



Kadi, M.W.

"Soil Pollution Hazardous to Environment": A case study on the chemical composition and correlation to automobile traffic of the roadside soil of Jeddah city, Saudi Arabia

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King AbdulAziz University, Department of Chemistry, P.O. Box 80203, Jeddah, 21589, Saudi Arabia

Abstract

Soil samples from different roads in Jeddah city were collected and analyzed for their elemental composition. The effects of traffic conditions were critically investigated to reflect the effect of the heavy and light traffic on the soil composition. Samples were analyzed for K, As, Co, Cr, Ni, Pb, Sb, V, and Zn. The results revealed great dependence of lead and zinc contents on traffic conditions. The lead content lies in the range $0.3-104.8 \pm 0.003$ mg/kg for the samples of high traffic conditions and 0.3 ± 0.0 mg/kg being for the sample with no traffic activity, whereas 104.8 ± 0.003 mg/kg was for the one of the most used highways area in Jeddah city. Zinc level lies in the range $56.59 \pm 0.003-456.93 \pm 0.06$ mg/kg which is quite close to lead pattern. The high zinc concentration was found along the main turn roads. The high zinc content in tested soil samples may come from traffic sources, especially vehicle tires. Concentrations of other elements showed little dependence on traffic conditions. © 2009 Elsevier B.V. All rights reserved.

Author Keywords

Inductively coupled plasma-mass spectrometry; Lead and zinc; Roadside dust; Soil pollution; Traffic-related elements

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