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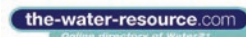
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Michael John Rouse • 9781780404509

Advanced Biological Treatment Processes for Industrial Wastewaters

F Cervantes, S Pavlostathis, A van Haandel • 9781843391142



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Water Practice & Technology

Online journal for water practitioners under the control of the *Water Science & Technology* Editorial Board, including technical and practical reports and management studies. For more information visit our website.

Journals

Water Quality Research Journal of Canada

Official Journal of the Canadian Association on Water Quality

Editor: R. Gehr, McGill University, Canada



The Water Quality Research Journal of Canada is a forum for original research dealing with the aquatic environment. The journal publishes peer-reviewed, scholarly articles dealing with the aquatic environment. Articles from outside of Canada are welcome provided that they

are of interest to the Canadian water quality research community.

ISSN: 1201-3080; vol.49, 4 issues, 2014
Institutional rate (print access):
£481/US\$743/€720

Journal of Water, Sanitation and Hygiene for Development

Editor in Chief:

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Maimuna Nalubega, African Development Bank, Tunisia

Marcos von Sperling, Federal University of Minas Gerais, Brazil



The Journal of Water, Sanitation and Hygiene for Development is a peer-reviewed journal devoted to the dissemination of high-quality information on the science, policy and practice of drinking-water supply, sanitation and hygiene at local, national and international levels.

ISSN: 2043-9083; vol.4, 4 issues, 2014
Institutional rate (print access):
£925/US\$1,464/€1,160

Journal of Water Reuse and Desalination

Editors:

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How Yong Ng, National University of Singapore, Singapore



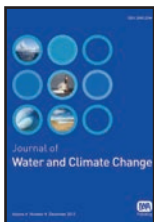
Journal of Water Reuse and Desalination publishes refereed review articles, theoretical and experimental research papers, new findings and issues of unplanned and planned reuse. The journal welcomes contributions from developing and developed countries. Interested in

submitting a paper? Guidelines for Authors are available on our website at www.iwaponline.com/jwrd or contact: Emma Gulseven
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ISSN: 2220-1319; vol.4, 4 issues, 2014
Institutional rate (print access):
£477/US\$755/€598

Journal of Water & Climate Change

Editors: Rutger de Graaf, Rotterdam University of Applied Sciences, The Netherlands
 Shaleen Jain, University of Maine, USA
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 Chris Perera, Victoria University, Australia



Journal of Water and Climate Change publishes refereed research and practitioner papers on all aspects of water science, technology, management and innovation in response to climate change, with emphasis on reduction of energy usage.

ISSN: 2040-2244; vol.5, 4 issues, 2014
Institutional rate (print access):
£508/US\$753/€637

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An International Journal

Published in partnership with:

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Editors: Ian Littlewood, British Hydrological Society, UK

Chong-Yu Xu, University of Oslo, Norway



Hydrology Research publishes articles within all fields of hydrology in its widest sense. While emphasis is placed on studies of the hydrological cycle, the journal also covers the physics and chemistry of water.

Hydrology Research is intended to be a link between

basic hydrological research and practical application of scientific results within the broad field of water management.

ISSN: 0029-1277; Vol.45, 6 issues, 2014
Institutional rate (print and online access):
£1,012/US\$1,736/€1,518

Journal of Water and Health

Editor-in-Chief:

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Journal of Water and Health is a peer reviewed journal devoted to the dissemination of information on the health implications and control of waterborne microorganisms and chemical substances in the broadest sense. This includes microbial toxins, chemical quality and the

aesthetic qualities of water.

Contributions are published on the health-related aspects of the following areas:

- Epidemiology
- Risk assessment
- Detection and ecology of pathogens in the environment
- Water and wastewater treatment
- Disinfection
- Disinfection by-products
- Indicators of water and waste quality
- Regulatory issues and standard development
- Water quality and assessments
- Monitoring
- Microbial toxins (including cyanobacteria)
- Chemical and physical quality of water as it affects health
- Endocrine disruptors
- Taste and odour
- Impacts of water quality on food quality
- Impact of climate change on water quality
- Water-based diseases
- Water-based insect reactors of disease
- Water policy and health
- Health effectiveness of water management

ISSN: 1477-8920; Vol.12, 4 issues, 2014
Institutional rate (print and online access):
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Journal of Hydroinformatics

Official Journal of the IAHR-IWA-IAHS Joint Committee on Hydroinformatics

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Journal of Hydroinformatics is a peer-reviewed journal devoted to the application of information technology in the widest sense to problems of the aquatic environment. It promotes hydroinformatics as a cross-disciplinary field of study, combining technological, human-

sociological and more general environmental interests, including an ethical perspective.

Journal of Hydroinformatics' scope covers the following areas:

- Physically based simulation modelling
- Numerical methods
- Data-driven modelling and management
- Artificial neural networks
- Evolutionary methods
- Cellular automata
- Modelling systems
- Geographic information systems and virtual imaging
- Ecology and water quality modelling
- Environmental impact assessment
- Knowledge engineering and management
- Socio-economic framework
- Intelligent decision support, negotiation and management
- Education and training
- Internet-based applications
- Optimisation and control

- Risk analysis, fuzzy logic and management of uncertainty
- Tools, environments and languages

ISSN: 1464-7141; Vol.16, 6 issues, 2014
Institutional rate (print and online access):
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Journal of Water Supply: Research and Technology- AQUA

Editors:
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 Benjamin Stanford, Hazen and Sawyer, P.C., USA



Journal of Water Supply: Research & Technology – AQUA publishes peer-reviewed scientific and technical, and practical/operational papers that deal with research and development in water supply technology and management, covering the complete water cycle.

Journal of Water Supply: Research and Technology – AQUA's international coverage includes:

- Sustainable water resources management source water quality, quantity, protection
- Applied limnology
- Hydraulics of water systems including source waters, treatment and distribution systems
- Water treatment processes, residuals treatment and management
- Modelling of source waters, treatment and distribution systems
- Applied methods to characterize water quality
- Distribution systems
- Water system management and policy - legislation, economics, public relations, crisis management
- Public health, risk assessment, regulations and standards
- Water reclamation and reuse (e.g. for agricultural or industrial use)
- Irrigation
- Desalination systems for water supply

ISSN: 0003-7214; Vol.63, 8 issues, 2014
Institutional rate (print and online access):
£799/US\$1,369/€1,155

Water Policy

Official Journal of the World Water Council

Editor in Chief: J. Delli Priscoli,
 US Army Corps of Engineers,
 Institute for Water Resources, USA



Water Policy publishes analyses, reviews and debates on all policy aspects of water resources.

Examples of such topics are:

- Ecosystems, engineering, management and restoration
- Engineering and design
- River-basin and watershed management

- Multiple uses of water
- Pollution monitoring and control
- Management, use and sharing of trans-boundary waters, treaties and allocation agreements
- Capacity building

- Flood control and disaster management
- Groundwater remediation and the conjunctive use of groundwater and surface water
- Public participation, consensus building and confidence building
- Conflict management and negotiations of water resources
- Demand management
- Commercialization of water
- Integrated water resources management
- Allocation of risks among stakeholders

ISSN: 1366-7017; Vol.16, 6 issues, 2014
Institutional rate (print and online access):
£875/US\$1,701/€1,375

Water Research

Editor in Chief: Mark van Loosdrecht, Delft University of Technology, The Netherlands



Water Research publishes refereed, original research papers on all aspects of the science and technology of water quality and its management worldwide.

