test results with a very discerning eye as it is obvious these “highly catalyzed Platinum filters” create many more problems than they correct. The approach of using highly catalyzed Platinum filters in the outside environment may well work but we can not allow these filters to become the normal for underground mining. MSHA has issued two PIB’s on the effects of these highly catalyzed filters, so in retrospect it would be hard for MSHA to now ignore the results of this round of testing. I for one believe it is time for MSHA to take action and eliminate or at least greatly reduce the use of these filters in all underground mining applications after all MSHA does have a responsibility to protect the health of the miner.

In closing I would like to state that the M-NM industry should not be treated any differently than the Coal Industry. I understand that there are inherent differences in these two industries but you must remember that there is no difference in the miners working in these industries. They all need the same level of protection provided under the law and by your organization.

If you need clarification of any of the statements made in this document I may be reached by phone at 724-737-5213 or e-mail at genedavis@chater.net .

Sincerely

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