

PUBLIC SUBMISSION

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Docket: MSHA-2014-0031
 Exposure of Underground Miners to Diesel Exhaust

Comment On: MSHA-2014-0031-0176
 Exposure of Underground Miners to Diesel Exhaust Request for Information; reopening of the rulemaking record for public comments.

Document: MSHA-2014-0031-0187
 Comment from Adrienne Keel, NA

Submitter Information

Name: Adrienne Keel
Organization: NA

General Comment

In response to the request issued by the Mine Safety and Health Administration (MSHA) for more information on Exposure of Underground Miners to Diesel Exhaust (RIN 1219-AB86), I am submitting a public comment regarding the public health risks involved with underground miner exposures to diesel exhaust.

In June 2012, the International Agency for Cancer Research (IARC) classified diesel exhaust (including diesel particulate matter, or DPM) as a Group 1 known human carcinogen (OSHA 2019). Numerous animal and epidemiological studies have shown that both short-term and long-term diesel exhaust exposures pose adverse health effects, including the National Institute for Occupational Safety and Health (NIOSH) and the National Cancer Institutes (NCI) findings that diesel exhaust exposure increases miners' risk of death due to lung cancer (Exposure of Underground Miners to Diesel Exhaust, 81 Fed. Reg. 110, 36826-36827). Particles deposit within the human respiratory tract through inhalation, causing respiratory diseases.

Furthermore, the nasal cavity cannot filter particle sizes less than 0.5 m, and more than 90% of the DPM particles diameters are below 1 m. Particles this small are capable of entering the deepest ranges of the lungs, creating an additional increased risk for cardiovascular diseases. Studies have found an increased risk of lung cancer and also a shorter time to termination of employment associated with higher diesel exhaust exposure. Neither OSHA nor the MSHA have Permissible Exposure Level (PEL) in place for diesel exhaust in the United States, and this is most likely because it is difficult to perform a risk assessment on diesel exhaust; it is composed of several different chemicals, some of which have their own PELs, and the

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chemicals can vary depending on the mining environment. What is certain is that underground coal mining environments pose the highest risk for adverse health effects such as lung cancer and ischemic heart disease. We also know that there is a correlation of increased risk of respiratory disease, cardiovascular disease, lung cancer and mortality with increasing exposure concentrations of diesel exhaust.

According to the Federal Mine Safety & Health Act of 1977 (Pub. L. No. 95-164, as amended [30 U.S.C. 801 et seq.]) it is the duty of the MSHA to provide for the protection of the health and safety of persons working in the mining industry of the United States, including developing, promulgating, and revising as may be appropriate, improved mandatory health or safety standards for the protection of life and prevention of injuries in coal or other mines (SEC. 101 811). Diesel exhaust and DPM should be addressed in the Federal Mine Safety & Health Act as a poisonous gas, and managed under the ventilation standards addressed in Sec. 303 863, which states that there should be no harmful quantities of noxious or poisonous gases. Harmful quantities should be defined according to risk assessments of either diesel exhaust composition chemicals, or diesel exhaust or DPM in underground mining operations. Several countries have developed their own DPM emission standard or guideline to guarantee the health of their underground miners. Germany set their DPM limit for underground non-coal and other surface workplaces at 0.3 and 0.1 mg/m, respectively. Most provinces in Canada set their standards to 1.5 mg/m for DPM measured as RCD (respirable combustible dust) for non-coal mines. America and Australia have recommended exposure standards for DPM at 0.16 mg/m (measured as TC) and 0.1 mg/m (measured as EC). These standards are developed based on various dosimeters for DPM measurement. As studies continue, an accuracy and proper dosimeter should be selected to measure the DPM standards for the underground mining industries.

I would like to thank the Mine Safety and Health Administration for considering public comments regarding mine worker safety.

Sincerely,

Adrienne K., MPH Candidate
George Washington University

1. Ping, C., Guang, X. 2017. Intl J of Mining Sci and Tech 27:831-838.
2. Neophytou, A.M. et al. Epidemiology 27(1):21-28.