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- Water quality standards

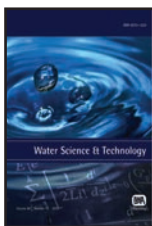
- Studies on inland, tidal or coastal waters
- Limnology of lakes, impoundments and rivers
- Solid and hazardous waste management
- Environmental restoration
- Analysis of the interfaces between sediments and water, and water/atmosphere interactions
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Editor in Chief: Helmut Kroiss, Vienna University of Technology, Austria



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- Wastewater treatment and transportation processes for stormwater and domestic, industrial and municipal effluents.

- Sources of pollution including hazardous wastes and source control.
- Effects and impacts of pollution on rivers, lakes, groundwater and marine waters.
- Water reuse and aquatic environmental restoration.
- Policy, strategy, control and management aspects of water quality.

Water Science and Technology – together with its adjunct journals *Water Science and Technology: Water Supply* and *Water Practice and Technology* - has a special mission to serve as a bridge between science, engineering applications and management aspects of water as represented by the many IWA specialist groups and other groupings. Papers describing progress in full-scale implementations

are particularly encouraged.

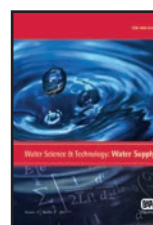
WST aims at fast publication of early results on new findings and research directions concerning water.

Water Science & Technology (WST)

ISSN: 0273-1223; Vols.69-70, 24 issues, 2014
Institutional rate (print and online access):
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Water Science and Technology: Water Supply

Editor in Chief: Helmut Kroiss, Vienna University of Technology, Austria



Water Science and Technology: Water Supply, published as an adjunct to *Water Science and Technology*, applies the same rigorous peer review standards as *Water Science and Technology* so as to publish the best papers submitted on all aspects of water supply.

Subjects covered include:

- Management of water resources (including reservoirs),

- Water treatment technologies, including wastewater reuse and recycling,
- Water distribution systems,
- Drinking water quality,
- Water utility management including economic and social aspects.
- Norms and standards

Water Science and Technology: Water Supply has a special mission to serve as a bridge between the many IWA specialist groups and between science, engineering applications and management aspects of water supply. Papers describing progress in full scale implementations are particularly encouraged.

The journal aims at fast publication of early results on new findings and research directions concerning water supply and management.

Water Science & Technology: Water Supply (WST: WS)

ISSN: 1606-9749; Vol.14, 6 issues, 2014
Institutional rate (print and online access):
£1,680/US\$2,973/ €2,714

Water Practice and Technology

Editor in Chief: Helmut Kroiss, Vienna University of Technology, Austria



IWA's online journal *Water Practice & Technology* was launched under the control of the Water Science and Technology Editorial Board to provide the widest possible dissemination of high-quality material that is of interest to practitioners rather than researchers. Types of article include:

- Case studies
- Practical "know-how" reports
- Compilations of data on previously reported processes

By publishing these articles electronically *Water Practice and Technology* provides a much-needed searchable archive that makes these practice-focused articles rapidly available worldwide.

Water Practice and Technology provides an invaluable source of information for water practitioners, including those active in utilities,

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Water21

Magazine of the International Water Association

Editor:
Keith Hayward



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perspective in relation to the most important business, technology and environmental issues affecting the water sector. As well as regular news and features, each issue also includes sections on water utility management and on global issues and initiatives.

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ISSN (Online): 2219-1534
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£347/US\$637/€553

Water Asset Management International

Editors:
Dr John Bridgeman, Professor Stewart Burn,
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Water Asset Management International is an international newsletter focusing on asset management in water and wastewater utilities. The focus of the newsletter is on the strategic aspects of this developing field, providing utilities with international perspectives on infrastructure planning and maintenance as they seek to

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Each issue of *Water Asset Management International* contains submitted papers from around the world, along with news, details of events and publications, and perspectives from water utility CEOs on the importance of asset management. Submissions of papers of likely interest to an international audience and presented so as to be accessible to the general asset management community are welcomed.

ISSN (Print): 1814-5434
ISSN (Online): 1814-5442
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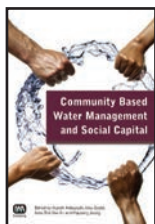
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Developing Countries

Community Based Water Management and Social Capital

Authors: Kiyoshi Kobayashi, Ibnu Syabri, Ismu Rini Dwi Ari and Hayeong Jeong



Community Based Water Management and Social Capital provides scientific understanding of community based water management and how to secure responsible management to satisfy quality and quantity requirements. It shows how community based water management can be synchronized with public water

service, by introducing the most recent field experiments and theoretical studies in economics, social science, engineering, and regional planning which include game theory, microeconomics, econometric, statistics, social network analysis, social choice, and micro finance.

Community Based Water Management and Social Capital presents field experiments and theoretical studies in economics, social science, engineering, and regional planning to investigate important questions:

- what motivates people in voluntary water management
- what is the effect of participatory approach in water management
- how does social capital work in the voluntary actions
- what are key factors for effective governance for water management with diverse actors - local people, enterprise, and government
- what is necessary for proper water allocation
- how to synchronize public water service with community based water management.

The book provides students, researchers, practitioners and governments with a comprehensive account of the current situation and perspectives on voluntary water management. It delivers a new scientific understanding on sustainable water management schemes and appropriate institutional social structures to secure inalienable rights to access to water.

Contents:

- Introduction
- Why People Collaborate?
- Small Scale Water Supply System: Strategy and Framework for Action
- Collective Action and Legitimated Social Capital
- Water Choice Model and Social Capital
- Water Governance and Participatory Approaches
- Governance for Efficient Water Management
- Trust
- Water Right, Vulnerability of Poverty, Conflict Management, and Participatory Approaches
- Water Governance in Indonesia
- Social Institutions/Engineering Views/Management Matters
- Water Allocation and Institutional Arrangement
- PDAM and HIPPAM
- Comprehensive Social Participatory Model for Water Springs Conservation Management in Indonesia
- Network Analysis of Community Based Water Management
- Cognitive Analysis of Resident to Community Based Water Management
- Case Study of Adaptive Planning and Conflict Resolution in Indonesia
- How to Synchronize PDAM and HIPPAM

February 2014 • 272 pages • Paperback

ISBN: 9781780405452

Ebook ISBN: 9781780405469

IWA Members Price: £71.25/US\$128.25/€96.19

Non Members Price: £95.00/US\$171.00/€128.25

Developing Countries

How to Design Wastewater Systems for Local Conditions in Developing Countries

Author: David M Robbins and Grant C. Ligan



This is a practical handbook providing a step-by-step approach to the techniques used for characterizing wastewater sources and investigating sites where collection, treatment and reuse/disposal technologies will be installed. It is intended to help enable local implementation of on-site and decentralized wastewater management system (DWMS) for wide scale use in

development settings.

How to Design Wastewater Systems for Local Conditions in Developing Countries helps local service providers and regulatory officials make informed decisions through the use of tools, checklists and case studies. It includes will include a link to a web based community of on-site and decentralized wastewater professionals, which contains related tools and case studies. This handbook serves as a reference for training classes, certification programs, and higher education programs in civil and sanitary engineering.

