

Executive Summary

“Controlling Respirable Coal Mine Dust in Underground Mines”

Hosted by the Mine Safety and Health Administration and

Co-sponsored by the National Institute for Occupational Safety and Health

National Mine Health and Safety Academy

Beckley, West Virginia

July 25, 2007

On July 25, 2007, the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) held a free one-day workshop on “*Controlling Respirable Coal Mine Dust in Underground Mines.*” The seminar, which attracted over 120 attendees, brought together a group of experts to share information, expertise and experience in dealing with dust control issues to prevent disabling occupational lung disease in coal miners, like coal workers’ pneumoconiosis (CWP) or black lung and silicosis, which are caused by inhaling excessive levels of respirable coal mine dust and silica dust. These debilitating diseases can devastate a miner’s quality of life, create a heavy burden on the victim and his or her family, and in some cases lead to premature death. While significant progress has been made since 1970 to reduce dust levels in our Nation’s coal mines, recent information published by NIOSH indicate that severe cases of CWP continue to afflict underground coal miners some 37 years after passage of the 1969 Act to prevent such diseases in coal miners. We know that, while there is no cure for these disabling lung diseases, they are entirely preventable using available dust control tools and techniques each and every day.

The workshop featured speakers from Joy Mining Machinery, J. H. Fletcher & Co., National Institute of Occupational Safety and Health (NIOSH), and Mine Safety and Health Administration (MSHA). Topics covered focused on continuous miner and roof bolter dust control techniques and included presentations on lung diseases of coal miners, ventilation, reducing dust generation & optimum suppression techniques, dust control on continuous mining machines, dust suppression systems on roof bolting machines, dust control parameter for special mining situations, and on-shift examinations of dust control parameters.

Introductory Remarks

Opening remarks were delivered by Melinda Pon, Special Assistant for MSHA’s Coal Mine Safety and Health. Ms. Pon reviewed the prevalence of coal workers’ pneumoconiosis (CWP) from 1970 to the present, comparison of CWP by coal district, and the current number of working Part 90 Miners by state/region. While she acknowledged that significant progress has been made since 1970, recent trends indicating an increase in the prevalence of CWP among miners with 25 or more years tenure and in the occurrence of new cases of the disease that include progressive massive fibrosis (PMF), the most disabling and potentially fatal form of CWP, among some of the younger miners raises serious concern. She concluded by urging, on behalf of Mr. Richard Stickler, Assistant Secretary for Mine Safety and Health, that every coal mine operator nationwide :

- Raise awareness on the health hazards associated with exposure to excessive dust levels;
- Maintain required controls stipulated in the approved mine ventilation plan on each production shift;
- Conduct adequate on-shift exams;
- Repair damaged controls immediately;
- Require miners to follow safe and healthy work practices;
- Prevent exposures to excessive levels of respirable coal mine dust; and
- Encourage miner participation in the free medical screening programs.

Lung Diseases of Coal Miners

Dr. Edward L. Petsonk of the National Institute for Occupational Safety and Health (NIOSH) located in Morgantown, WV detailed the causes, symptoms, diagnosis, and treatment of lung diseases found in coal miners. Other topics discussed included health effects, quality of life issues, methods of prevention, recent findings from medical monitoring of coal miners in southwestern Virginia and eastern Kentucky, and the role of tobacco smoking on CWP and silicosis development and progression. On the role of smoking, Dr. Petsonk stated that while smoking can cause airway obstructive disease, it neither causes CWP or silicosis, nor accelerates their progression. According to Dr. Petsonk, since these lung diseases are caused by exposure to excessive coal mine dust levels, they are entirely preventable by reducing the level of dust exposure, the toxicity of the dust, and allowing sufficient time for the dust to clear from the lungs. He concluded his presentation by saying that, while we can't eliminate dust in coal mining, by controlling dust each and every shift using available controls we can eliminate cases of advance black lung.

Ventilation – A Principal Control for Dust and Methane

Mr. Ken Fields, who represented MSHA's Pittsburgh Safety and Health Technology Center, provided a detailed overview of face ventilation best practices for mining operations employing continuous mining machines and roof bolters. Other topics covered included the advantages and disadvantages of exhausting and blowing face ventilation methods, optimum air quantities and their measurement, and recommended best practices when using either face ventilation method w/out a dust scrubber in a variety of mining situations.

Reducing Dust Generation and Optimum Suppression Techniques

Messrs. Jay Colinet and Jeff Listak, Pittsburgh Research Laboratory, NIOSH, described various dust control approaches designed to minimize dust liberation during cutting so less dust has to be removed from mine air, direct dust clouds away from miners, and reduce airborne dust levels for longwall, continuous mining, and roof bolting operations. Ventilating air, water sprays and dust collectors continue to be the primary controls used for protecting workers from overexposure to respirable coal mine dust. Discussed were the best use of air for dilution and displacement; the role of water sprays to maximize wetting and airborne capture; and the circumstances under which dust collectors can be expected to function most effectively. There was also considerable discussion on ways to maximize roof bolter dust controls to insure that that the bolter dust collection systems are operating properly.

Dust Control on Continuous Mining Machines

Mr. Robert Schon of Joy Mining Machinery provided a detailed discussion of flooded-bed dust collector (scrubbers), machine dust sprays, and the new wethead cutterhead miner. On the topic of scrubbers, specific items that were covered included the principle of operation, machine configurations, major components and function, maintenance requirements and frequency, testing flow, and troubleshooting such systems. Also covered were the types of machine dust sprays provided by Joy and what the typical boom spray and machine spray arrangements looked like. Lastly, he discussed the new Joy wethead cutterhead miner, its design features and potential benefits that included reducing dust levels, face ignition frequency, bit consumption, scrubber maintenance and lost production time, as well as the results of independent third party dust evaluations.

Roof Bolting Machine Dust Suppression Systems

Representatives from J.H. Fletcher & Co. discussed the purpose, performance, and limitations of the dust suppression system on roof bolting machines. Topics covered included the types of control systems and why required, approval requirements for a dust collection system, typical system components and function, how to tell if the dust collection system is operating properly or is contaminated, how to clean a contaminated system, currently performance limits, approval and certification, bagged and un-bagged systems, and inspection and maintenance procedures.

Dust Control Parameters for Special Mining Situations

Mr. Mike Dickerson, who represented MSHA's Coal Mine Safety and Health District 4, discussed how the District went about successfully controlling silica dust levels during in-mine construction, slope sinking, and when sandstone channels and clay intrusions are present.

On-Shift Examinations of Respirable Dust Control Parameters

Mr. Paul Prince, who also represented MSHA's Coal Mine Safety and Health District 4, reviewed the current requirements of 30 C.F.R, Section 75.362(a) which requires the operator to conduct an on-shift examination of all respirable dust control parameter stipulated in the approved mine ventilation plan prior to beginning production. Also discussed were the steps in conducting a complete examination, the actions required to be taken during and after an examination, and the reporting requirements applicable to the examination.