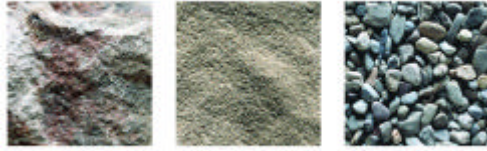


NATIONAL STONE, SAND & GRAVEL ASSOCIATION



Natural building blocks for quality of life

May 22, 2002

By e-mail to clair-edward@msha.gov;
regular mail submission to follow
By fax to 202-693-9361

Mr. Edward P. Clair
Associate Solicitor for Mine Safety and Health
Department of Labor
Office of the Solicitor
1100 Wilson Blvd., 21st Floor
Arlington, VA 22209-3939

Dear Ed:

The National Stone, Sand & Gravel Association (NSSGA) is pleased to offer the attached comments to the Mine Safety and Health Administration (MSHA) on MSHA's draft Report on Joint MSHA/Industry Study: Determination of DPM Levels in Underground Metal and Nonmetal Mines.

NSSGA is the world's largest mining association with more than 900 member companies – mostly small businesses operating in over 3,500 locations across America. Our membership represents about 90% of the crushed stone and 70% of the sand and gravel produced annually. NSSGA's member underground mines make up 33% of the entire underground mines operating in the United States. During 2000, 2.7 billion metric tons of crushed stone, sand and gravel, valued at \$14.2 billion, were produced and sold in the United States from 10,000 locations nationwide – more than double the tonnage of the next largest mining sector, coal.

NSSGA has always wholeheartedly supported efforts, regardless of their source, that promote miner health and safety, and has actively offered its own products and services to advance health and safety within the mining sector. We have also supported those features of the Diesel Particulate Matter (DPM) Rule that have already gone into effect. However, NSSGA cannot support imposition of either the interim or final PEL because we believe realistic estimates of the cost of compliance are not yet available for all underground stone mines. Further, we believe the final PEL is technically infeasible. We also do not support the use of area samples for compliance purposes, and are concerned about the agency's choice of total carbon, not elemental carbon, as a surrogate for diesel particulate matter (DPM) exposure. A more complete evaluation of how to deal effectively with the potentially confounding effect of smoking needs to be accomplished. Our views are more fully elucidated in the attachment.

NSSGA appreciates the opportunity to comment afforded by MSHA's decision to extend the industry comment period to May 22. If you have any questions or comments, please do not hesitate to contact us.

Sincerely,

James Sharpe, CIH
Vice President, Safety & Health Services

CC: Dave D. Lauriski

Enclosure

**COMMENTS OF THE
NATIONAL STONE, SAND & GRAVEL ASSOCIATION
ON MSHA'S DRAFT REPORT:
JOINT MSHA/INDUSTRY STUDY: DETERMINATION OF DPM LEVELS
IN UNDERGROUND METAL AND NONMETAL MINES
May 22, 2002**

CONCLUSIONS REACHED BY MSHA IN THE DRAFT REPORT

MSHA concluded that the interim and final concentration limits are technically and economically feasible for the 9 NSSGA member mines in the study. The study calls for the use of 80% efficient DPM filters to reach both the interim and final PELs and, in some cases, calls for auxiliary ventilation, ventilation control structures, repositioning intake fans, installing a low DPM emission engine, new ventilation ductwork and various other ventilation system upgrades to meet the final PEL.

Economically, MSHA concluded that all 9 of the NSSGA member mines could meet the financial burdens placed on them by the rule. The average first year cost for the 9 NSSGA member mines to comply with the interim PEL is \$144,542, and an additional \$125,657 to comply with the final PEL. These costs include the purchase of DPM filters and ovens, new diesel engines and various ventilation system improvements.

MSHA came to these conclusions using both personal and area "worst case" samples in their data analysis of the nine NSSGA member mines.

AREA SAMPLES/FINAL PEL

- Area samples, which measure exposures in physical sectors of a mine, must not be used for compliance. The purpose of the DPM rule is to limit exposure to DPM by miners, hence only samples (i.e., personal samples) placed on miners should be used for compliance.
- The PEL of 160 $\mu\text{g}/\text{m}^3$ is not technically possible to meet with existing mining equipment, and is economically burdensome as well.