There is an increasing interest on the part of local government officials and private sector service providers to implement wastewater treatment systems to solve sanitation problems. The model presented in this handbook promotes activities that first generate data related to source and site conditions that represent critical inputs, and then applies this information to the technology selection process. Matching the most appropriate technologies to the specific needs of the wastewater project is the key that leads to long term sustainability.

How to Design Wastewater Systems for Local Conditions in Developing Countries is an invaluable resource for public sector decision makers and private sector service providers in developing countries. It is also a useful text for students at engineering colleges in developing countries interested in taking a class that teaches the methods of decentralized wastewater management system (DWMS) development.

Contents:

- Introduction to on-site and decentralized wastewater treatment and typical components of DWMS systems. Discusses pre-treatment, primary treatment, secondary treatment, disinfection, reuse and recycling.
- The DWMS decision model – critical inputs (source and site) and the DEWATS decision-making process.
- Characterizing the Source by determining hydraulic and organic loading; Identifying fluctuations in flow, and identifying other source factors that might impact upon the technology decisions.
- Evaluating the site:
 - Drawing the site plan. Includes checklists, setbacks and examples.
 - Determining available area for wastewater components.
 - Testing the soils for depth, bearing capacity and permeability.
 - Discusses percolation testing and soils evaluation as methods for determining permeability.
 - Checking the slope and drawing topography.
 - Evaluating water resources – groundwater and surface water, and methods for collecting anecdotal information to determine flood plain elevations.
 - Understanding the local land-use issues.
 - Evaluating social issues related to the site.
- Using Collected Data for DEWATS Decision-making; Case studies, practical exercises, interfacing with other resources.

March 2014 • 156 pages • Paperback

ISBN: 9781780404769

Ebook ISBN: 9781780404776

IWA Members Price: £52.50/US\$94.50/€70.88

Non Members Price: £70.00/US\$126.00/€94.50

Developing Countries

Low Cost Emergency Water Purification Technologies

Authors: Chittaranjan Ray and Ravi Jain



Natural disasters, such as floods, tsunamis, hurricanes, and earthquakes, affect over 226 million people every year. The occurrence of these natural disasters has been increasing every year due to the effect of extreme weather events and higher populations living in areas vulnerable to natural hazards.

Developing a guideline for emergency water treatment becomes even more important as the number of natural events continues to increase. Simple and low cost technologies have been developed to provide ways to treat water, ranging from point of use (POU) treatment to small scale (SS) community treatment. During times of natural disasters, POU and SS technologies offer applicable ways for providing clean and safe water. This guide to emergency water treatment has been developed based on current research, products, and field studies to create an expeditious and easy process for choosing which technology is most appropriate in each emergency situation.

Initial, rapid response for water treatment should have the following characteristics:

- Portable
- Low cost
- Light weight
- Ease to use or requiring minimal training
- Requiring minimal or no external power

A solution for long term response should have the following characteristics:

- Ability to support a community or large population
- Able to purify large volume of water
- Parts that do not require frequent replacements
- Does not require complex training to operate
- Uses easily available power sources

This is a valuable resource for Environmental Engineers, Civil Engineers, Environmental Engineering Technicians and Civil Engineering Technicians

Co-Published with Elsevier

May 2014 • 200 pages • Paperback

ISBN: 9781780406428

IWA Members Price: £27.74/US\$49.93/€37.45

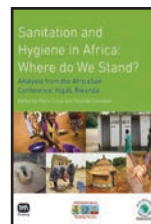
Non Members Price: £36.99/US\$66.58/€49.94

Developing Countries

Sanitation and Hygiene in Africa: Where do We Stand?

Analysis from the AfricaSan Conference, Kigali, Rwanda

Authors: Piers Cross and Yolande Coombes



The Third African Sanitation and Hygiene Conference was held in Kigali, Rwanda in July 2011. It was hosted by the Government of the Republic of Rwanda, and the African Ministers Council on Water. The meeting attracted extraordinary interest: over 1000 people registered and nearly 900 people attended from a total of 67 countries, including representatives

of 42 African countries.

The content of AfricaSan 3 was aligned with the needs of countries as defined in country preparation meetings which took place in advance. AfricaSan

* For Ebook Prices please see page 2

3 looked to address the country needs and to commitments and country action planning. Different groups (ministers, civil society, local government, utilities, and donors) committed to actions to support the goals of AfricaSan. The goal of the AfricaSan process is to support countries to achieve the Millennium Development Goal, (MDG) for sanitation and hygiene.

Sanitation and Hygiene in Africa: Where do We Stand? takes stock of progress made by African countries through the AfricaSan process since 2008 and the progress needed to meet the MDG on sanitation by 2015 and beyond. This book addresses priorities which have been identified by African countries as the key elements which need to be addressed in order to accelerate progress.

- Reviews progress on implementing the eThekweni Declaration to meet the MDG for sanitation and progress generally in Africa. It analyses what is needed to accelerate the rate of access to sanitation in Africa.
- Shares advances in the evidence base on sanitation and hygiene in Africa to be able to assist decision-makers to overcome key blockages in implementing large-scale sanitation and hygiene programs.
- Raises the profile of sanitation and hygiene as a determinant of sustainable development in order to strengthen leadership and advocacy for sustained sanitation and behaviour changes.

This book is essential reading for government staff from Ministries responsible for sanitation, sector stakeholders working in NGOs, CSOs and agencies with a focus on sanitation and hygiene and water and sanitation specialists. It is also suitable for Masters courses in water and sanitation and for researchers and the donor community.

October 2013 • 256 pages • Paperback

ISBN: 9781780405414

Ebook ISBN: 9781780405421

IWA Members Price: £66.75/US\$120.15/€90.11

Non Members Price: £89.00/US\$160.20/€120.15

Developing Countries

Southeast Asian Water Environment 5

Editors: K. Yamamoto, H. Furumai, H. Katayama, C. Chiemchaisri, P. Udomphon, C. Visvanathan, and H. Satoh



The most important articles presented at the Eighth and Ninth International Symposiums on Southeast Asian Water Environment have been selected for this book. It covers surface and ground water monitoring and management, management in water supply, technologies for water and wastewater treatment, and emerging issues such as

micropollutants and the effects of climate change on water issues. This publication is the result of building an academic network among researchers of related fields from different regions to exchange information.

This book is an invaluable source of information for researchers, policy makers, NGOs, NPOs, and those who are concerned with achieving global sustainability within the water environment in developing regions.

This is the fifth volume in the series of books on the Southeast Asian water environment.

Contents:

- Groundwater Quality and Its Management
- Water Environment and Management
- Water Supply Management and Technology
- Wastewater Treatment Technologies
- Micropollutants
- Climate Change and Water

This title belongs to Southeast Asian Water Environment Series

December 2013 • 220 pages • Paperback

ISBN: 9781780404950

Ebook ISBN: 9781780404967

IWA Members Price: £71.25/US\$128.25/€96.19

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The books in the Southeast Asian Water Environment Series present the most important articles from the International Symposiums on Southeast Asian Water Environment organized by the Research Center for Water Environment Technology and Dept. of Urban Engineering, University of Tokyo.

