CONSTRUCTED WETLANDS

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GREEN PLANT-BASED REMEDIATION TECHNOLOGY

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List of Abbreviations

16S rRNA	Method of identification of bacterial gene sequence
BBD	Box-Behnken design
CEC	Contaminants emerging concern
CFU	Number of bacteria in 1 mL
CSSFs	Continuous sub-surface flow system
COD	Chemical Oxygen Demand
CWs	Constructed wetlands
DO	Dissolved Oxygen
DOE	Design of experiment
EDX	Energy-dispersive X-ray spectroscopy
HRT	Hydraulic Retention time
HSSFCWs	Horizontal sub-surface flow constructed wetlands
HPLC	High-performance liquid chromatography
MBR	Membrane Biological Reactors
MSM	Mineral salt medium
NF	Nanofiltration
OD	Optical density
ORP	Oxidation - reduction potential
PCR	Polymerase chain reaction
PPCPs	Pharmaceuticals and personal care products
RSM	Response surface method
R^2	Linear regression
SEM	Scanning electron microscopy
TSA	Tryptic soy agar
TSB	Tryptic soy broth
TSS	Total suspended solids
WWTPs	Wastewater treatment plants

Preface

Alhamdulillah and thank to Almighty Allah (S.W) for the blessings that have been showered on us to reach this level of knowledge in life. The writing of this book is an adaptation from a Doctor of Philosophy thesis entitled "Phytoremediation of Pharmaceuticals in Sewage Using Pilot Sub-Surface Flow Constructed Wetland". This book explores in detail the theoretical facts on the degradation performances of pharmaceutical compounds. The contents of this book are very suitable for any party or individual who tends to utilise plants for remediation of contaminated water. Hopefully with the sharing of this knowledge opens the eyes of readers about the great potential of plants as remediation agents in treating contaminated water.

With this opportunity, we would like to thank our dear family members for their endless support and encouragement in completing this book. The highest appreciation goes to Faculty of Engineering and Built Environment for supporting us during the process of writing this book through Halim Razali Strategic Theory (HRST) Professional Expert and Universiti Kebangsaan Malaysia for providing financial support (DPB-2024-003, GGPM-2023-031 and FRGS-1-2015-SG05-UKM-01-1) for publication of this book. Without their support, it would not have been possible for us to complete this book.

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