Basic water treatment

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Fourth edition

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Preface to the fourth edition

The third edition of this book, which has become one of the accepted primers on water treatment, involved greatly expanding the processes covered and significant revisions to the coverage of the 'traditional' processes. This was driven by the enormous changes that had occurred since the publication of the first edition. This fourth edition represents a far more modest up-dating of the third edition, to take account of changes in legislation over the past five years, and to reflect the evolution in water treatment over the same period. The opportunity has also been taken to expand the book's scope, introducing chapters on private water supplies and Water Safety Plans and a section on water re-use. This is a relatively slim volume covering water treatment, a very broad subject. Thus a degree of subjectivity has had to be exercised over what should be covered.

Basic Water Treatment 4th edition is aimed at university students, at practising water treatment engineers, for whom it will be a useful reference book, and at mechanical engineers and chemists who need to put their specialized knowledge into a broader context; it will also be of interest to those managers and non-technical staff who wish to understand some of the quality and technical issues relating to water treatment. It is not a prescriptive handbook on water treatment plant design; rather it provides essential background and is a useful first choice reference book for many aspects of water quality and treatment.

It is important that all involved in water quality and water treatment do not adopt too blinkered an approach. In Western Europe we now have to focus very closely on compliance with prescriptive water quality standards, although the Water Framework Directive and public concerns over the environment require a wider consideration of water resources and water demands. However, over much of the world, water engineers should consider, or at least be aware of, much wider issues, weighing the costs of high quality water against

the overriding need to supply safe water to as many as possible. *Basic Water Treatment 4th edition* primarily relates to water treatment in Western Europe and North America but it also takes account of treatment in other developed areas, and in developing and less developed areas.

Foreword

This fourth edition of *Basic water treatment* is being published at a time when there is a growing need to inspire young engineers to take up a career in the water industry, which provides unlimited opportunities at home and abroad to make a difference to society – water supply is the oft forgotten but essential building block for economic and social development, and even in developed countries, it is now realised that we can no longer take a plentiful supply of safe water for granted.

Although necessarily simplified in its content, *Basic water treatment* has great merit in so much as it presents essential principles alongside the various methods of water treatment. This is important because no two water supplies are the same and a successful water treatment plant is one where the design has been adapted carefully to meet the needs of the unique setting. I am particularly pleased to note that the authors have introduced a new section on water safety plans. This risk management methodology first advanced by the World Health Organisation in September 2004, focuses the attention of water professionals and policy makers on to the core activities which underpin water safety – catchment, treatment, distribution, building systems – addressing the weaknesses which have emerged from several decades of 'standards' and 'compliance' driven water policy.

Embracing the water safety plan approach is essential if we are to deal with the current well documented world-wide legacy of treatment plants which perform below their capability because they are difficult to operate and maintain. It is an unfortunate fact, verified by independent investigations, that the root cause of the majority of water quality incidents and outbreaks of water borne disease is 'value engineering', a euphemism for the consequences of bad design, inadequate commissioning and a general failure to provide operators with the tools they need to deliver safe water under the inherently variable set of water quality circumstances that nature affords.

Notwithstanding the fact that my experience as an operator and a regulator has led me to witness the pitfalls of too much reliance being placed on water treatment, it is axiomatic that it remains of fundamental importance and will continue to be key to maintaining public confidence in drinking water quality. I am, therefore, very pleased to commend this book as a valuable tool for students and practitioners alike.

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for England and Wales