Preface

The Cochin backwaters is a multiple-use system of great socio-economic importance to the community. Activities that impact directly on the aquatic ecosystem include water transport and harbour operations, fishing, aquaculture, sand mining, coir making and upriver irrigation. Increasing urbanisation and industrialisation along the shores of the water system have inevitably exacerbated the problem of waste management and pollution control.

Polycyclic aromatic hydrocarbons (PAHs) are produced naturally by the diagenetic transformation of organic matter to fossil fuels. However, the PAH load in the environment is enhanced by the extraction and utilisation of fossil fuels. Indeed, urban and domestic activities, such as the manufacturing industry, land-transport and domestic fires, are significant sources of the contaminants. Thus, the increasing production and load of PAHs in the environment is a direct consequence of the socio-economic activities in the neighbourhood. It follows that initiatives at controlling environmental contamination actually touch on the socio-economic culture of the community.

It cannot be gainsaid that environmental assessment provides the scientific basis for viable environmental management initiatives. This thesis, therefore, is the culmination of an attempt to contribute to the growing database on the environmental quality of the Cochin estuarine system. The thesis is presented in 7 chapters as follows;

Chapter 1: Introduction. Pertinent sources of PAHs in the study area are described and factors influencing their distribution and pathway in the aquatic environment are briefly highlighted.

Chapter 2: Materials and methods. Detailed descriptions of the field and laboratory analytical techniques applied in the course of the study are presented.
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Chapter 3: Water quality and physico-chemical parameters. Results of hydrographical parameters recorded are presented and discussed with reference to the general water quality.

Chapter 4: Variability of PAH concentrations with hydrographic factors. The variation of concentration levels of the contaminants at a point station under the dynamic estuarine processes is illustrated to highlight the complexity of factors influencing the distribution and speciation of PAHs in the water column.

Chapter 5: Distribution of PAHs in estuarine backwaters. Results of the concentration levels of PAHs in the study area are presented and the spatial and temporal distribution, and important sources discussed.

Chapter 6: Characteristics of PAH assemblages. The PAH distribution patterns are analysed with the view of further elucidating the sources of the contaminants in the aquatic system.

Chapter 7: Conclusion. Overall concluding remarks and recommendations are presented.

A summary of the thesis provides an overview of the work accomplished and salient findings. The thesis ends with a compilation of literature cited.