Title *

Proposed method to assign respirators to workers exposed to airborne biological contaminants from human, animal and plant waste processing operations.

Abstract *

Despite 80 years of intensive scientific research, workers exposed to airborne human, animal and plant biological waste products continue to work without specifc guidance on the selection and use of respiratory protection to reduce inhalation, mucous membrane and skin exposure to these bioaerosols. Since the 1930s numerous scientists from many countries have conducted air sampling and analysis of microbial agents generated by processing raw sewage,sludge,wastewater, and biosolids. Viable and cultivable viruses,bacteria,fungi, protozoa, and parasites have been collected and analyzed with results generally reported in PFU or CFU per cubic meter of sampled air. In addition, non-viable biological materials such as endotoxins have also been sampled and analyzed. Some of these scientists have attempted to link the concentration of bioaerosols to the incidence and prevalence of acute and chronic infectious,allergic and toxic diseases associated with exposure to these agents. There is a knowledge gap between air sample findings, epidemiologic findings and methods to protect workers from disease using respirators. The occupational hygienist bases recommendations for respirator selection on the ratio of bioaerosol concentration to the OEL or occupational exposure limit established for that agent. This establishes the respirator protection factor required to reduce the exposure to a safe concentration. Alternatively, in 2013, the IRSST Quebec CA proposed a control banding approach to the selection of respirators for workers exposed to bioaerosols. This paper will evaluate the scientific literature on bioaerosol concentrations, OELS,epidemiologic findings, and propose a method to assign respirator protection to waste workers exposed to bioaerosols.

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