Distribution patterns of PAHs at Mai Po Marshes Nature Reserve, Hong Kong

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Mai Po Marshes is a sub-tropical estuarine wetland in Hong Kong, which is a complex and dynamic unique ecosystem. The main objective of the present study is to investigate spatial and temporal ecological distribution of PAHs in the sediments, in order to identify the route and source by which PAH reach Mai Po Marshes. Samples of sediments were collected monthly from eight shrimp shallow ponds (local name gei wais) from July 2003 to January 2004, and from mangrove swamps and inter-tidal mudflats during wet (July) and dry (November) seasons respectively. Fish samples were also collected from Mai Po in July and August. PAHs were extracted from the samples by Soxhlet extraction and analyzed by Gas Chromatography and Mass Spectrometry (GC/MS). The results suggested that Deep Bay, Shenzhen River and Yuen Long - Kam Tin Catchments were the PAH input entering the reserve during high tide wet season. The ratios of phenanthrene/anthracen (Phe/Ant) and fluoranthrene/pyrene (Flu/Pr) indicated that the source of PAHs in the sediments might have pyrolytic origin. The potency equivalency concentration (PEC) of PAHs exceeded the screening value (SV) (U.S. EPA 1989), suggesting that the fish in Mai Po for human consumption was not preferred. More intensive site-specific monitoring and evaluation of human health risks should be conducted.