AMERICAN COLLEGE OF
OCCUPATIONAL AND
ENVIRONMENTAL MEDICINE

Comments of the American College of Occupational and Environmental Medicine
U.S. Mine Safety and Health Administration
Lowering Miners' Exposure to Respirable Coal Mine Dust, Including Continuous Personal Dust (RIN 1219–AB64)

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Inhalation of excessive amounts of respirable coal mine dusts results in several lung diseases including coal workers' pneumoconiosis (CWP), silicosis, and occupationally-induced chronic obstructive pulmonary disease (COPD). Satisfactory control of dust inhalation can entirely prevent coal miners from developing impairment, disability and death due to these diseases.

The Coal Mine Health and Safety Act of 1969 (Act) was passed in part as a response to periodic mine disasters which plagued U.S. coal mines, including the 1968 Farmington mine explosion, and addressed multiple ongoing mine safety issues, as well as the increasing recognition that important respiratory health problems resulted from coal mine dust exposures. The Act was landmark legislation: it established the first U.S. national mandatory mine dust exposure limits, provided specific approaches to ongoing workplace exposure monitoring, and established an agency with the authority to enforce compliance with the law. Congressional intent for the Act was clearly stated: "Congress declares that the first priority and concern of all in the coal mining industry must be the health and safety of its most precious resource--the miner; and the existence of unsafe and unhealthful conditions and practices in the Nation's coal mines is a serious impediment to the future growth of the coal industry and cannot be tolerated; operators of such mines have the primary responsibility to prevent the existence of such conditions."

A major objective of the legislation, based upon the scientific evidence available at that time, was to eliminate severe and disabling occupational lung disease among U.S. underground coal miners. In addition, a medical surveillance program was initiated under the Act, with the goal of enabling increased preventive measures among miners whose chest x-rays showed evidence of early dust-related lung disease, as well as providing a mechanism to track progress in disease prevention. During the first 30 years after the Act was passed, as anticipated, participants in the radiographic surveillance program demonstrated an 89% decline in the tenure-related prevalence of abnormalities consistent with pneumoconiosis. After full implementation of the dust control measures in the Act in 1973, the years of potential life lost from pneumoconiosis (YPLL - a measure of mortality attributable to CWP) decreased 91.2% between 1968--1972 and 2002—2006 among U.S. coal miners.

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However, as a number of new research results became available over the last 40 years, it became clear that the 1969 dust limit would not fully eliminate advanced pneumoconiosis. Also, newer scientific literature established that inhalation of air with concentrations of coal mine dust at or below the permissible exposure limit of 2 mg/m^3 in the Act also caused clinically significant losses in ventilatory lung function in a proportion of the exposed miners, irrespective of any radiographic changes. In the face of these findings, in 1995 the National Institute for Occupational Safety and Health (NIOSH) issued a criteria document which formally recommended that respirable dust exposures in coal mines be limited to a time-weighted full-shift average of 1 mg/m^3, or half of the previous legal limit. As part of that recommendation, NIOSH indicated that respiratory health monitoring for miners should be expanded to include spirometry, symptom questionnaires, and occupational history information. This was recommended in order to assure the early recognition and control of all adverse respiratory health effects; in recognition that dust-related lung dysfunction has been demonstrated to occur in the absence of radiographic abnormalities. The criteria document also affirmed an earlier (1973) NIOSH recommendation that occupational exposures to respirable silica be limited to 50 $\mu g/m^3$. A number of relevant studies and reports have been published since 1995 and reinforce the earlier recommendations.

Over the last 5 years, ACOEM is aware that there have been a number of peer-reviewed scientific studies and public health reports (see references) that document a partial reversal of 30 years of improvement in coal miner occupational health. A number of these reports have demonstrated an increased prevalence of radiographic evidence of pneumoconiosis among groups of miners who participate in the national coal miner health surveillance program. Lung function deficits have also been documented among coal miners. Along with recognition of increasing morbidity in coal miners, annual YPLL from CWP have been increasing since about 2002. In particularly worrisome findings, severe and fatal dust-induced lung disease has recently been documented among many U.S. coal miners, including younger miners who have worked entirely under the current permissible limits and enforcement regime. In the face of these advanced cases of a preventable occupational lung disease among currently employed miners, ACOEM strongly encourages the implementation of actions to assure that both respirable silica and mixed mine dusts are continuously controlled to healthful levels at all coal mines.

