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Variability in Road Runoff Pollution by Polycyclic Aromatic Hydrocarbons (PAHs) in the Urbanized Area Adjacent to Biscayne Bay, Florida

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ABSTRACT

Polycyclic aromatic hydrocarbons (PAHs) were consistently documented in the sediments of the canals draining into Biscayne Bay. The study examines the contribution of urban runoff to PAHs discharges. Subtropical climatic conditions associated with prolonged dry seasons often exacerbate the problem of PAHs pollution as the initial storms of the wet season wash off pollutants accumulated over time. Road runoff samples were collected at two sites with different levels of traffic at the end and at the beginning of the wet season. Storm-event mass first flush was found to occur inconsistently. Higher levels of PAH pollution were found at both sites after an extended dry season. The Kendall ' s tau test used to measure the association between antecedent dry days and flow-weighted PAH concentrations was found to be statistically significant. The correlation between traffic intensity and PAHs levels in road runoff was found not to be statistically significant. High-molecular-weight PAHs originating in vehicle exhaust emissions appeared to dominate PAH concentrations in road runoff. The Friedman ' s test showed overall similarity in PAHs composition profiles between seasons with the exception of low-molecular weight PAHs.

KEYWORDS

PAHs, Storm-Event Mass First Flush, Seasonal Variability, Annual Average Daily Traffic

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