



MINE DUST
NETWORK

Abstract: Hazard Identification and Exposure Assessment of Dust Emissions from South African Gold Mine Tailings Sites

Decades of mining in South Africa have resulted in numerous gold mine tailings storage facilities (TSFs). These TSFs have contributed to air pollution due to the lack of proper rehabilitation measures needed to mitigate erosion. Human populations residing in close proximity to these TSFs have raised concern about high dust levels and the onset of respiratory-related symptoms likely caused by tailings emissions.

The Toxicology and Biochemistry Department, National Institute for Occupational Health (NIOH) has conducted a risk assessment to: (1) Determine the toxicity of the dust emitted from TSFs situated in the Gauteng and North West Provinces of South Africa; (2) Assess the levels of PM₁₀ and PM₄ dust as well as crystalline silica levels in environmental and personal samples; (3) Conduct risk characterisation where potential risk was calculated for the surrounding communities to likely develop cancer and non-cancer adverse health effects from their lifetime exposure by inhalation to respirable crystalline silica. The prevalence of health effects in surrounding communities has also been investigated. The results of this study and recommendations will be discussed.

Dr Charlene Andraos (Toxicology and Biochemistry Department, NIOH, South Africa): Biography



Dr Andraos has a PhD in Haematology and Molecular Medicine from the University of Witwatersrand, South Africa. She started her career as a Medical Scientist at the NIOH in 2010 specialising in particle toxicity and nanotoxicology. She is also registered with the South African Council for Natural Scientific Professions (SACNASP) as a Professional Natural Scientist in Toxicological Science and is also a member of the Toxicology Society of South Africa.

