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Heavy Metals in Soils around the Cement Factory in Rockfort, Kingston, Jamaica

PDF (Size: 476KB) PP. 48-54 DOI : 10.4236/ijg.2011.21005

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ABSTRACT

This study deals with the distribution of heavy metals in soils around one of the most important industries in Kingston, Jamaica i.e. the Carib Cement factory at Rockfort. The dust emitted from the Caribbean Cement Company Limited (Carib Cement), located in Rockfort, Kingston, gets deposited in course of time over the soil, leaves and forms a grey cover on the surrounding soils. Geochemical analysis of the top soil, collected from the present study area has been undertaken to assess the impact of the dust emitted from the cement factory and its effect on the surrounding ecosystem. A total of seventeen top soil samples of 0-10 cm depth were collected from the close vicinity of the Rockfort and the Harbour view area and analysed by INAA, AAS, XRF for major, minor and trace elements. Results show that the top soils of the study area are enriched in Pb, Zn, Cr, Cd, V, Pb, and Hg which are released into the air from the cement kilns. Results show that the soils are enriched in Ca with a maximum value of 18% followed by Al, Fe and Na. Heavy metals in the soils of the study area shows relatively high concentrations of zinc with a maximum of 132 ppm followed by Cr (57) ppm and Pb (32) ppm. Maximum concentrations were found in soils sampled at a distance of 2-3 m from the cement factory as opposed to samples collected much further ie from the Harbour View area. High concentrations of the heavy metals in the soils near the cement factory as opposed to those further away can be due to the emissions from the factory. A significant contribution can also come from traffic emissions as the study area is located along one of the busiest street of Kingston, Jamaica.

KEYWORDS

Cement, Dust, Rockfort, Kingston, Heavy Metals, Jamaica

Cite this paper

A. Mandal and M. Voutchkov, "Heavy Metals in Soils around the Cement Factory in Rockfort, Kingston, Jamaica," *International Journal of Geosciences*, Vol. 2 No. 1, 2011, pp. 48-54. doi: 10.4236/ijg.2011.21005.

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