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## Investigation of lead (Pb) concentration in road dust from large and small urban areas in Gampaha district, Sri Lanka

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Lead is a highly toxic metal that exists in the environment with heavy metal dust due to vehicular emissions on roadways as well as industrial production and operations. Acceleration of anthropogenic activities leads to the increment of heavy metal levels in the earth's crust. Gampaha district in Sri Lanka is one such hotspot that experiences extensive heavy metal contamination. Therefore, analysis of lead in road dust is vital to evaluate the pollution level and the threat to human health. The present study was carried out by selecting twelve sampling sites from large and small urban areas in the Gampaha district. Sampling sites lie in the GPS range of 6.96920 °N to 7.022829 °N and from 79.912284 °E to 80.049099 °E. Six sampling sites from large urban areas in the vicinity of the Colombo-Kandy main road (A1) and six sampling sites from small urban areas away from the A1 main road in the Gampaha area were selected. Deposited road dust samples were collected by the wiping method and analyzed in triplicate for six consecutive weeks from July to August 2020 while monitoring weather conditions. The preliminary factors that favor the persistence of heavy metals in the environment were investigated and analyzed; pH (7.1-8.0), conductivity (9.5-43.3  $\mu\text{S}$ ) and moisture content (0.6-1.4%) of road dust samples were found in the given ranges. The highest phosphorous (P) content (7.7  $\text{mg kg}^{-1}$ ) and the highest organic matter (0.9%) were found in road dust from large urban areas. The concentration of Pb was determined using atomic absorption spectroscopy. Pb content (15.1-71.1  $\text{mg kg}^{-1}$ ) was significantly high in road dust from large urban areas compared to small urban areas. Pb content in small urban areas was in the range of 0.7-5.8  $\text{mg kg}^{-1}$ . Statistical correlation analysis between the concentrations of Pb-P (correlation factor  $r=0.768$ ) and Pb-organic matter (correlation factor  $r=0.921$ ) indicated positive correlations. It is necessary to further study and understand the health risks associated with heavy metal toxicity to make the findings of this study beneficial to mankind.

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