
Foreword

My joy in introducing this book on “Contaminated Sediments” as part of the Handbook of Environmental Chemistry series is for the first time accompanied by a feeling of sadness. The reason for this feeling is that the whole idea and proposal for this book originated from the late Assist. Prof. of Oregon State University Tarek A. Kassim, who is sadly no longer with us to enjoy the final product of his ideas. Everything began as part of my role as co-editor of this series when I received the proposal from Tarek and I was asked to finalize the edition of the book. After receiving the proposal I waited and revised the manuscripts, also adding one from my own research group. So in all honesty the merit of this book belongs to the late Tarek Kassim. I hope Tarek’s colleagues and friends can appreciate one of his last projects.

Sediments offer different functions within the environment. Bottom sediments provide a habitat for many aquatic organisms and function as an important component of aquatic ecosystems. Contaminants enter river systems through various pathways. *Point sources* of pollution are identifiable points that are (fairly) steady in flow and quality (over the time scale of years). The magnitude of pollution is not influenced by the magnitude of meteorological factors. Major point sources include: municipal wastewater effluents and industrial wastewater effluents. *Diffuse sources* are highly dynamic, spread-out pollution sources and their magnitude is closely related to meteorological factors such as precipitation. Major diffuse sources of pollution include: surface runoff (load from atmospheric deposition), groundwater, erosion (load from eroded material), and diffuse pollution loads derived from paved urban areas (atmospheric deposition, traffic, corrosion), including combined sewer overflows since these events occur discontinuously over time and are closely related to precipitation (it has to be pointed out that emissions from urban areas are also partly involved in the point source term; so these discharges are not constant in reality). Both point and diffuse sources of pollution contribute to the total contaminant load of rivers. In summary, sediments have been described as a sink or storage place for pollutants and as a source for contaminants to be introduced into the aquatic environment.

The book contains six chapters covering different aspects of the research on contaminated sediments such as its influence on the sustainable use of the Planet, the fate and behavior of typical sediment pollutants like polycyclic

aromatic hydrocarbons, chlorinated and brominated organic pollutants, the application of sediment toxicity identification evaluation (TIE) protocols and the various ways to degrade toxic pollutants in sediments, for instance by the use of nucleic acid-based techniques for studying the diversity of bacterial communities present in contaminated sediments.

Overall, the present book is certainly timely since the interest in contaminated sediments has never decreased in the EU, where the network SEDNET (European Sediment Research Network) organizes workshops on different sediment issues and in the U.S., Battelle, EPA and The US Army Corps of Engineers are also involved in a sediment symposium that covers different scientific and technical aspects of contaminated sediments.

This book provides new scientific information and critical overviews on how to monitor and remediate contaminated sediments. This book will be of interest to a broader audience of environmental chemists, analytical chemists, microbiologists and specially those that are already working in or planning to enter this field.

Finally, I would like to thank all the contributing authors of this book for their time and effort in preparing this comprehensive compilation of research papers that will make this book on contaminated sediments a reference book in this field.

Barcelona, September 2008

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Contaminated Sediments

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2009, XVI, 181 p. 36 illus., 2 illus. in color., Hardcover

ISBN: 978-3-540-88013-4