Southeast Asian Water Environment 5

K. Yamamoto, H. Furumai, H. Katayama, C. Chiemchaisri, P. Udomphon, C. Visvanathan, H. Satoh

Publication Date: November 2013 -

ISBN - 9781780404950

Southeast Asian Water Environment 4

Kensuke Fukushi, Futoshi Kurisu, Kumiko Oguma, Hiroaki Furumai, and Psyche Fontanos

Publication Date: September 2010

ISBN - 9781843393627

Southeast Asian Water Environment

Satoshi Takizawa, Futoshi Kurisu and Hiroyasu Satoh

Publication Date: June 2009

ISBN - 9781843392767

Southeast Asian Water Environment 2

H Furumai, F Kurisu, H Katayama, H Satoh, S Ohgaki, NC Thanh

Publication Date: March 2007

ISBN - 9781843391241

Southeast Asian Water Environment 1

S Ohgaki, K Fukushi, H Katayama, S Takizawa, C Polprasert

Publication Date: December 2005

ISBN - 9781843390985

Drinking Water Quality

Generic Management Plan for Nitrosamines in Drinking Water

Authors: Gayle Newcombe, Jim Morran, Julie Culbert, Con Kapralos



The purpose of the Generic Management Plan for Nitrosamines in Drinking Water is to provide background information on the group of organic contaminants known as nitrosamines, as well as help water quality managers and treatment plant managers and operators in three main aspects of nitrosamine management, namely:

- To identify the risks associated with their systems regarding potential nitrosamine contamination
- To implement monitoring procedures to quantify the risk
- To implement operational measures to offset the risks.

This is a companion document to the Guidance manual for the minimisation of nitrosamines in drinking and recycled water. The latest edition of the guidelines has been published and a guideline value of 100 ng/L for NDMA has since been promulgated. A comprehensive survey of drinking water systems in Australia undertaken as part of project 1018 showed that the majority have levels of NDMA well below the guideline value. It also helped clarify and validate the risks and supported the suggested mitigation measures outlined in this document that can be applied for the production of drinking water that continuously complies with the guidelines.

This book is co-published with WaterRA

February 2014 • 15 pages

Ebook only

Ebook ISBN: 9781780406244

IWA Members Price: £15.00/US\$27.00/€20.25

Non Members Price: £20.00/US\$36.00/€27.00

Drinking Water Quality

Best Practice Guide on Managing Metals and Related Substances in Small Water Supplies

Authors: Matthew Bower and Colin Hayes



The management of small water supplies presents a unique challenge globally, in countries at all stages of development. A combination of lack of resources, limited understanding of the risks and poor expertise means that individuals and communities may face serious health risks from these supplies. This is not only due to

microbiological contamination, but also from contamination by metals, either due to natural or man-made contamination of the source water or through leaching from plumbing materials due to inadequate conditioning and corrosion inhibition and use of inappropriate materials.

This Best Practice Guide aims to share best practice and experience from around the world on a practical level. It looks at general issues relating to small supplies and ways of managing these, adopting a Water Safety Plan approach to deliver sound and lasting improvements to quality. Management techniques and treatment relating to specific metals will be covered, from a theoretical and practical perspective, to deliver a publication that will act as an authoritative guide for all those faced with the problem of ensuring the quality of a

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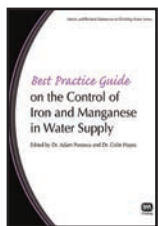
small water supply. Varied case-studies will help to illustrate issues and ways in which they have been resolved.

This title belongs to Best Practice Guides on Metals and Related Substances in Drinking Water
September 2014 • 125 pages • Paperback
ISBN: 9781780406398
Ebook ISBN: 9781780406404
IWA Members Price: £52.50/US\$94.50/€70.88
Non Members Price: £70.00/US\$126.00/€94.50

Drinking Water Quality

Best Practice Guide on the Control of Iron and Manganese in Water Supply

Authors: Adam Postawa and Colin Hayes



This Best Practice Guide on the Control of Iron and Manganese in Water Supply is one of a series produced by the International Water Association's Specialist Group on Metals and Related Substances in Drinking Water. Iron and manganese are often found in soft upland water sources associated with natural organic matter and are also commonly found in the groundwater from confined and unconfined aquifers.

The presence of iron and manganese in water is one of the most frequent reasons for customers' complaint due to aesthetic issues (yellow, brown and black or stains on laundry and plumbing fixtures). These two metals can be removed fairly readily by physico-chemical treatment. The municipal treatment systems deployed derive benefit from their larger scale, particularly in relation to control, but the processes used are less suitable for the numerous small supplies that are the most common water supplies throughout Europe, especially in rural areas. One important source of iron in drinking water is from old corroded cast-iron water mains, historically the material used most commonly in supply networks. Replacement and refurbishment is very expensive and the major challenge is how best to prioritize available expenditure.

The purpose for this Best Practice Guide on the Control of Iron and Manganese in Water Supply is to give readers the broad view of a problem based on state-of-the-art compilation of the range of scientific, engineering, regulatory and operational issues concerned with the control of iron and manganese in drinking water.

The Guide is of interest to water utility practitioners, health agencies and policy makers, as well as students on civil engineering and environmental engineering courses.

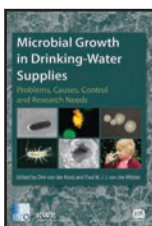
This title belongs to Best Practice Guides on Metals and Related Substances in Drinking Water
August 2013 • 96 pages • Paperback
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Ebook ISBN: 9781780400747
IWA Members Price: £52.50/US\$94.50/€70.88
Non Members Price: £70.00/US\$126.00/€94.50
Student Price: £42.00/US\$75.60/€56.70

Drinking Water Quality

Microbial Growth in Drinking Water Distribution Systems

Problems, Causes, Prevention and Research Needs

Editors: Dirk van der Kooij and Paul W.J.J. van der Wielen



Maintaining the microbial quality in distribution systems and connected installations remains a challenge for the water supply companies all over the world, despite many years of research. This book identifies the main concerns and knowledge gaps related to regrowth and stimulate cooperation in future research.

Microbial Growth in Drinking Water Distribution Systems provides an overview of the regrowth issue in different countries and the water quality problems related to regrowth. The book assesses the causes of regrowth in drinking water and the prevention of regrowth by water treatment and distribution.

Contents:

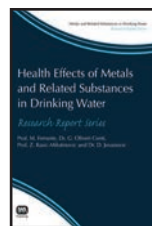
- *General Introduction*, D. van der Kooij and P.W.J.J. van der Wielen
- *Measurement of Biostability and Impacts on Water Treatment*, M. W. LeChevallier
- *Removal of Organic Matter in Water Treatment Systems - Case Studies in Japan*, Y. Watanabe
- *Organic Matter, Pipe Materials, Disinfectants and Biofilms in Distribution Systems*, A. K. Camper
- *Safe Distribution without a Disinfectant Residual*, G.J. Medema, P. Smeets, M. Blokker and J.H.M. van Lieverloo
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- *Opportunistic Pathogens in Drinking Water in the Netherlands*, P. W.J.J. van der Wielen, Ronald Italiaander, Bart A. Wullings, Leo Heijnen and Dick van der Kooij
- *The Last Meters Before the Tap: Where Drinking Water Quality is at Risk*, Hans Curt Fleming, Bernd Bendinger, Martin Exner, Jürgen Gebel, Thomas Kistemann, Gabriela Schaule, Ulrich Szwezyk, Jost Wingender
- *Invertebrates in Drinking-water Systems*, J. H.M van Lieverloo, W. Hoogenboezem, G. Veenendaal and D. van der Kooij
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- *Optimization of Design and Operation of Distribution Systems to Preserve Water Quality and Maintain Customer Satisfaction*, Jan H.G. Vreeburg
- *Research Needs*, Dick van der Kooij and Paul. W.J.J. van der Wielen

September 2013 • 500 pages • Paperback
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Ebook ISBN: 9781780400419
IWA Members Price: £96.75/US\$174.15/€130.61
Non Members Price: £129.00/US\$232.20/€174.15

Drinking Water Quality

Health Effects of Metals and Related Substances in Drinking Water

Authors: M. Ferrante, G. Oliveri Conti, Z. Rasic-Milutinovic, and D. Jovanovic



Metals are inorganic substances that occur naturally in geological formations. Naturally occurring metals are dissolved in water when it comes into contact with rock or soil material. Some metals are essential for life and are naturally available in our food and water. Trace amounts of metals are common in water, and these are normally not

harmful to your health. In fact, some metals are essential to sustain life. Calcium, magnesium, potassium, and sodium must be present for normal body functions. Cobalt, copper, iron, manganese, molybdenum, selenium, and zinc are needed.

