



Comments to DOL

**Comments of the
National Institute for Occupational Safety and Health
on the
Mine Safety and Health Administration
Proposed Rule on Asbestos Exposure Limit**

**30 CFR Parts 56, 57, and 71
RIN: 1219-AB24**

**Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health**

October 13, 2005

The National Institute for Occupational Safety and Health (NIOSH) has reviewed the Mine Safety and Health Administration (MSHA) proposed rule *Asbestos Exposure Limit* published in the *Federal Register* (FR) on July 29, 2005 [70 FR 43950]. NIOSH concurs with the proposal to reduce the MSHA permissible exposure limit (PEL), making the regulation consistent with the Occupational Safety and Health Administration (OSHA) PEL. NIOSH also concurs with the proposal to incorporate reference to Appendix A of OSHA's asbestos standard [29 CFR 1910.1001], specifying a phase-contrast microscopy method (PCM) for analyzing airborne asbestos samples.

Below is a comment on the regulatory definition of asbestos followed by specific technical comments on the FR notice.

A. Regulatory Definition of Asbestos

MSHA notes on page 43972 that "*Substantive changes to the definition of asbestos are beyond the scope of this proposed rule.*" MSHA has thus retained the current definition of asbestos as the six asbestos minerals, chrysotile, amosite (cummingtonite-grunerite asbestos), crocidolite, anthophyllite asbestos, tremolite asbestos and actinolite asbestos. NIOSH remains concerned that the regulatory definition of asbestos should include asbestiform mineral fibers such as winchite and richterite, which were of major importance as contaminants in the Libby, MT vermiculite [NIOSH 2001; 2002]. NIOSH recognizes that the scope of this issue has implications that encompass numerous federal agencies and should be addressed in a coordinated manner.

MSHA notes on page 43953, "*Although we have received comments regarding the hazards associated with cleavage fragments, we do not intend to modify our existing definition of asbestos with this rulemaking.*" NIOSH agrees with MSHA's decision not to modify its definition of asbestos within this particular rulemaking. NIOSH is presently re-evaluating its definition of asbestos and nonasbestiform minerals, and will work with other agencies to assure consistency to the extent possible.

B. Specific Technical Comments

Page 43952, B. Where Asbestos is Found at Mining Operations. "*In some cases, visual inspection can detect the presence of asbestos.*"

This statement may create the impression that confirmation by a trained analyst is not necessary. Knowledge about the geology of the mine site is useful for determining the possible presence of asbestos. If the mineralogy of the mine site indicates the potential for asbestos, then a more comprehensive assessment (e.g., bulk sample analysis, settled dust sample) might be warranted to assess whether workers may be at risk of exposure. As noted on page 43977, the collection and analysis of bulk and settled dust samples can be useful in

ascertaining the presence of asbestos. However, the collection of airborne samples is the only reliable means of determining worker exposure to asbestos.

Page 43957, A. Summary of Asbestos Health Hazards. *“Asbestos-related diseases typically have long latency periods commonly not producing symptoms for 20 to 30 years following initial exposure.”*

Acute pleuritis can occur relatively early following exposure [Rudd R 2002]. NIOSH suggests the following revision: *“Most asbestos-related diseases typically have long latency periods, commonly not producing symptoms for 20 to 30 years following initial exposure.”*

Page 43958, B.3. Fiber Characteristics. *“Baron (2001) reviewed techniques for the measurement of fibers and stated, ‘...fiber dose, fiber dimension, and fiber durability are the three primary factors in determining fiber [asbestos] toxicity...”*

The cited sentence from Baron [2001] refers to mechanisms for the toxicity of fibers in general, not just for asbestos fibers as implied. The word “asbestos” added to the quotation should be removed.

Page 43959, C.1. Lung Cancer. *“NIOSH (May 2003) identified over 10,000 lung cancer deaths in the United States during 1999 based on only 20 Census Industry Codes (CIC). This sum was computed from ‘selected states,’ not the entire United States. NIOSH (May 2003) also identified 300 lung cancer deaths among coal miners from 15 selected states.”*

As a point of clarification, NIOSH identified many additional lung cancer deaths among other CICs not listed in the May 2003 NIOSH reference; their associated proportionate mortality rates did not meet the criteria for inclusion in the tables. The last sentence appears to be erroneous: there were 19 states for which data were obtained by NIOSH to generate a finding of 327 lung cancer deaths in 1999 where the decedent’s industry was identified as coal mining. [See Table 13-1 in the May 2003 NIOSH reference and the list of states for the year 1999 in Appendix E of that same reference.]

