



November 21, 2005

Mine Safety and Health Administration
Office of Standards, Regulations, and Variances
1100 Wilson Blvd. Room 2350
Arlington, VA 22209-3939

RE: RIN 1219-AB24 – Proposed Rule – Asbestos Exposure Limit

To Whom It May Concern:

The Industrial Minerals Association – North America (IMA-NA) is a Washington, DC area-based trade association created to advance the interests of North American companies that mine or process minerals used throughout the manufacturing and agricultural industries. IMA-NA membership also is open to companies that provide equipment and services to the industry.

IMA-NA has reviewed the above-referenced Notice of Proposed Rulemaking (NPRM) by the Mine Safety and Health Administration (MSHA) and is pleased to offer the following comments. IMA-NA hereby incorporates by reference the oral testimony and written comments it submitted previously during the Advanced Notice of Proposed Rulemaking (ANPRM) phase of this rulemaking record.

Consistent with our earlier submissions, IMA-NA concurs with the key provisions of the current proposal. Specifically, IMA-NA supports the reduction of the MSHA permissible exposure limit (PEL) for full-shift exposures and the excursion limit earlier adopted for asbestos by the Occupational Health and Safety Administration (OSHA). IMA-NA further supports the continued use of phase contrast microscopy (PCM) for initial quantification of asbestos fibers in air with the use of transmission electron microscopy (TEM) as needed to aid in the identification of asbestos. IMA-NA also supports MSHA's proposed approach to control take-home asbestos contamination on work clothing.

IMA-NA notes that MSHA has described this proposed rule as limited in scope and that the Agency expressly seeks to align its rule with the OSHA asbestos regulation. MSHA states that it has “decided not to propose to change our existing definition of asbestos in this rulemaking.” MSHA also states that its asbestos “definition is consistent with several Federal agencies’ regulatory provisions, including OSHA’s.” Page 43952, Section II A, *Scope of Proposed Rule*. MSHA states its intent to regulate only asbestos, provides an accurate mineralogical description of asbestos and the asbestiform crystal

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growth habit, and confirms that “cleavage fragments are not asbestiform and do not fall within our definition of asbestos.” Page 43953, Subsection 2, *Differentiating Asbestiform and Nonasbestiform Habit*.

In aligning this proposed rule with the OSHA asbestos standard, MSHA is accepting OSHA’s risk assessment in lieu of conducting its own. However, IMA-NA would support the inclusion of other asbestiform amphibole minerals if they clearly demonstrate a health risk similar in magnitude and scope to the asbestiform amphiboles currently regulated as asbestos and to which miners are exposed. Extension of this proposal to all mining environments appears reasonable as well.

Although generally supportive of the proposed rule, IMA-NA notes that certain preamble language in the proposed rule inadvertently and improperly may broaden the scope of this regulation, or any subsequent MSHA asbestos regulation, to treat elongated amphibole cleavage fragments as asbestos fibers. Specifically, IMA-NA is concerned about the possible application of an arbitrary fiber-counting criteria to “define” asbestos rather than to simply count asbestos fibers once identified. This unintended outcome would contradict the stated scope of this proposed rule directly and run counter to cleavage fragment health science.

This “cleavage fragment issue” (as it is often called) has a long and often contentious history. For this reason IMA-NA and many others commented extensively on this issue during the ANPRM. MSHA also is fortunate to have a 1992 OSHA rulemaking to review that includes a risk analysis specific to amphibole cleavage fragments. 57 FR 24310-24331. We encourage MSHA to fully review that OSHA rulemaking proceeding and have attached a copy for your convenience (**Attachment 1**).

As stated during the ANPRM, the adoption of an overly broad asbestos definition could transform major portions of the earth’s crust into asbestos and cause significant harm to segments of the mining and aggregates industries with no offsetting benefit to miners’ health. The impact of regulating amphibole cleavage fragments as asbestos was described by the Bureau of Mines (BOM) in its submission to the OSHA rulemaking docket in 1989. A copy of the BOM impact statement is appended (**Attachment 2**). If MSHA were to regulate elongated amphibole cleavage fragments as asbestos, its existing discussion on regulatory costs would require significant revision. Page 43981, Subsection 2. IMA-NA believes a new quantitative risk assessment would be necessary to justify such a change.

IMA-NA hopes MSHA understands that the analytical methodology proposed for the quantification of asbestos fibers in air is not specific to asbestos. We are, in fact, aware of no analytical method that is specific to asbestos. The commonly applied NIOSH PCM method 7400, NIOSH TEM method 7402, OSHA ID-160 (the PCM method that MSHA specifically incorporates through OSHA Appendix A), for example, properly state that elongated cleavage fragments are “interferences” when used for asbestos quantification (see **Attachment 3** – highlighted statements in methods). Even when applied by accredited laboratories, available analytical methods will not identify asbestos

consistently and reliably *for the analyst*. Instead, it is knowledge of the nature of asbestos and its appreciation *by the analyst* that most influences the consistency and reliability of asbestos identification.