However many of the metals and metalloids that are found in drinking water can have an adverse impact on human health. This book provides a state-of-the-art review of the health implications of metals and metalloids in drinking water and is a key reference in the risk assessment and management of water supplies. The increased urbanization and increased water demand in industrial areas has amplified the metals problem in groundwater sources. In fact the contamination of our water resources by poisonous metals occurs largely due to human activity. These activities include industrial processes, such as electronics industry and mining activity, agricultural activities, and the dumping of wastes in landfills.

The International standard references concerning water resources are various and, though they are based on WHO guidelines, they are extremely diversified in relation to local issues and emerging problems. This report pulls the information together to provide an important reference source.

Contents:

- Metals and Drinking Water
- Metals and Water Resources
- Metals and Health
- Toxic Metals
- Mutagenic and Genotoxic Metals
- Carcinogenic Metals
- Magnesium (mg)
- Calcium (ca)
- Silicium (si)
- Barium (ba)
- Lithium (li)
- Sodium (na)
- Potassium (k)
- Beryllium (be)
- Cadmium (cd)
- Lead (pb)
- Mercury (hg)
- Arsenic (as)
- Aluminum (al)
- Zinc (zn)
- Nickel (ni)
- Copper (cu)
- Iron (fe)
- Silver (ag)
- Vanadium (v)
- Manganese (mn)
- Chromium (cr)
- Cobalt (co)
- Tin (sn)
- Strontium (sr)
- Selenium (se)
- Bismuth (bi)
- Tungsten (w)
- Uranium (u) and Depleted Uranium (du)
- Radon (ra)
- Metals and Disinfection Treatment

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- Metals Regulations and Guidelines to some Countries

This title belongs to Metals and Related Substances in Drinking Water: Research Report Series

November 2013 • 126 pages • Paperback

ISBN: 9781780405971

Ebook ISBN: 9781780405988

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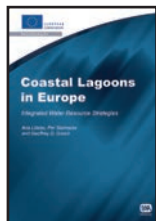
Non Members Price: £110.00/US\$198.00/€148.50

Environment

Coastal Lagoons in Europe

Integrated Water Resource Strategies

Authors: Ana Lillebo, Per Stalnacke and Geoffrey D. Gooch



Lagoons represent nearly 13% of the shoreline globally and around 5% in Europe. Coastal lagoons are shallow water bodies separated from the ocean by a barrier (e.g., narrow spit), connected at least intermittently to the ocean by one or more restricted inlets, and usually geographically oriented parallel to the shoreline.

Coastal lagoons are flexible and usually able to cope with environmental change, yet nowadays they are under threat. This is partly due to climate change impacts (for example, sea-level rise and hydro-meteorological extreme events) but also due to more direct human activities and pressures.

The book focuses on addressing these challenges through integrated management strategies seen in a land-sea and science-stakeholder-policy perspective. Pan-European management challenges are seen from the context of the perspectives of Policy, Environment and Modelling. Four case study lagoons in different geographical locations in Europe provide examples of some of the practical experiences and results around these challenges. Possible impacts on drainage basins and lagoons are introduced through integrated scenarios which were developed through a multi-science and land-lagoon science perspective combined with interactions and contributions from stakeholders and citizens.

Issues around climate change impacts on environmental conditions in both drainage basins and lagoons are also included.

The book derives from a collaborative EC-funded project entitled Integrated Water Resources and Coastal Zone Management in European Lagoons in the Context of Climate Change comprising nine partner institutes with a wide diversity in the scientific disciplines covered.

Contents:

- Challenges in the Policy-Environment-Modelling Management Context
- The LAGOONS Project in a Management Challenge Context
- The challenges in Context of Science-Policy Interface
- The Use of Modelling Tools to Assess River Basin Environmental Impacts
- The challenges to Improve Integrated Catchment-to-Coast Modelling in the Context of Climate Change
- Socio-Economical and Environmental Scenarios for 2030
- Engagement of Local Communities and Integrated Scenarios
- Catchment-to-Coast Integrated Scenarios
- Lagoons Impact Integrated Scenarios
- Integrated Scenarios
- The Scenarios Under the Context of Climate Change (2030 and beyond)
- Lagoons Response Using Key Bio-Indicators & Implications on Ecological Status

- Catchment-to-Coast Climate-Change Impact Scenarios

- Coastal Areas Management Perspective

- Marine Ecosystem Services

- Recommendations & Strategies

- pan-European View for Coastal Lagoons

- Case Studies

- Facts and Figures: Ria de Aveiro (Portugal), Mar Menor (Spain), Vistula Lagoon (Poland/Russia) and Tylgulskiy lagoon (Ukrain)

This title belongs to European Water Research Series

January 2015 • 250 pages • Paperback

ISBN: 9781780406282

Ebook ISBN: 9781780406299

IWA Members Price: £71.25/US\$128.25/€96.19

Non Members Price: £95.00/US\$171.00/€128.25

Environment

Greenhouse Gas Emission and Mitigation in Municipal Wastewater Treatment Plants

Authors: Xinmin Zhan, Zhenhu Hu and Guangxue Wu



The wide adoption of wastewater treatment processes and use of novel technologies for improvement of nitrogen and phosphorus removals from wastewater have been introduced to meet stringent discharge standards. Municipal wastewater treatment plants (MWWTPs) are one of major contributors to the increase in the

global GHG emissions and therefore it is necessary to carry out intensive studies on quantification, assessment and characterization of GHG emissions in wastewater treatment plants, on the life cycle assessment from GHG emission prospective, and on the GHG mitigation strategies.

Greenhouse Gas Emission and Mitigation in Municipal Wastewater Treatment Plants summarizes the recent development in studies of greenhouse gas emissions (N₂O, CH₄ and CO₂) in MWWTPs. It also summarizes the development in life cycle assessment on GHG emissions in consideration of the energy usage in MWWTPs. The strategies in mitigating GHG emissions are discussed and the book provides an overview for researchers, students, water professionals and policy makers on GHG emission and mitigation in MWWTPs and industrial wastewater treatment processes.

The book is a valuable resource; for undergraduate and postgraduate students in the water, climate, and energy areas; research in the relevant areas; professional reference by water professionals, government policy makers, and research institutes.

