

National Institute for Occupational Safety and Health

Comments to the Mine Safety and Health Administration (MSHA)

Formal comments from the National Institute for Occupational Safety and Health (NIOSH) to the Mine Safety and Health Administration (MSHA) on Exposure of Underground Miners to Diesel Exhaust; Request for information; extension of comment period

Docket Number: MSHA-2014-0031; RIN 1219-AB86

August 10, 2020



Centers for Disease Control
and Prevention
National Institute for Occupational
Safety and Health

AB86-COMM-137-2

The National Institute for Occupational Safety and Health (NIOSH) has reviewed the Mine Safety and Health Administration (MSHA) notice *Exposure of Underground Miners to Diesel Exhaust; Request for information; extension of comment period* published in the *Federal Register* (FR) on March 25, 2019 (84 FR 11028). NIOSH commented to the docket November 28, 2016 (Docket ID MSHA-2014-0031-0062) and now offers additional references for MSHA to consider. We encourage MSHA to search the NIOSHTIC-2 bibliographic database for future publications: <https://www2a.cdc.gov/nioshtic-2/default.asp>.

Health effects research

Recent studies validated the approach to exposure reconstruction used in the Diesel Exhaust in Miners Study (DEMS) [Vermeulen et al. 2020], provided a larger meta-analysis further supporting the relationship between diesel exhaust particulate exposure and lung cancer [Ge et al. 2020], and provided evidence supporting a relationship between diesel exhaust particulate exposure and bladder cancer [Koutros et al. 2020], chronic obstructive pulmonary disease mortality [Ferguson et al. 2020], and alterations in serum cytokine levels [Dai et al. 2018]. In addition, one study suggests that reducing exposure to diesel exhaust particulate could reduce the risk of ischemic heart disease [Neophytou et al. 2019].

Exposure control research

In the NIOSH reply to question C18 in the 2016 MSHA request for information, two new citations are now added in bold font: "Light-duty vehicles have been found to be responsible for a major fraction of the diesel particulate matter (DPM) burden in underground metal mines [Rubeli et al. 2004; **Bugarski et al. 2020 a,b**]." (MSHA question C18: *What are the advantages, disadvantages, and relative costs of requiring that all light-duty diesel-powered equipment be equipped with high-efficiency DPM filters?*)

References

Bugarski AD, Hummer JA [2020a]. Contribution of various types and categories of diesel-powered vehicles to aerosols in an underground mine. *J Occup Environ Hyg* 17(4):121–134, <http://dx.doi.org/10.1080/15459624.2020.1718157>.

Bugarski AD, Hummer JA, Vanderslice S, Shahan MR [2020b]. Characterization of aerosols in an underground mine during a longwall move. *Min Metall Explor* 37(4):1065–1078, <http://dx.doi.org/10.1007/s42461-020-00209-6>.

Dai Y, Ren D, Bassig BA, Vermeulen R, Hu W, Niu Y, Duan H, Ye M, Meng T, Xu J, Bin P, Shen M, Yang J, Fu W, Meliefste K, Silverman D, Rothman N, Lan Q, Zheng Y [2018]. Occupational exposure to diesel engine exhaust and serum cytokine levels. *Environ Mol Mutagen* 59(2):144–150, <http://dx.doi.org/10.1002/em.22142>.

Ferguson JM, Costello S, Elser H, Neophytou AM, Picciotto S, Silverman DT, Eisen EA [2020]. Chronic obstructive pulmonary disease mortality: The Diesel Exhaust in Miners Study (DEMS). *Environ Res* 180:108876, <http://dx.doi.org/10.1016/j.envres.2019.108876>.

Ge C, Peters S, Olsson A, Portengen L, Schüz J, et al. [2020]. Diesel engine exhaust exposure, smoking, and lung cancer subtype risks: a pooled exposure-response analysis of 14 case-control studies. *Am J Respir Crit Care Med*, April 24, <http://dx.doi.org/10.1164/rccm.201911-2101OC>. Advanced online publication.

Koutros S, Kogevinas M, Friesen MC, Stewart PA, Baris D, Karagas MR, Schwenn M, Johnson A, Monawar Hosain GM, Serra C, Tardon A, Carrato A, Garcia-Closas R, Moore LE, Nickerson ML, Hewitt SM, Lenz P, Schned AR, Lloreta J, Allory Y, Zhang H, Chatterjee N, Garcia-Closas M, Rothman N, Malats N, Silverman DT [2020]. Diesel exhaust and bladder cancer risk by pathologic stage and grade subtypes. *Environ Int* 135:105346, <http://dx.doi.org/10.1016/j.envint.2019.105346>.

Neophytou AM, Costello S, Picciotto S, Brown DM, Attfield MD, Blair A, Lubin JH, Stewart PA, Vermeulen R, Silverman DT, Eisen EA [2019]. Diesel exhaust, respirable dust, and ischemic heart disease: an application of the parametric g-formula. *Epidemiology* 30(2):177–185, <http://dx.doi.org/10.1097/EDE.0000000000000954>.

Vermeulen R, Portengen L, Lubin J, Stewart P, Blair A, Attfield MD, Silverman DT [2020]. The impact of alternative historical extrapolations of diesel exhaust exposure and radon in the Diesel Exhaust in Miners Study (DEMS). *Int J Epidemiol* 49(2):459–466, <http://dx.doi.org/10.1093/ije/dyz189>.