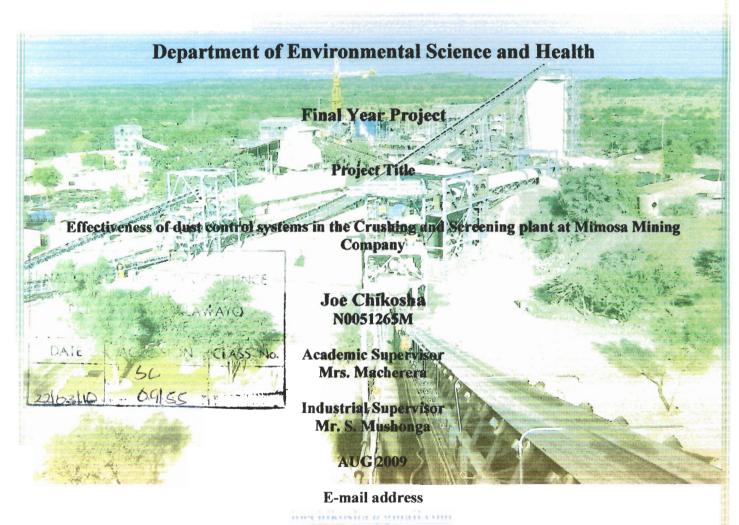


Faculty of Environmental Science



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Effectiveness of dust control systems in the Crushing and Screening plant at Mimosa Mining Company

Abstract

Long term exposure to mine dust increases the risk of pneumoconiosis related disease to employees such as siliconiosis, asbestosis, black lung, chronic bronchitis and emphysema. Dust control involves putting elimination, substitution, engineering, administrative controls and using Personal Protective equipment. Quantification and reporting provides a basis for periodic evaluation of the dust control system to assess their effectiveness. Mimosa Mining Company has dust control systems in the Crushing and Screening plant. However there has been an increase in occupational respiratory diseases and dust exposure complaints from the section. The purpose of this survey is to assess the effectiveness of the dust control systems in controlling dust to level below Threshold Limit Values (TLVs). The TLV for Total and Respirable dust is 10mg/m³ and 2mg/m³ respectively. The assessment was conducted consulting plant design drawings to identify the location of the dust control systems. Physical verification of the dust control systems in place was done by the Crushing and Screening Superintendent and the researcher a checklist to assess their condition. A sample of 27 employees were sampled from a population of 40 employees and sampled for Total and Respirable dust exposure using personal dust sampling equipment. The results were analyzed using t-distribution to compare the mean dust exposure against standard TLVs. From the results it was found the dust control systems are in place as per plant design drawing and they are effective in controlling dust to level below TLV (10mg/m³) but Respirable dust was above TLV (2mg/). The researcher recommended re-evaluation and upgrading of the dust control systems.