May 2015 • 150 pages • Paperback

ISBN: 9781780406305

Ebook ISBN: 9781780406312

IWA Members Price: £66.75/US\$120.15/€90.11

Non Members Price: £89.00/US\$160.20/€120.15

Environment

Water and Climate Change Adaptation

Policies to Navigate Uncharted Water

Author: Organisation for Economic Co-Operation and Development (OECD)



This publication sets out the challenge for freshwater in a changing climate and provides policy guidance on how to navigate this new "waterscape". It examines the range and complexity of possible changes in the water cycle and the challenges of making practical, on-site adaptation decisions for water. It offers policymakers a

risk-based framework and guidance to "know", "cap" and "manage" water risks in order to provide flexibility and improve decisions despite the lack of reliable predictions. It draws insights from a stock take of current policy efforts to adapt water systems across all 34 member countries and the European Union, including water-related aspects of National Adaptation Plans and Strategies, specific policy measures, and financing programmes. Finally, the report examines the use of economic instruments to promote adaptation (e.g. insurance schemes, water markets and banks, water pricing), incentives for 'green' infrastructure and ecosystem-based approaches, and financing issues.

Contents:

- A changing and uncertain future for freshwater
- A risk-based approach to adapting water systems to climate change
- Climate change adaptation for water systems in OECD countries
- Improving flexibility: Adaptive governance, policy options and financing approaches
- Using hindsight to guide the future: Concluding remarks

This title belongs to OECD Report Series

March 2014 • 102 pages • Paperback

ISBN: 9781780405742

Ebook ISBN: 9781780405759

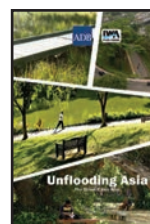
IWA Members Price: £20.25/US\$36.45/€27.34

Non Members Price: £27.00/US\$48.60/€36.45

Environment

Unflooding Asia the Green Cities Way

Authors: Zoran Vojinovic and Jingmin Huang



A continuing increase in disasters triggered by floods occurs almost daily even though our technological capabilities have grown rapidly and global economic growth per capita has doubled. This paradoxical situation proves that our earlier ways of thinking are inadequate and that we must shift our way of thinking and working. It has

become obvious that most flood-related disasters, although commonly referred to as natural disasters, are not the result of nature-related processes alone. Some of the early efforts in dealing with floods and flood-related disasters were only concerned with the construction of engineering structures (e.g., levees, floodwalls, dams, embankments, storage basins, diversions, etc.) without significant consideration of aspects which are nowadays regarded as equally important, if not more important. There is a great deal of natural, social and technological interactions that shape the vulnerability to floods. Realizing that flood risk can hardly ever be completely eliminated, the traditional 'flood

* For Ebook Prices please see page 2

defence' culture has been replaced with the culture of learning how to live under flood risk and how to better respond to it. This renders purely engineering solutions inadequate.

Can the threats of more flood-related disasters provide an impetus to shift our mind-set towards an approach that favours not only sound technological innovations but one that also addresses the social, cultural, and wider ecological aspects of dealing with floods?

In this illustrated book, the Asian Development Bank (ADB) seeks to introduce a holistic thinking in dealing with urban floods by adopting the green cities development approach. Green cities development is a holistic approach which promotes multipurpose (or multifunctional) solutions that are not only technologically and economically efficient, but which are also ecologically sustainable and socially just.

April 2014 • 72 pages • Hardback

ISBN: 9781780406152

Ebook ISBN: 9781780406169

IWA Members Price: £51.75/US\$93.15/€69.86

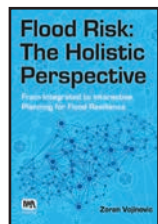
Non Members Price: £69.00/US\$124.20/€93.15

Environment

Flood Risk: The Holistic Perspective

From Integrated to Interactive Planning for Flood Resilience

Author: Zoran Vojinovic



According to the International Disaster Database (EM-DAT), over the last seventy years, floods have shown the fastest rate of increase relative to any other type of disasters. Devastation due to these events occurs almost daily. Even though our technological capabilities for dealing with floods have advanced rapidly over the same period, and while global

economic growth per capita has doubled, flood events have become ever more disastrous. Does this mean that our technological developments have advanced independently from the social and wider ecological needs? Flood Risk: The Holistic Perspective is a direct response to this question and it argues that this paradoxical situation is a result from our narrow and fragmented perception of reality which has been characteristic of our academic disciplines and government agencies. It suggests that the way forward can be found only if we broaden our view and learn how the natural or social phenomena can provoke a response in a society, or a social group, which in turn can trigger the technical developments, and so on, again and again, in what has the potential to become a network of interactions and relationships through positive feedback (or coevolving) cycles.

The holistic perspective however may raise the following question: If everything is connected to everything else, how can we ever hope to understand anything? Our response draws from the understandings brought by complexity theory where individual elements coevolve together both in development and application. This recognition opens a new analysis which goes beyond the direct objects or actors of concern (risk forecasting, early warning, land-use planning technology and systems for example), and into the relationships between them. The book suggests that our initial response to this and many other challenges is to change our perception from a disciplinary and defensive one to a progressive (or transcendental) and transdisciplinary, i.e., the one that turns challenges into the possibilities that can re-shape our future. The book is structured in eight chapters. Chapter 1 provides exposure to the complexity of flood-related issues and illustrates diversity of multiple points of view. Chapter 2 elaborates on the history of holistic thinking with connection to the flood resilience process. Chapter 3 discusses the holistic risk governance approach which progresses

beyond the integrated urban flood management. Chapter 4 describes the Green Cities Initiative, an initiative which is essentially holistic in its nature as it aims to improve transport, energy efficiency, and industrial metabolism including water supply and distribution as well as drainage and sewerage services through the holistic lens of interactions between different sectors. Chapter 5 discusses various risk assessment practices and it concludes that any practice that omits social, ethical and wider ecological points of view will be severely restricted in its scope and its reach. Chapter 6 describes the root causes of floods in the Pasig-Marikina River Basin in Metro Manila, Philippines. Chapter 7 reflects upon the key issues and challenges from 2011 Thailand floods. Finally, Chapter 8 presents some of the key aspects concerning urban stormwater management practice in Beijing, China. *This title belongs to Urban Hydroinformatics Series*

July 2014 • 250 pages • Hardback

ISBN: 9781780405322

Ebook ISBN: 9781780405339

IWA Members Price: £74.25/US\$133.65/€100.24

Non Members Price: £99.00/US\$178.20/€133.65

Environment

Reservoir Eutrophication: Preventive Management

An Applied Example of Integrated Basin Management Interdisciplinary Research

Authors: Charles Carneiro, Cleverson Vitorio

Andreoli, Cynara de Lourdes da Nobrega Cunha,

Eduardo F Gobbi



The overall objective of *Reservoir Eutrophication: Preventive Management* is to present the environmental and anthropogenic factors associated with the process of eutrophication and algal blooms in the Rio Verde reservoir and propose lake use and management technologies in order to minimize the problem.

Eutrophication process in Rio Verde reservoir with the occurrence of intense algal blooms is a consequence of the interconnection of different climatological, hydrological, morphological, physico-chemical and biological factors, which occur not only in the watershed but also in the reservoir. *Reservoir Eutrophication: Preventive Management* compiles the information gathered from the development of a broad research program in Rio Verde watershed, from 2008 until 2010. Rio Verde reservoir, which was built in 1976, is located in the Metropolitan Region of Curitiba, capital of the state of Paran in South Brazil. This reservoir is mainly used for supplying water to one of PETROBRAS Refinery. However, the reservoir is to be used for supplying drinking water to the population and that is why better understanding this system dynamics is a great concern.