The College strongly endorses the following sections of the proposed MSHA rulemaking RIN 1219-AB64:

1. Dust Standards (30 CFR Parts 70 and 71 Subparts B): the adoption of the current science-based NIOSH-recommended exposure limits monitored over an entire workshift of 1 mg/m^3 for respirable dust and establishment of a separate limit for respirable silica. MSHA also is committed to future rulemaking addressing the permissible limit for respirable silica exposures. ACOEM takes note of the thousands of measurements of respirable dust levels which have been reported from active coal mines over the last several decades. These dust measurements on average are well below the proposed limit, including many performed by MSHA inspectors as well as those completed by coal mine health and safety personnel, and thus fully support the feasibility of implementation of the reduced dust standard. ACOEM also stresses the importance of MSHA identifying,

retaining, and training the competent professional staff required to assure effective and equitable enforcement of the protective standards, and thereby to assure that all working coal mine environments provide continuous and universal adherence. ACOEM further supports the MSHA proposals that aim to assure that airborne measured respirable dust level be maintained at or below a safe level by a) measuring samples during each individual work shift, rather than the current strategy of averaging samples over multiple shifts, and b) requiring appropriate application of real-time continuous dust monitoring technologies that permit timely actions for controlling dust, and c) establishing a weekly permissible accumulated exposure limit to reduce the likelihood of excessive dust exposures among miners who work extended hours.

2. Medical Surveillance (30 CFR Part 72 Subpart B): the addition of spirometry, symptom questionnaires, and occupational histories to the performance of chest radiographs for the ongoing monitoring of respiratory health for all coal miners, at both surface and underground mines. We firmly concur that all such testing be done only by competent personnel using equipment and procedures approved by NIOSH. NIOSH has been using such personnel, equipment, and procedures as part of their Enhanced Coal Workers' Health Surveillance Program (see below). Medical surveillance for occupationally-induced COPD (including chronic bronchitis and emphysema) requires the complementary findings of lung function testing (screening spirometry) and respiratory symptoms. Either modality alone is not sufficient for the accurate detection of these diseases. We also encourage continued efforts to recognize and overcome barriers to participation in health monitoring, through approaches such as the Miner's Choice Program (MCP) and NIOSH's Enhanced Coal Workers' Health Surveillance Program (ECWHSP). Program statistics indicated that participation in the Coal Worker's X-ray Surveillance Program declined after the initial rounds. The recent increased levels of participation stimulated by these Programs broaden opportunities for early interventions and secondary disease prevention, provide more accurate estimates of the population burden of disease, and should permit better evaluation of the impact of regulatory efforts on disease prevalence.

3. Scope (30 CFR Part 90): In addition to extending the definition of a Part 90 miner to include surface coal miners, we also recommend that miners who have developed occupational obstructive lung disease (COPD) due to mine dust exposure be included as Part 90 miners with the option to be transferred to areas of the mine where the concentration of respirable dust is documented to be at or below 50% of the permissible level. Since it is known that, in addition to the interstitial dust diseases, obstructive lung diseases can also be caused and worsened by mine dust exposure, miners who have been shown to develop these diseases will also benefit from transfer rights, to facilitate secondary prevention and reduce the risk of worsening lung disease.

4. Silica: Current science clearly demonstrates important risks to workers exposed to the 100□g/m^3 respirable silica limit proposed in this announcement, and ACOEM supports MSHA's intention, stated in the NPRM, to promulgate a silica PEL that is more protective than the current rule.

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Figure 2-4. Percentage of examined miners with coal workers' pneumoconiosis (category 1/0+) by tenure in mining, 1970–2006. Figure 2-6. Respirable coal mine dust: Geometric mean exposures by type of mine, MSHA inspector and mine operator samples, 1979–2003. From:

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