

Assessment of the Heavy Metal Concentrations in Roadside Soil Within Aizawl City, Mizoram, India

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Extended Abstract

Environmental pollution, particularly soil contamination by heavy metals, poses a significant concern globally. This research focuses on assessing heavy metal concentrations in roadside soil in Aizawl, Mizoram, India. Twelve sites were sampled monthly from August 2020 to July 2021, and concentrations of Copper (Cu), Iron (Fe), Manganese (Mn), Nickel (Ni), Lead (Pb), and Zinc (Zn) were analyzed using Atomic Absorption Spectroscopy. The study area's unique hilly terrain presented challenges in sample collection, emphasizing the need for location-specific methodologies. The research reveals varying concentrations of heavy metals, with Fe being the most abundant, followed by Mn, Zn, Cu, Pb, and Ni. The pollution assessment, using the Pollution Load Index (PLI), Geoaccumulation Index (Igeo), and Enrichment Factor (EF) indicates moderate pollution levels. The distribution of heavy metals shows fluctuations across sites and seasons, with potential sources identified through Principal Component Analysis [1]. Vehicular emissions, industrial activities, and atmospheric deposition contribute to heavy metal contamination, with distinct patterns observed at each site. While concentrations of Cu, Fe, Mn, Ni, Pb, and Zn in roadside soil are generally within permissible limits, elevated levels suggest anthropogenic influences [2]. The research underscores the need for ongoing monitoring and management to mitigate potential health risks associated with heavy metal exposure. Despite the absence of specific Indian regulations, the study uses China's benchmarks for contextual relevance [3]. This research contributes valuable insights into the dynamic nature of heavy metal contamination in roadside soil, particularly in hilly terrains, emphasizing the importance of tailored methodologies for accurate assessments.

References

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