The book is the result of an interdisciplinary research program, which has involved more than 150 researchers, with the aim of defining a watershed management preventive system in order to prevent eutrophication processes. This way, the book combines academic rigor with practical applicability and is of interest for both researchers and technologists working in watershed management. *Reservoir Eutrophication: Preventive Management* is of interest to researchers and technologists that wish to examine specific characteristics of tropical climates. It is of specific interest to developing countries and for researchers interested in knowing the developed methodology adapted for temperate conditions.

Contents:

- Eutrophication and Structure of Studies
- Watershed General Description

- Database for Appraisal and Environmental Analysis of Rio Verde Watershed - the Environment Digital Model
- Geology, Pedology and Use Aptitude of Land
- Natural Plant Cover and Land Use - Mapping, Description and Appraisal
- Land Potential and Emerging Fragility
- Rio Verde Reservoir Water Supply Capacity
- Reservoir Ionic and Particulate Systems Description
- Artificial Reservoirs Basins Pollutant Potential Assessment - Concentrations and Loads
- Sediment Analysis
- Hydrodynamic and Transport in Rio Verde Reservoir
- Phytoplankton Ecology in Rio Verde Reservoir
- Zooplankton
- Ichthyofauna
- Participatory Methodologies Applied in Rio Verde Watershed, Paran
- Watershed Socioeconomic Aspects
- Fishing Appraisal
- Agricultural Activities
- Rural Sanitation
- The Voice of the Population of Cristina Colony: Study on Risk Perception
- Environmental Education
- Advanced Oxidation Processes
- Environmental Zoning of Rio Verde Environmental Protection Area
- Rio Verde Watershed Preventive Action Plan

July 2014 • 515 pages • Paperback

ISBN: 9781780406473

Ebook ISBN: 9781780406480

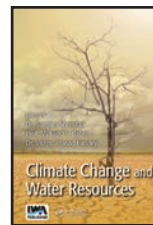
IWA Members Price: £112.50/US\$202.50/€151.88

Non Members Price: £150.00/US\$270.00/€202.50

Environment

Climate Change and Water Resources

Authors: Sangam Shrestha, Mukand S. Babel, Vishnu Prasad Pandey



Climate Change and Water Resources is written by expert authors from around the world and examines the full scope of climate change science, the impacts on the water sector, and all available mitigation and adaptation strategies. Each chapter provides an analysis of the issues raised and is supported by appropriate

examples and case studies.

- Provides modelling tools for climate change projections and the impact on the water sector
 - Covers fundamental issues in water resources management
 - Examines current policies, laws, and international debate on climate change, with regard to water availability
 - Balances theoretical background with numerous practical examples and case studies from around the world
 - Includes leading experts from around the world
- Contents:
- Climate Change Science and Climate Information Tools
 - Climate System and Hydrological Cycle
 - Climate Variability and Climate Change
 - Climate Information Tools and their Application for Climate Change Impact and Vulnerability Assessment
 - Climate Change Impacts
 - Impact of Climate Change on Water Resources Sector
 - Environmental Implications of Climate Change

* For Ebook Prices please see page 2

- Economics and Social Implications of Climate Change
- Adaptation to Climate Change
- Managing Water Under Current Climatic Variability
- Climate Change Adaptation and Mitigation Options and Strategies
- Trans-Boundary River Systems, International Water Laws, Water Conventions, Water Treaties and Climate Change
- Global, Regional and State Efforts to Address Climate Change Relating to Water Resources
- Case Studies

This title is co-published with CRC Press.

July 2014 • 376 pages • Hardback

ISBN: 9781780405902

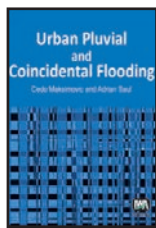
IWA Members Price: £54.75/US\$98.55/€73.91

Non Members Price: £72.99/US\$131.38/€98.54

Environment

Urban Pluvial and Coincidental Flooding

Editors: Čedo Maksimovic and Adrian Saul



Pluvial flooding is defined as flooding that results from rainfall-generated overland flow, before the runoff enters any watercourse or sewer. It is usually associated with high intensity rainfall events (typically >30mm/h) but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen, developed or otherwise has low permeability resulting in overland flow and ponding in depressions in the topography. Urban pluvial flooding arises from high intensity 'extreme' rainfall events. In such situations urban underground sewerage/drainage systems and surface watercourses may be completely overwhelmed. This volume deals with the many aspects involved with pluvial and coincidental flooding. It investigates causes and consequences. In order to reduce the impact of this type of flood, it presents various techniques to anticipate and forecast floods. Moreover, it presents way to reduce the impact and consequences, both short and long term. Case studies and instructions for training and education are included as well. The chapters were contributed by experts on the subject that have been active in flood management and flood impact reduction in many countries.

- presents advanced techniques for urban flood date collection, processing, modelling and forecasting
- contains contributions on water quality, health impact, vulnerability and socio-economic impact
- includes case studies and a part on education and training

Contents:

- Introduction – Urban Flooding – A Global Issue
- Types of Flooding and their Coincidence/ Interaction with Pluvial Flooding
- Data Needs, Acquisition and Data Processing for Urban Flood Modelling and Management
- Conventional Modelling of Floods and Interactions
- Prediction and RTC (Real Time Control) of Urban Pluvial Floods
- Water Quality and Health Issues in Urban Flooding
- Urban Pluvial Flood Vulnerability Resilience to Flooding and Urban Pluvial Flood Risk Assessment
- Towards Sustainable Solutions for the Future
- Full Scale Modelling and Implementation Issues – Practitioner's (modeller's) Experience and Views
- Case Studies

- Socio-Economical Interactions
- Education and Training Issues
- After the Flood Recovery
- Conclusions and the Way Forward
- Annex (on CD-ROM)

This title is co-published with CRC Press.

August 2014 • 416 pages • Hardback

ISBN: 9781780405544

IWA Members Price: £49.98/US\$89.96/€67.47

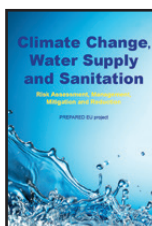
Non Members Price: £66.64/US\$119.95/€89.96

Environment

Climate Change, Water Supply and Sanitation

Risk Assessment, Management, Mitigation and Reduction

Editors: Gesche Grützmaier and Adriana Hulsmann (PREPARED EU project)



Climate Change, Water Supply and Sanitation: Risk Assessment, Management, Mitigation and Reduction pulls together the final outcomes and recommendations from the PREPARED project that originated from the WSSTP (Water Supply and Sanitation Technology Platform) thematic working group Sustainable

Water Management in Urban areas. The PREPARED project confirms and demonstrates the technological preparedness of water supply and sanitation systems of ten cities in Europe and also Melbourne and Seattle to adapt to the expected impacts of climate change. It shows that the water supply and sanitation systems of cities and their catchments can adapt and be resilient to the challenges of climate change; and that the technological, managerial and policy adaptation of these PREPARED cities can be cost effective, carbon efficient and exportable to other urban areas within Europe and the rest of the world.

