

Wastewater Quality Monitoring and Treatment

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Preface

The European Community decided in 1991 to obligate all the Member States to be equipped with wastewater treatment plants for all the cities whose wastewater organic loads are greater than 15 000 equivalent-inhabitants, before the 31st December 2000, and 2000 equivalent-inhabitants before the 31st December 2005. In this context, the quality of the treated wastewater must be better than reference values for some variables such as BOD (biological oxygen demand), COD (chemical oxygen demand), TSS (total suspended solids), global nitrogen and total phosphorus. These obligations generate a huge range of activities within the European Union, including research and technological developments, and similar trends can be observed, e.g. in the USA and Canada.

Unfortunately, wastewater monitoring procedures are prone to many drawbacks because of difficulties to accurately and frequently measure the necessary variables, which essentially rely on 'classical' monitoring approaches involving sampling, storage and laboratory analysis. The only way to make progress in wastewater treatment (and hence to comply with related regulations) is to ensure that the plants are able to work with unqualified reliability which implies that reliable monitoring of the wastewater quality and quantity and of the treatment efficiency should be performed for the characterisation of raw and treated wastewaters and for the control of the plant itself.

This book reflects this awareness by summarising different views on wastewater treatment-related monitoring and control. The book is composed of six different parts. The first part provides an overview of EU and US wastewater policies, standard methodologies, reference materials and discusses sampling assistance, biosensors and alternative methods. Sewer quality control is examined in the second part, including considerations on sewage characterisation and evolution, flow measurements and monitoring in rural areas. This is followed, in the third part, by chapters concerning urban wastewater treatment plant control and, in the fourth, by industrial wastewater treatment plant control. Part 5 discusses monitoring in the context of discharges and receiving medium, including water quality modelling. Finally,

socio-economic aspects are considered in the sixth part, with a focus on data collection and merging, as well as training.

This book has been written by experts in the field of wastewater treatment policy, control and monitoring. It provides an overview of the existing knowledge in wastewater monitoring and identifies emerging needs, which will be of direct interest to policy makers, water scientists and industries, and analytical control laboratories.

Philippe Quevauviller, Olivier Thomas and André van der Beken