Several highly regarded mineral scientists (Dr's Wylie, Lee, Chatfield and Ross) testified before MSHA during the ANPRM phase of this rulemaking. These experts have researched and published on the mineral characteristics of asbestos for decades and appeared at the request of the National Stone, Sand and Gravel Association. These highly experienced analysts also cautioned MSHA that there currently is no analytical method specific to asbestos and that existing methods are only tools *that aid* in the identification and quantification of asbestos when the fiber exposure is not known 'a priori' to be asbestos (as is often the case in mining environments). IMA-NA endorses the opinions expressed by these noted experts and hereby incorporates by reference their testimony and comments.

These analysts also recommended analytical modifications that would improve specificity in the qualification and quantification of asbestos. These modifications spoke principally to PCM differential fiber-size counting criteria that are more specific to asbestos (an identification approach recommended in OSHA's own Appendix B ID-160 PCM method – see Attachment 3). **Attachment 4** to this submission provides several quotes from the testimony of these experts which we feel reinforce our concerns. IMA-NA encourages MSHA to review the full oral testimony and written comments of these noted scientists.

Given the above concerns, IMA-NA is pleased to submit the following specific recommendations:

1. Retain in the final standard an accurate and complete description of the asbestiform and nonasbestiform crystal growth habit such as that currently found on Page 43953, Section C 2, and again make it clear in this section that only the asbestiform varieties of the listed minerals are covered under the final standard. This definition is consistent with what generally is referred to as the consensus definition that appeared in one of our submissions for the ANPRM entitled: "*The Asbestiform and Nonasbestiform Mineral Growth Habit and Their Relationship to Cancer Studies.*" We again are submitting this document as it addresses the key mineralogical distinctions clearly and concisely, provides a review of the pertinent health science base and a differential fiber counting PCM method "more" specific to asbestos (see **Attachment 5**). Please note a listing of the contributors and supporters of this consensus definition on page 64 of that document relative to their backgrounds and qualifications as geologists and mineral scientists. IMA-NA supports calling any substance by its proper name and regulating that substance on the basis of its demonstrated adverse health effects. IMA-NA does not view "difficulty" as a viable justification to mischaracterize exposures, but rather as a reason to make needed advancements.

2. MSHA does recognize on Page 43953, Section C 2, of the proposed rule that it is often difficult to determine the difference between an asbestos fiber and an elongated cleavage fragment on an individual fiber basis, but states; “A determination as to whether a mineral is asbestiform or not must be made, where possible, by applying existing analytical methods.” (Emphasis added). As no analytical method is specific to asbestos, IMA-NA suggests broadening that advice to encourage the use of all available scientific literature and mineralogical expertise. Until such time as an asbestos-specific analytical protocol is developed, all available tools must be used in equivocal exposure circumstances (when the exposure is not known ‘a priori’ to be an asbestos exposure). IMA-NA believes the scientific literature in regard to distinguishing asbestos fibers from elongated nonasbestiform fibers is reasonably extensive and should be consulted when an analysis is challenged. One reference example (which also addresses amphibole from Libby, Montana) can be found in **Attachment 6**.
3. MSHA further should provide guidance to aid the regulated community make this key distinction by adopting the steps taken by OSHA to enhance the reliability of identification when needed. OSHA allows for “differential” fiber counting to provide latitude to the analyst to use his/her expertise and all available information helpful in making the proper distinctions. OSHA further allows and encourages the use of Polarized Light Microscopy (PLM) bulk analysis applied by qualified individuals as another tool to be used in the identification of asbestos. OSHA includes Appendix C in its asbestos standard for this purpose (see **Attachment 7**). This Appendix C PLM method includes additional descriptive guidance that aids the analyst in the identification of asbestos and would be a valuable addition to the MSHA standard. **Attachment 8** contains 1989 correspondence from the OSHA laboratory that outlines how MSHA’s sister agency analytically addresses this matter.

In recommending the use of bulk analysis, IMA-NA is not suggesting bulk analysis be used in place of air sampling (recognizing the regulatory compliance aspect of air sampling), but rather as an additional tool to enable MSHA and the analyst to properly characterize the exposure. Of course if representative bulk analysis clearly shows the absence of asbestos, the need for air sampling can be better assessed. Analysts consistently testify that it is much easier to identify asbestos in bulk material (where the full range of asbestiform growth characteristics is commonly seen) than based on a few “fibers” or a single fiber on an air filter. Again, the characteristics of asbestiform fibers (widths independent of length, polyfilamentous bundling of fibrils, etc.) are best seen on a population basis (the bigger the population, the easier to distinguish). Such characteristics extend beyond merely “parallel sides” (also observed among cleavage fragments). Proper discrimination of fibers, of course, becomes a more critical issue as the PEL is reduced.

