Environmental Engineering and Management Journal

February 2025, Vol. 24, No. 2, 407-422
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu
http://doi.org/10.30638/eemj.2025.032

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MINING DUST: HEALTH IMPACTS, CONTROL MEASURES AND FUTURE DIRECTIONS

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Abstract

Exposure to respirable crystalline silica through mining dust poses significant health risks to mine workers and nearby communities, leading to silicosis and other respiratory diseases. Since human activity is linked to numerous environmental disturbances, including the prevalence of dust, particulate matter can hinder human health and result in many health consequences, such as asthma, cancer, and pneumoconiosis. A comprehensive analysis of the health risks associated with dust in mining environments is crucial in arriving at the proper control measures necessary to prevent dust-associated hazards. This article reviews the various types of dust found in mining operations, such as explosives, coal cutting, transportation, and tail gas dust, as well as their effect on the environment and society. The article highlights the significance of implementing effective dust control measures and future directions and recommends various approaches, such as water sprays, ventilation systems, personal protective equipment (PPE), and medical monitoring programs. Additionally, it provides a detailed explanation of the regulations and standards of workers' exposure limits to dust particles at work. WHO, NIOSH, and OSHA provision health-based guidelines and recommendations limits for silica dust, coal dust, metal dust, and diesel exhaust particles. The article concludes with the implementation of frequent medical monitoring programs for employees. Continual research is essential for enhancing stakeholders' understanding of health hazards and developing innovative preventative strategies to safeguard workers' well-being.

Keywords: dust emission, environment, hazard, monitoring, safeguard

Received: December, 2023; Revised final: May, 2024; Accepted: July, 2024; Published in final edited form: February, 2025

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