NIOSH’s National Occupational Respiratory Mortality System (NORMS) provides online interactive access to national mortality data based on information from death certificates (see <http://webappa.cdc.gov/ords/norms.html>). NORMS output indicates that from 1985 to 1999, there were a total of more than 2,300,000 lung cancer deaths among U.S. residents age 15 and older. For a limited subset of these deaths (from 26 states), data on decedents’ usual industry is available for analysis. Analysis of this subset reveals 9,798 lung cancer deaths among decedents whose usual industry was reported as mining, out of about 500,000 decedents with reported usual industry (i.e., about 2%).

Page 43959, C.2. Mesotheliomas. *“NIOSH found that most mesothelioma deaths were included with the categories of ‘all other industries’ (56 percent) or ‘all other occupations’ (57 percent).*

The 56% and 57% figures are taken from Tables 7-5 and 7-6 in the NIOSH [2003] reference, which lists the top ten industries/occupations in terms of frequency of associated mesothelioma deaths. The “all other” categories represent the residual deaths with designated industries and occupations that were not the ten listed industry/occupation categories. Without specifying the industries and occupations that are in the top ten, the figures are not useful. It would be helpful also to specify the limited nature of the subset of data analyzed to produce these figures; as stated in the NIOSH reference, the data is limited to selected states.

“For those death certificates that included a Census Industry Code (CIC), the most frequently recorded was ‘construction.’”

It is inaccurate to state that death certificates have a CIC. Death certificates have only a literal description of the decedent’s usual industry. Codes for the literal description are included in electronic data mortality files. Also, this sentence doesn’t seem useful because it relates to the construction industry.

It may be more informative to replace the two sentences noted in this section with the following: “NIOSH’s National Occupational Respiratory Mortality System (NORMS) provides online interactive access to national mortality data based on information from death certificates (see <http://webappa.cdc.gov/ords/norms.html>). NORMS output indicates that, in 1999, there were a total of 2,485 mesothelioma deaths among U.S. residents, age 15 and older. For a limited subset of these deaths (from 19 U.S. states), data on decedents’ usual industry is available for analysis. Analysis of this subset indicates that there were 3 mesothelioma deaths in 1999 among decedents whose usual industry was reported as mining, out of 480 mesothelioma decedents with reported usual industry (i.e., about 0.6%).”

Page 43959, C3. Asbestosis. *“Steenland et al. (2003) estimated that there were about 400 deaths from asbestosis in 1997, and that 100% of these asbestosis-deaths were due to occupational exposure.”*

NIOSH suggests the following revision: “Steenland et al. estimated that, based on an analysis of underlying cause of death, there were about 400 deaths from asbestosis in 1997, and assumed that 100 percent...” The clarification that the Steenland et al. [2003] paper was based only on underlying cause makes the 400 deaths comparable to the data given in the preceding statement in the preamble. Steenland et al. [2003] assumed that all asbestosis deaths were occupational; they did not estimate the 100% attributability.

Page 43960, C.3. Asbestosis, Last paragraph. *“Most asbestosis deaths were classified under “all other industries” (45 percent) and “all other occupations” (57%).”*

The 45% and 57% figures are taken from Tables 1-6 and 1-7 in the 2003 NIOSH report, which lists the top ten industries/occupations in terms of frequency of associated asbestosis deaths. The “all other” categories represent the residual deaths with designated industries and occupations that were not the ten listed industry/occupation categories. Without specifying the industries and occupations that are in the top ten, the figures are not useful. It would be helpful also to specify the limited nature of the subset of data analyzed to produce these figures: as stated in the NIOSH reference, the data is limited to selected states.

“The death certificates for most individuals who died from asbestosis lacked the Census Industry Code (CIC) and the Census Occupation Code (COC)...For those death certificates that included a CIC and a COC, the most frequently recorded industry and occupation were “construction” (CIC=060) and “plumbers, pipefitters, and steamfitters” (COC=585), respectively.”

It is inaccurate to state that death certificates have a CIC or COC. Death certificates have only a literal description of the decedent’s usual industry. Codes for the literal description are included in electronic data mortality files. Also, this information doesn’t seem useful because it does not relate to the mining industry.

It may be more informative to replace the three sentences noted in this section with the following: “NIOSH’s National Occupational Respiratory Mortality System (NORMS) provides online interactive access to national mortality data based on information from death certificates (at <http://webappa.cdc.gov/ords/norms.html>). NORMS output indicates that from 1985-1999, there were a total of 14,507 asbestosis deaths among U.S. residents age 15 and older. For a limited subset of these deaths (from 26 states), data on decedents’ usual industry is available for analysis. Analysis of this subset reveals 28 asbestosis deaths among decedents whose usual industry was reported as mining, out of 3,445 asbestosis decedents with reported usual industry (i.e., about 0.8%).”