4. IMA-NA encourages the review of all available geological information on ore deposits to better understand the nature of mining exposures as well. We view

this advice of particular importance to MSHA given the complexity of many mining environments and, therefore, the increased likelihood of identification questions.

5. MSHA asbestos monitoring (both bulk and air sampling) that is believed to reflect asbestos should be retained for a time sufficient to allow additional review if challenged (given the identification issues enumerated above).

In light of the above, IMA-NA recommends that the Proposed Rule be amended to read as follows:

56.5001 (amended) – 57.5001 (amended) and 71.702

(b) *Asbestos standard.*

(1) *Definitions.* Asbestos is a generic term for a number of hydrated silicates that, when crushed or processed, separate into flexible fibers made up of fibrils. As used in this part –

Asbestos means chrysotile, amosite (cummingtonite-grunerite asbestos) crocidolite, anthophyllite asbestos, tremolite asbestos and actinolite asbestos and does not include non-fibrous or nonasbestiform minerals.

Asbestiform means a mineral that crystallized with the habit (morphology) of asbestos. The asbestiform crystal growth habit is generally recognized by the following characteristics which are best observed on a population basis and therefore best observed in bulk samples:

Mean fiber aspect (length to width) ratios ranging from 20:1 to 100:1 or higher for fibers longer than 5 micrometers. Very thin fibrils, usually less than 0.5 micrometers in width, and two or more of the following:

- Parallel fibers occurring in bundles
- Fiber bundles displaying splayed ends
- Matted masses of individual fibers and/or
- Fibers showing curvature

Fiber Counting Criteria are 5 micrometers (µm) or longer with a length-to-diameter ratio of at least 3:1.

(2) *Permissible Exposure Limits (PELs).* – (i), (ii) - (no change recommended)

(3) *Measurement of Asbestos.* Airborne asbestos fiber concentration shall be determined by phase contrast microscopy using a method statistically equivalent to the OSHA Reference Method in OSHA's asbestos standard found in 29 CFR 1910.1001, appendix A when the exposure is known 'a priori' to be only commercial asbestos (not mixed dust).

When a fiber exposure is not known to be asbestos (or is otherwise equivocal) or is a mixed dust exposure, additional investigation is necessary because no currently available analytical method is specific to airborne asbestos. This additional investigation shall include the following:

- Review of available geological information for the identification of regulated asbestiform mineral occurrences in the mining deposit.
- The analysis of bulk samples (ore, insulation, settled dust, etc.) that is representative of the miner's work area exposure. OSHA appendix C 29 CFR 1910.1001 (Polarized Light Microscopy Method) or an equivalent method, shall be used for bulk analysis. The absence of asbestos in bulk samples shall eliminate the need for air sampling and/or analysis of particulate on air filters. The presence of asbestos in the bulk sample at any level will require personal air sampling or analysis of collected air samples.
- On air samples analyzed by PCM or TEM, the characteristics of asbestos fibers defined in section (b) 1 above, described in OSHA appendix C and supported in OSHA appendix B, shall be observed.
- Bulk and air samples that have been analyzed with results indicating the presence of asbestos at any level, shall be retained for a period of no less than one year for possible reanalysis. This sample retention requirement will be applied to mine operator and MSHA collected samples.

In summary IMA-NA believes there is need for caution in this area because current analytical methods are not specific to asbestos and this poses a significant problem for the mining community (especially with a reduced PEL). The proper identification of asbestos calls for enhanced education, improved methodology, and better use of the existing knowledge base regarding the nature of asbestos. IMA-NA believes MSHA is in a unique position to highlight and support these needed improvements.

Respectfully submitted,



Mark G. Ellis
President

Attachments

Attachments

(Click on link to view attachment)

[AB24-COMM-107-1](#)

Attachment 1 to AB24-COMM-107

[AB24-COMM-107-2](#)

Attachment 2 to AB24-COMM-107

[AB24-COMM-107-3](#)

Attachment 3 to AB24-COMM-107

[AB24-COMM-107-4](#)

Attachment 4 to AB24-COMM-107

[AB24-COMM-107-5](#)

Attachment 5 to AB24-COMM-107

[AB24-COMM-107-6](#)

Attachment 6 to AB24-COMM-107

[AB24-COMM-107-7](#)

Attachment 7 to AB24-COMM-107

[AB24-COMM-107-8](#)

Attachment 8 to AB24-COMM-107