



938/E2/Poster

Heavy metal contamination in road dust from Colombo- Katunayake Expressway, E03

L W V Priyadarshana,² M P Deeyamulla^{1*} and Namal Priyantha²

¹Department of Chemistry, University of Kelaniya, Kelaniya

²Postgraduate Institute of Science, University of Peradeniya, Peradeniya

Surface dusts are a complex environmental media and often contain elevated concentrations of inorganic and organic pollutants such as heavy metals, metalloids, and polycyclic aromatic hydrocarbons. Their composition reflects inputs from variety of sources, including water transported material from surrounding soils, dry and wet atmospheric deposition, road surface wear, road paint degradation, vehicle wear (tires, body, brake linings, etc.), vehicle fluid and particulate emissions. Use of road dusts as a background investigation of heavy metal concentrations has been used to identify the level of pollution and this study was conducted to investigate the concentrations of five heavy metals (Pb, Cu, Cr, Zn and Ni) in road dusts along the newly built Colombo-Katunayake Expressway (E03). Road dusts samples were collected at 2 km intervals from 26 sampling points up and down along the expressway in two different function areas, as 13 samples from the Colombo to Katunayake lane and another 13 samples from the Katunayake to Colombo lane. Heavy metals in road dust samples were analyzed using atomic absorption spectrophotometry (AAS). The concentrations of metals in road dust are expressed in mg/kg of the dry weight of the dust sample. Concentrations of Pb and Cu in road dust samples from E03 express way were found in the range of 14.15–21.60 mg kg⁻¹ with a mean value of 34.39 (±20.35) mg kg⁻¹ and 101.86 (±56.33) mg kg⁻¹ with a range of 33.05–241.80 mg kg⁻¹ respectively. The average concentrations of Cr, Zn and Ni were obtained as 78.56 (±10.50), 284.01 (±42.30) and 28.17 (±4.30) mg kg⁻¹ respectively in road dust samples. The level of heavy metal contamination was compared with the background samples obtained from Uda Peradeniya road Kandy, where the anthropogenic influence is comparatively low. According to the results of heavy metal concentrations at 26 sampling points, Zn concentrations were the highest followed by Cu and Cr concentrations. Further, Pb concentrations of road dust investigated in the E03 expressway were relatively lower than recorded in the literature of similar studies. This may be due to the use of unleaded gasoline in Sri Lanka. However, average concentrations of all the heavy metals studied were comparatively higher than the background level. This shows that there is heavy metal pollution at the sampling points in the E03 expressway.

Keywords: Heavy metal pollution, road dust