

Peer reviewer comments

1) Assessment of whether the Current Intelligence Bulletin has fully included all relevant material in its evaluation that is pursuant to its aims

Reviewer 1

Since this review was published, an additional article – Wade et. al. [<http://chestjournal.chestpubs.org/content/early/2010/09/28/chest.10-1326>] has been published in **Chest** and I believe should be included in the review as it supports the surveillance information showing increased rates of PMF.

In addition there has been more information published about diffuse interstitial fibrosis resulting from exposure to coal mine dust. This was not touched on in the review, perhaps because there is no good surveillance data on the prevalence of this form of coal worker's pneumoconiosis. Consideration might be given to mentioning this as a small sentence or two as another manifestation of CWP under the section: "Other Respiratory Disease Outcomes". Two articles by A. Brichet [Rev Mal Respir 1997; 14:227-285, and Sarcoidosis Vasc Diffuse Lung Dis 2002; 19:211-219 as well as a more broad discussion of environmental interstitial fibrosis, Taskar VS et. al. [Proc Am Thorac Soc 2006; 3:293-298] have described this.

These suggestions were accepted and the relevant articles added to the CIB.

Reviewer 2

The updated document does not provide a complete compendium of the relevant literature over the past 15 years related to health effects from coal mine dust exposure, focusing mainly on the literature relevant to the NIOSH recommendations. For example, there are a number of pathology/autopsy studies describing dust exposure and emphysema that are not cited (including Vallyathan V, Green FHY, Brower P, Attfield MD, 1997, Ann Occ Hyg; Hnizdo E, Murray J and Davison A, 2000, Int. Arch Occup Environ Health). Additionally, peer-reviewed publications describing diffuse interstitial fibrosis as a manifestation of coal mine dust exposure are not discussed in the document (eg, Brichet A, et al, 2002, Sarcoidosis Vasc Diffuse Lung Dis).

This suggestion was accepted and the relevant articles added to the CIB. That for gold miners was not added, however, since it does not apply to coal mining.

2) Evaluation of whether the presentation and summarization of that material is fair and unbiased

No comments requiring a response.

3) Determination of whether the overall conclusions are accurate and supportable, including those relating to support for the 1995 conclusions and recommendations

Reviewer 3

1. The exposure data comes from both MSHA and mine operator samples. These samples are collected on five production shifts during one week every other month for a total of 30 samples for the year. These can be personal, occupational or area samples. The sample time is limited to 8 hours regardless of the shift lasting as long as 10 to 12 hours. The existing regulatory program represents about a 12 %, at best, representation of a miner's exposure for the year.

CIB and the CCD seem to assume that the nations [*sic*] coalmines are in compliance with the existing standard yet it is known that there is a level where the applicable standard is exceeded. The CIB acknowledges that there are multiple factors that may explain the increase in CWP prevalence. Yet the CIB recommendation only addresses lowering the standard in spite of not having a sound basis for the level of exposure.

2. The CIB does not identify the increase in CWP prevalence as an industry-wide problem across all coal regions, but more of a localized problem. Given the above, it would appear that the best course of action would be to concentrate efforts on the "hot spots" to determine the cause or causes of the increase in the prevalence of CWP. Nothing in the CIB or CCD addresses the exposure issue or any of the other issues that may be a contributing factor in the local regions. Other issues not mentioned are mining methods, production levels and ventilation methods. All coal regions are being painted with the same brush.

Using the same logic, if other regions are not showing an increase in the prevalence of CWP, does that not mean that the present standard is adequate? These other regions that show a decline in CWP, such as District 8 and 10, have higher production per shift than the hot spot regions. The recommendation needs to deal with the personal exposure of the miner on each production shift. This coupled with the new sampling technology that gives real time exposure data will provide the means to measure and control the miner's exposure during the production shift.

*We believe that the reviewer is mistaken when he says that the "CIB and the CCD seem to assume that the nations [*sic*] coalmines are in compliance with the existing standard," and, "Yet the CIB recommendation only addresses lowering the standard in spite of not having a sound basis for the level of exposure" The recommendations in the CCD were largely based on epidemiological findings from coal miners in this country. In developing these findings, great care was taken to ensure that the dust levels employed were unbiased. For the earlier results, based on Round 1 of the National Study of Coalworkers' Pneumoconiosis (NSCWP), dust levels for the period before 1970 (the much greater part of most of the study miner's tenure) were derived from special research industrial hygiene surveys undertaken in the late 1960s. Dust concentrations in those studies reached levels of 7 – 8 mg/m³, and there is no scientific evidence or other information to indicate that there is any systematic bias in these data. In later studies, considerable effort was made to derive unbiased estimates of dust levels, undertaken as part of a PhD thesis (1, 2). The recommendations for a lower dust standard were derived from these data using risk analyses, and were confirmed by results from overseas. In essence, the issue of the protectiveness of the existing 2 mg/m³ standard is independent of the issue of maintaining*

compliance with that existing standard. It is the clear view of NIOSH that both a reduction in dust levels is needed and that strict compliance with the standard is necessary.