Page 43960, C.5. Reversible Airways Obstruction (RAO). This section relates to fixed (irreversible) obstruction as much as reversible obstruction. NIOSH suggests deleting “Reversible” from the heading.

Page 43960, C.6. Other Nonmalignant Pleural Disease and Pleural Plaques. It would be useful to delete “and Pleural Plaques” from the heading because “pleural plaques” are a form of “nonmalignant pleural disease.” Inserting the word “diffuse” before “pleural thickening” in the text in this section would more clearly distinguish “diffuse pleural thickening” from (localized) “pleural plaques.”

NIOSH also recommends that MSHA mention in this section that acute pleuritis is known to be associated with asbestos exposures [Rudd R 2002].

Page 43960, C.7. Asbestos Bodies. “These collections of coated fibers, found in sputum or broncho-alveolar lavage (BAL) fluid, are called asbestos bodies or ferruginous bodies. Like pleural thickening and pleural plaques, these bodies indicate prior asbestos exposure.”

It is not technically accurate to refer to asbestos bodies as “collections” of coated fibers. Also, not all ferruginous bodies are asbestos bodies, as implied in the above language. Finally, asbestos bodies can also be found in lung tissue, not just in sputum or BAL fluid [Craighead et al. 1982]. NIOSH recommends revising these sentences as follows: “These coated fibers, found in sputum or broncho-alveolar lavage (BAL) fluid, are called ferruginous bodies, or more specifically, asbestos bodies. When found in sputum or BAL fluid, these bodies provide evidence of prior asbestos exposure, and their abundant presence in lung tissue is one of the criteria that serve to support a pathologic diagnosis of asbestosis.”

Page 43961. A. Determining Asbestos Exposures in Mining. “Several factors complicate the evaluation of personal exposure levels in mining. Non-asbestos particles collected on the filter can hide the asbestos fibers (overloading) and, as discussed earlier (see section II.C.2), mining samples may also contain intermediate fibers that are difficult to classify.”

NIOSH method 7400 and OSHA method ID-160 require all fibers to be counted; when performing PCM analysis, fibers are not classified. NIOSH suggests deleting reference to classifying fibers in the above paragraph.

Page 43962. 2. Methods of Reducing or Avoiding Miners’ Exposures to Introduced (Commercial) Asbestos. When intact asbestos-containing building materials (ACBM) are left intact, documenting, labeling, and monitoring the ACBM may limit the likelihood of future worker exposure if that ACBM becomes friable or is disturbed.

Page 43963. 2. Summary of MSHA’s Asbestos Sampling and Analysis Results. “Available data from death certificates in 24 states confirm that there is asbestos-related mortality among miners.”

The footnote for this sentence cites Appendix E of the NIOSH Work-Related Lung Disease (WoRLD) Surveillance Report [2003]. However, Appendix E only lists the 26 states for which NIOSH obtained industry and occupation information on deaths for analyses presented in the 2003 WoRLD Surveillance Report. Appendix E provides no information on asbestos-related deaths among miners.

NIOSH suggests replacing the sentence with the following: "Available death certificate data confirms the occurrence of asbestos-related mortality among decedents whose usual industry was reported as mining (National Occupational Respiratory Mortality System, <http://webappa.cdc.gov/ords/norms.html>)."

Page 43970, Table VI-5--Selected Studies Involving Miners Exposed to Asbestos. The major findings for Amandus et al., 1987, Part I, and Amandus et al., 1987, Part III, are reversed. Part I is the exposure document, and Part III is the radiographic findings document.

Page 43972, VII. Section-by-Section Discussion of Proposed Rule. NIOSH commented that ... should be counted as asbestos if they meet the counting requirements for a fiber (3:1 aspect ratio and >5 µm in length).

This statement should be corrected to reflect the counting requirements for a fiber recommended by NIOSH: an aspect ratio of 3:1 or greater and >5 µm in length [NIOSH 1980].

Page 43980, VIII.1. c. Benefit of the Proposed 0.1 f/cc 8-hour TWA, Full-Shift Exposure Limit. "We estimate that there would be from 0.5 to 13.1 lung cancer deaths avoided, 0.2 to 4.4 mesothelioma deaths avoided, and 0.1 to 1.3 gastrointestinal cancer deaths avoided....we expect a reduction of between 1 and 19 deaths avoided due to lowering the 8-hour TWA PEL to 0.1 f/cc."

This paragraph gives estimated numbers of deaths avoided, but does not indicate over what period of time these numbers of deaths would be avoided. It would be useful if the time period is specified.

REFERENCES

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