Foreword

Over the past few decades technological developments have advanced enormously, even to the extent that they are often overwhelming, particularly for students and young water professionals entering the wastewater and water quality field. The quantity, handling, interpretation and understanding of water quality data generated in a wastewater treatment plant's lifecycle is becoming an increasing challenge, even to the most experienced users. The rapid developments in computational technology, combined with this deeper, fundamental understanding of the chemical, biological and physical processes involved in wastewater treatment and aquatic ecosystems, are causing this increased complexity in data management. Conversely, in many middle- and low-income countries, scientists and practitioners are regularly experiencing data scarcity and facing the challenge of how to interpret the data they do have to generate useful information that would lead to the creation of knowledge and ultimately to increased wisdom.

This book will make a major contribution to addressing these issues better and to bridging the gap between science and technology and their practical applications. The innovative 'alternative approach' that the authors of the book have consciously chosen to follow, starting with practice then moving to theory, and from application to fundamentals, will quickly attract many followers. Such an approach in our field is refreshing as it combines statistics, mathematics, modelling, process engineering, microbiology, physics and bio-chemistry in a balanced way, providing theoretical and fundamental information to the extent required for the solution of practical problems, regularly demonstrated by one or more examples. To many the final outcome may appear natural, and ultimately not even 'alternative'; however to get to that stage of practical simplification is an achievement in itself, and is thanks to the extensive experience and knowledge of the authors on this matter.

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I have known Professor von Sperling, the lead author, for over a decade and we have been working closely on a large research and capacity-building project for the developing world involving more than 90 PhD and MSc students and post-doctoral Fellows. When I read this book, I can hear him saying the words in his characteristic Brazilian-English accent, because that is exactly what he has been preaching for years to students and to all of us. I recall and am grateful for all the advice he has generously offered during our research encounters.

This book is a breath of fresh air in our field; the authors set the tone from the very first paragraph, their approach is surprisingly direct and transparent, their knowledge is genuinely shared, the book is open access, and the attached tools are accessible and changeable, giving the reader the feeling of 'what you see is what you get'. The usefulness of this book to all stakeholders in the field is undoubted; it will be used by its intended audience and will soon become a compulsory, 'must have', item in the collection of water scientists and professionals. I am delighted that the authors have made such a tremendous effort to create this book; I am looking forward to using it myself and to introducing it to a curriculum of programs I lead, and my students will use it too. I would like to take this opportunity to congratulate the authors on this great and unique piece of work.

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