ANALYSIS OF SOURCE CONTRIBUTION TO PARTICULATE MATTER POLLUTION IN BENUE CEMENT FACTORY

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ABSTRACT

Total suspended particulate (TSP) matter samples from Benue Cement Factory, Gboko, Nigeria were collected at various source locations, using a locally fabricated particulate matter sampler (PMS). The sampling was done during wet and dry seasons of the year respectively. Collected samples were analyzed for elemental oxide composition, using wet chemical methods. Each of the three main sources of TSP analyzed gave a mean value below 250µg/m³ – the Federal Ministry of Environment (Nigeria) – specified threshold limit value (TLV). From elemental oxide analysis of each of the TSP samples the following six substances were characterized and quantified: SiO₂, Al₂O₃, Fe₂O₃, CaO, MgO and SO₃. The highest contribution of particulate matter pollution was recorded in the mill building which gave a dry season monthly average of 195.76±6.76 µg/m³, being in compliance with the relevant standard. It is not surprising that the elemental oxide composition of the TSP sample analyzed is very similar to the elemental oxide composition of cement and its raw materials, confirming anthropogenic source.

Keywords: TSP analysis, Industrial Pollution, Cement, Industrial Safety.