Area Samples

Area samples were used throughout this study and MSHA intends to use them to determine compliance with the interim and final PEL when those provisions of the DPM rule go into effect. NSSGA believes this is a misuse of this type of sampling, and strongly objects to its use for compliance purposes.

The stated purpose of the DPM Rule is to “reduce the risks to underground metal and nonmetal miners of serious health hazards that are associated with exposure to high concentrations of diesel particulate matter (DPM)” [FR, Vol. 66, 13, p. 5706]. The only sampling method ever designed to accurately determine individual worker exposures is personal sampling; that is, samples placed directly in the worker’s breathing zone. The idea behind placement of the collection medium in the miner’s breathing zone is to allow for collection on the filter of the same type and concentration of particulate matter as the worker breathes. Properly collected and analyzed personal samples are accepted in the industrial hygiene community as representative of a worker’s exposure dose.

By definition, area samples do not work as surrogates for personal exposure. That is because they are placed in an area of the mine, not on a part of the human body. As such, it is impossible for them to accurately represent a worker’s exposure, and any attempt to do so is serious violation of fundamental industrial hygiene principles. The main reason area samples are collected is to gauge the effectiveness of control measures.

A full-shift area sample MSHA collected “in the vicinity of active mining operations” of Mine F illustrates the point. Miners working in this area may or may not have been exposed to the exposure level represented by the sample. The sample simply cannot tell us one way or the other. It is possible a miner worked in the vicinity of the sampling apparatus the entire shift, and thus received the full dose reflected by the sample result. It is also possible all the miners here were in environmental cabs supplied with clean, fresh filtered air, were in and out of the area all shift long, or even were never there at all if this part of the mine is fully automated. Permissible Exposure Limits (PELs) are reference numbers developed to protect *workers, not areas of the mine*, from contaminant overexposure during a normal work shift. The Rule is aimed at keeping miners out of the harm’s way of DPM, not areas or equipment in those areas.

In concluding its report titled “Sampling for Diesel Particulate Matter in Mines,” the Diesel Emissions Evaluation Program (DEEP) stated, “The importance of *personal sampling* at this time cannot be overstated.” [emphasis added] The report goes on to say, “Personal sampling is usually performed to measure the exposure of the individual worker or for assessing compliance with regulated exposure limits.”

Occupational samples present a similar problem. Sampling an occupation does not provide data representative of a miner’s personal exposure to a health hazard. Instead, you have data that represents the occupation’s 8-hour exposure. Miners routinely change tasks and locations throughout a shift, while the occupational sample remains with a specific piece of equipment or mine location. That occupational sample represents the task’s full-shift exposure, which may include more than one miner. On the other hand, the miner may only have been working at that task for a few hours, not a full shift.

NSSGA believes that MSHA’s conclusion that the nine underground stone operations could feasibly meet both PELs based on the results of area sampling is flawed. As we have discussed, such a determination must be made on the basis of personal sampling alone.

The Final PEL of 160 $\mu\text{g}/\text{m}^3$

Economic Feasibility

NSSGA does not agree with MSHA's conclusion that both PELs are economically feasible in underground stone mines. We believe that costs are most likely higher than the agency estimates, for the reasons listed below. Therefore, before imposition of either PEL, we favor an economic analysis be performed that reflects our concerns.

- DPM filter costs for underground mining equipment will vary widely depending on the equipment.
- DPM filters will not be a viable solution for all underground mines. Instead, ventilation modifications will be needed in many mines, which will significantly increase compliance costs. Stone mines will require larger filters, due to the size of the diesel equipment. Installation costs for these larger filters will exceed \$4,000 per filter.
- MSHA's draft report underestimates the number of ovens needed to regenerate DPM filters.
- Industry cost estimates for compliance with the DPM rule are far greater than MSHA's Final Rule FREA.
- Increased ventilation will be needed to deal with the increased levels of NO_x from DPM filter use.

Technical Feasibility

In the draft report, p. 64, MSHA admits that the CV increases from 8% to 12.7% as sample results drop from the interim PEL level to the final PEL. This is a sharp decline, and underscores the rapidly increasing variability of sample results as results reach lower levels. One must assume that the CVs reported represent best-case results, for this study was performed with a technical rigor that is apt not to be repeated under real-world compliance circumstances. As a consequence, we would expect that even greater variability will be seen when sampling and analysis are performed under less than the relatively ideal circumstances that occurred in this study.