In his second point, the reviewer questions whether the problems revealed in the CIB are generic across the industry or are regional. He suggests that if the problems are regional, there is no need to reduce the coal mine dust standard in localities where disease appears to be under control. First, in counter to this argument, the CCD showed that there was benefit to reducing the dust level in all coalfields across the country (Table 7-2). Moreover, it may be that success in complying with the current 2 mg/m³ standard is not uniform across the coalfields. That is, the reported dust levels, which are generally less than 1 mg/m³ on average (Table 2-16 of the Work-related Occupational Respiratory Disease Report (3)), may reflect reality in some coal mining regions. In these regions, then, the coal mine industry has successively demonstrated they can meet the recommended 1 mg/m³ standard, and thus its recommendation should prove no economic hardship.

The reviewer also implies that action to reduce the dust standard be delayed until the causes for the hot spots be found. Since the causes of pneumoconiosis are not profound, being simply overexposure to coal mine and silica dust in the case of coal mining, the solution to the problem is already evident. There is abundant evidence to justify both reducing the dust standard and ensuring that it is met.

4) Evaluation of whether the organization and format of the material as presented is satisfactory for the intended purpose

Reviewer 1

One suggestion is consideration of re-stating the core recommendations of the 1995 Criteria Document explicitly, or at least a general summary of the most important recommendations including:

- 1) 1 mg/m³ standard for 10 hour day, 40 hour week TWA for respirable coal mine dust
- 2) .05mg/m³ standard for 10 hour day, 40 hour week TWA – for respirable silica
- 3) Adding spirometry to medical surveillance for coal workers
- 4) Adding respiratory questionnaire and occupational history questionnaire.
- 5) Including surface miners.

We accept this suggestion.

5) Other comments

Reviewer 1

Page 9 last paragraph, second to last sentence – I would recommend using the following, “This type of opacity is a radiographic manifestation of nodules in the lung having a typology often **associated** with excessive exposure to silica dust. (rather than arising from).

Page 10 – consider eliminating reference 24.

Reviewer 2

- a. Page 6, first sentence, remove the word “underground” as a modifier of coal miners, since exposures may affect both underground and surface coal miners.
- b. Though exposure to diesel exhaust particulates in coal mining workplaces has raised concerns about potential risks, the report contains no mention of this exposure and possible associated health effects.
- c. A few typos and areas of ambiguity were noted as follows:
 - (1) Page 2, item #6 - last sentence, “A major underlying problem may be achieving sufficient dust control in small coal mines.”
 - (2) Page 10, last paragraph, 4th sentence, “Although no existing epidemiologic data exist . . .” should be changed to say, “Although no epidemiologic data exist . . .”
 - (3) Page 12, 2nd full paragraph, last sentence, there is no verb.
 - (4) Page 13, 1st paragraph, 3rd sentence states, “This dichotomy, in the author’s presentation, was associated with more rapid development of silicosis (≥ 2 mg/m³) compared to chronic silicosis development (< 2 mg/m³).” The sentence is ambiguous, and seems to compare more rapid onset of silicosis to chronic silicosis, presumably of longer latency. But is the more rapidly developing disease clinical distinguishable from chronic silicosis, or is the only difference in latency? Please clarify.
 - (5) Page 14, 2nd paragraph, there should be a space between associated severe declines.

We accept these suggestions except for that on diesel exhaust. This CIB is focused on the exposure to coal mine dust. NIOSH has published a separate document on diesel exhaust (4).

Reference List

1. Seixas NS, Moulton LH, Robins TG, Rice CH, Attfield MD, Zeller ET [1991]. Estimation of cumulative exposures for the National Study of Coal Workers' Pneumoconiosis. *App Occup Env Hyg* 6:1032-1041.
2. Seixas NS, Robins TG, Rice CH, Moulton LH [1990]. Assessment of potential biases in the application of MSHA respirable mine dust data to an epidemiologic study. *Am Ind Hyg Assoc J* 51:534-540.
3. NIOSH. [2008]. Work-related lung disease surveillance report 2007, Volume 1. DHHS (NIOSH) Publication No. 2008-143a. Cincinnati, OH, National Institute for Occupational Safety and Health.
4. National Institute for Occupational Safety and Health. [1988]. Current intelligence bulletin 50: Carcinogenic effects of exposure to diesel exhaust. Cincinnati, OH, NIOSH.