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## **Investigation of metal concentrations in indoor and outdoor dust in Kelaniya area, Sri Lanka**

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Urban dust is often contaminated with heavy metals and has become one of the major problems in metropolitan cities which is difficult to be controlled. Kelaniya area in Sri Lanka is one such vulnerable location. Anthropogenic activities have contributed exclusively for the elevation of heavy metal concentrations in atmospheric dust and in the earth's surface. Analysis of both indoor and outdoor dust therefore becomes an important tool in the prediction of the extent to which air pollution has taken place in a particular area. This can help to relate the threat for human health by toxic elements and to identify its impacts. This investigation was carried out by selecting two major locations at the vicinity of the Kandy-Colombo main road (A1) in Kelaniya area including the premises of University of Kelaniya which is located very close to the A1 main road. The sites lie in the GPS range of 6.969674 °N to 6.975092°N and from 79.913546°E to 79.923919°E. Ten sampling sites from indoor and outdoor locations were selected. Samples were collected as triplicates for six consecutive months from June to November 2018. They were analyzed for pH, conductivity, moisture, phosphorous content and organic matter. Concentration levels of five heavy metals Pb, Cu, Zn, Cr and Fe were also determined using atomic absorption spectroscopy. The preliminary factors that favor the persistence of heavy metals in the environment were investigated and analyzed. It was observed that acidic dust and organic nature favor heavy metal deposition. Among the heavy metals, Fe content was very high (1614-6134 mg/kg) in the dust samples. Cr levels (1.92-10.58 mg/kg) were very low. Pb content (21.09-84.52 mg/kg) was reasonably high. Zn level (14.72-42.48 mg/kg) and Cu level (6.0-45.0 mg/kg) were relatively abundant in almost all the samples. A good positive correlation was observed in between Pb- Zn, Pb-Fe and Pb-organic matter than other combinations assuring to a correlation coefficient greater than 0.5 in every instance. These results suggest that components of positive correlation have arisen from a common source and that dust comprised of high Zn or Fe concentration have a higher probability of Pb contamination.

**Keywords:** Heavy metals, Indoor dust, Outdoor dust, Toxicity