Filters

MSHA seems to have concluded that at least 80% efficient filters are the agency's recommended panacea for the alleged DPM exposure problem in underground stone mines. For, the agency recommends, no fewer than fifty-two 80% efficient DPM filters could be used – coupled with other changes - to bring the nine stone mines into compliance with the interim PEL. Four years from now, these nine mines would then need to add twenty-two more 80% efficient DPM filters – couple with other changes - to come into compliance with the final PEL. Filters were recommended for 28 of the 31 mines sampled in the study.

We would urge the agency to proceed with caution, however, regarding filters. While filters may in fact be a viable fix for *some* equipment, the technology has not been scientifically tested on higher horsepower engines, such as the engines found in stone mines. NIOSH itself has commented on this lack of scientific evidence in e-mail correspondence with the National Mining Association. A copy of that correspondence was given to MSHA at the April 9th meeting with industry counsel.

Original equipment manufacturers (OEMs) have expressed concern about increased back-pressure levels that can occur when a DPM filter is added to the exhaust train of the diesel equipment. Excess back-pressure levels can cause engine damage, including burnt and stuck valves, burnt turbocharger turbines and pistons, cracked heads, and, ultimately, engine failure.

The OEMs' trade association, the Engine Manufacturers Association (EMA), voiced its concerns in a May 22 letter to Assistant Secretary Dave Lauriski. The group said, "Due to the current state of technology, EMA believes that MSHA should reconsider or delay implementation of the requirement that requires retrofitting mining equipment with filter technology." The EMA added, "Failure to complete the necessary testing and verification [of filter technology] may not only result in a lack of diesel PM emissions reductions, but in equipment and engine damage or failure that could jeopardize safety."

NSSGA has no knowledge that MSHA ever engaged OEMs in a dialogue on the consequences to their engines of installation of the filters the agency recommends. Rather, it seems that filter manufacturers were the primary resource for information. For business reasons, filter makers can be expected to paint a rosy picture of the effectiveness of their products. Engine manufacturers, concerned about claims against their warranties, are apt to be more cautious.

Besides concerns over engine damage, NO_x fumes (a respiratory irritant) have been found to significantly increase with the wholesale use of filters. It seems counter-productive to raise the levels of one respiratory irritant by reducing the levels of another potential respiratory irritant, but this seems to be the unwanted trade-off associated with DPM filter applications.

OTHER COMMENTS & ISSUES

Exclusive Use of Engineering Controls

The DPM rule mandates engineering controls as the sole control method to reduce DPM levels in underground mines. If the goal is to reduce miners' exposure to DPM levels, why not make the rule more performance-oriented by allowing operators to choose from a menu of options to achieve compliance? Administrative controls and personal protective equipment (PPE) are two other control methods routinely authorized by MSHA and utilized by the safety and health professional to control crystalline silica and welding fumes, of which some believe are carcinogens, like MSHA believes DPM is. Other options especially should be available to operations which demonstrate that compliance using engineering controls is burdensome.

NIOSH Method 5040

The DPM analytical procedure, NIOSH Method 5040, requires that levels of elemental carbon, not total carbon, be determined, and the method should be used as intended. In agreement is NIOSH, which can be considered an authority on the matter since it developed the method.

Influence of Smoking on Sample Results

Smoking is a source of carbon, a potential interference with the analytical method, and MSHA cannot ignore the role of smoking in potentially producing false positive results. In underground mines with smokers, the agency can provide no assurance results will not be tainted by the presence of tobacco smoke, unless the agency's sampling technician remains with the sample throughout the workday. Tobacco smoke is also a well-known cause of lung cancer,

along with a host of other ailments. Since DPM is also alleged to be a lung carcinogen, the agency could take a positive step toward improving miner health by launching an anti-smoking campaign for the benefit of the mining workforce, similar to what it does annually to discourage people from entering abandoned mines.

SUMMARY

NSSGA cannot accept MSHA's decision to use area DPM samples for compliance with the PELs in the DPM Rule. Nor can the Association accept the final PEL. NSSGA does not support imposition of the interim PEL until a more accurate picture of estimated costs is provided. Options besides engineering controls need to be made available to operators, the agency must not deviate from the recommendations of its own research agency on measuring elemental carbon instead of total carbon, and the influence of cigarette smoking must be thought through more completely.