World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:11, No:01, 2017

Physical Characterization of Indoor Dust Particles Using Scanning Electron Microscope (SEM)

Authors : Fatima S. Mohammed, Derrick Crump

Abstract : Harmattan, a dusty weather condition characterized by thick smog-like suspended particles and dust storm are the peculiar events that happen during ¾ of the year in the Sahelian regions including Damaturu Town, Nigeria), resulting in heavy dust deposits especially indoors. The inhabitants of the Damaturu community are always inflicted with different ailments; respiratory tract infections, asthma, gastrointestinal infections and different ailments associated with the dusty nature of the immediate environment. This brought the need to investigate the nature of the settled indoor dust. Vacuum cleaner bag dust was collected from indoor of some Nigerian and UK homes, as well as outdoors including during seasonal dusty weather event (Harmattan and Storm dust). The dust was sieved, and the (150 µm size) particles were examined using scanning electron microscope (SEM). The physical characterization of the settled dust samples has revealed the various shapes and sizes, and elemental composition of the dust samples is indicating that some of the dust fractions were the respirable fractions and also the dust contained PM10 to PM 2.5 fractions with possible health effects. The elemental compositions were indicative of the diverse nature of the dust particle sources, which showed dust as a complex matrix.

Keywords : indoor dust, Harmattan dust, SEM, health effects
Conference Title : ICACAP 2017 : International Conference on Applied Climatology and Air Pollution
Conference Location : London, United Kingdom
Conference Dates : January 19-20, 2017