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Characterization of settleable dust, surface dust and trapped dust samples from the old and abandoned asbestos mine dumps in the Limpopo Province, South Africa**Maphuti Georgina Kwata and Shadung J Moja**
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Asbestos mining was banned in South Africa because of the health effects that are linked to the inhalation of asbestos dust/fibers. Asbestos mine dumps in Limpopo Province are partially rehabilitated and surface asbestos dust/fibers could easily be lifted and transported by wind and settle in sensitive areas. Despite the cessation of asbestos mining in 2002, there is still a concern about possible environmental exposure to asbestos fibers. The presence of old and abandoned asbestos mine dumps continue to be a concern to government and local communities. Since old and abandoned asbestos mine dumps are partially rehabilitated, it is now the government's responsibility to fund the rehabilitation of the dumps. The aim of this research is to monitor, measure and characterize settleable dust, surface dust and trapped dust samples collected around local communities in the vicinity of old and abandoned asbestos mine dumps. The local standard method for collection and analysis of settleable dust (the South Africa National Dust Control Regulations 827 of 2013) was used in this research. Surface dust samples were collected using a dust pan, brush, zipper plastic and sieve sample. Trapped dust samples were collected by using a sticky tape and stored in containers. Samples were collected from January 2016 to July 2016 in Limpopo Province at five sampling sites named Site A, Site B, Site C, Site D and Site E. Samples were prepared for analyses with X-Ray Diffraction (XRD), Scanning Electron Microscopy-Energy Dispersive Spectrometry (SEM-EDS) and X-Ray fluorescence (XRF) techniques. The settleable dust rates are below the residential limit of 600 mg/m²/day. The XRF result confirms the presence of silicates of oxides minerals. SEM results confirm the presence of amphibole, fiber glass with a strong long spiral shape and particles size of 685 µm, 150 µm and with different shape granular and sponge like shape with particle size of 430 µm for chlorite, mix spectra of organic fiber and quartz, organic fiber, smectite, talc and mica. The XRD results confirm presence of 11% of amphibole and specifically 7% of serpentine within Limpopo Province is a concern due to its contribution to human health problems.

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