The book:

- addresses issues related to the management of water, waste water and storm water that are impacted by climate change both in quantitative and qualitative aspects.
- addresses many of the Pan-European problems and optimises, tests and implements adaptive solutions that contribute towards an integrated and coordinated approach.
- develops adaptation strategies, considering and weighting the mitigation side of solutions to minimise our carbon- and water footprint.
- improves resilience to deal with the impact of climate change.
- contributes to the development of the knowledge base where it concerns the water supply and sanitation sector.

Contents:

- Introduction
- Integrated Water Resource Management and Investigation of New Water Resources
- Adaptation of Water Supply Systems
- Storm Water Management
- Adaptation of Sanitation Systems
- Adaptation of Operation and Management

September 2014 • 208 pages • Paperback

ISBN: 9781780404998

Ebook ISBN: 9781780405001

IWA Members Price: £63.75/US\$114.75/€86.06

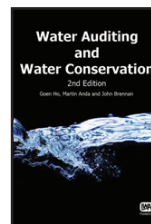
Non Members Price: £85.00/US\$153.00/€114.75

Environment

Water Auditing and Water Conservation

2nd Edition

Authors: Goen Ho, Martin Anda and John Brennan



Water auditing is a method of quantifying water flows and quality in simple or complex systems, with a view to reducing water usage and often saving money on otherwise unnecessary water use. There is an increasing awareness around the globe of the centrality of water to our lives. This awareness crosses political and

social boundaries. In many places people have difficult access to drinking water. Often it is polluted. Water auditing is a mechanism for conserving water, which will grow in significance in the future as demand for water increases.

There is a strong emphasis on principles, and on the relationship of water auditing with associated activities like environmental auditing, environmental management systems, resource conservation, flow measurement, water quality and legal frameworks.

Field experience from professionals is integrated with the theoretical material and the book outlines the processes and issues at stake in a variety of typical applications (arenas) in which water auditing are conducted. These include buildings (interior and exterior), landscape, external commercial applications requiring irrigation, aquatic centres, material transport by water, cooling systems and non-metal manufacturing (e.g. paper manufacture).

This new edition is updated with recent information and particularly examines the impact of climate change and revises material throughout on environmental auditing. The relationship between water accounting and financial accounting is introduced and advances in ultrasonic measurement, smart meters, wireless data transmission and remote monitoring are added. Changes and trends in legislation for water conservation and water reuse are included and also the use of smart meters to interpret water consumption data including leak detection. Three of the chapters are being re-organised and integrated under a wider umbrella of water conservation in mining and mineral processing; Gold mining is now included as an arena.

There are brand new chapters on water conservation in oil refining and on fertiliser manufacture.

Water Auditing and Water Conservation, 2nd Edition is an invaluable resource for the prospective water auditor providing knowledge of water auditing to apply to many situations and to make recommendations for water conservation measures. It is aimed at undergraduate and graduate students in environmental engineering and science programs, water auditors and professionals in the water field, especially those motivated by quantitative water conservation needs.

Contents:

- Introduction to Water Conservation and Auditing
- The Relationship Between Water Auditing and Environmental Auditing
- Process: Audit Preparation and Conducting the Audit
- Process: the Water Management Strategy
- Process: the Water Audit Report
- Water Auditing and Environmental Auditing Revisited
- Instrumentation and Flow Measurement
- Water Quality
- Environmental Legislation: Impact on Water
- Arena: Commercial Water use Inside Buildings
- Arena: External Commercial Water Use
- Resources: Domestic and Small Commercial

* For Ebook Prices please see page 2

Wastewater Reuse

- Arena: Municipal and Non-Aquatic Recreational Water use
- Arena: Aquatic Centres
- Water Conservation in Isolated Communities
- Groundwater Balance in Mines
- Contaminated Water Systems
- Arena: Material Transport - Water Use
- Arena: Water Use in Cooling Systems
- Arena: Water in Non-Metal Industries
- Arena: Water in the Food Industry
- Conservation in Oil Refining
- Conservation in Fertiliser Manufacture
- Resources: Environmental Water Use and Water Resources Management

October 2014 • 336 pages • Paperback

ISBN: 9781780405193

Ebook ISBN: 9781780405209

IWA Members Price: £74.25/US\$133.65/€100.24

Non Members Price: £99.00/US\$178.20/€133.65

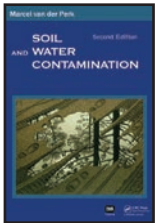
Student Price: £50.00/US\$90.00/€67.50

Environment

Soil and Water Contamination

2nd Edition

Author: Marcel van der Perk



Soil and Water Contamination, 2nd Edition provides an overview of transport and fate processes of environmental contamination, in such a way that the reader can both understand and predict contaminant patterns in soil, groundwater, and surface water. In contrast to most existing textbooks, soil and water

pollution are treated as integrated environmental matter from a geographical/spatial perspective at point, local, regional, and catchment scales. The spatial approach links up with recent developments and trends in environmental legislation and other integrated catchment management initiatives. This new edition contains valuable material on pesticides and pharmaceutical contaminants and a greater number of exercises, case studies and examples. This textbook describes the environmental behaviour of major contaminant groups, including nutrients, metals, radionuclides, and organic pollutants, which makes it a valuable reference for quick evaluation of the chemical behaviour of pollutants in the environment.

Soil and Water Contamination, 2nd Edition is intended for undergraduate and graduate students in Earth and Environmental Sciences, who understand the fundamentals of chemistry

- Contents:
- Introduction to Soil and Water Contamination
 - Source, Role, and Behaviour of Substances in Soil and Water
 - Transport and Fate Processes of Substances in Soil and Water
 - Patterns of Substances in Soil and Water.

Co-Published with CRC Press

November 2013 • 450 pages • Hardback

ISBN: 9781780404912

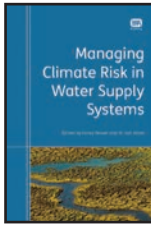
IWA Members Price: £37.50/US\$67.50/€50.63

Non Members Price: £49.99/US\$89.98/€67.49

Environment

Managing Climate Risk in Water Supply Systems

Editors: Casey Brown and M. Neil Ward



Water resources systems provide multiple services and, if managed properly, can contribute significantly to social well-being and economic growth. However, extreme or unexpected hydroclimatic conditions, such as droughts and floods, can adversely affect or even completely interrupt these services. This manual seeks to

provide knowledge, resources and techniques for water resources professionals to manage the risks and opportunities arising from hydroclimatic variability and change.

Managing Climate Risk in Water Supply Systems provides materials and tools designed to empower technical professionals to better understand the key issues in water supply systems. These materials are part of a suite of resources that are developed to share climate risk knowledge related to a range of sectors and climate-related problems.

The text motivates students by providing practical exercises and it stimulates readers or workshop participants to consider options and analyses that highlight opportunities for better management in the water systems in which they are stakeholders.

Managing Climate Risk in Water Supply Systems provides a hands-on approach to learning key concepts in hydrology and climate science as they relate to climate risk management in water supply systems.

The primary audience is technical professionals in water resources management and provides a practical approach to training.

Contents:

- Introduction
- Water Resources Analysis and Management
- Climate Variability and Hydrologic Predictability
- Climate Predictability and Forecasts
- Climate Risk Management in the Water Sector
- Techniques for Using Climate Information in Planning and Operations
- Appendices: Planning and Decision Making
- Assessing Water Demand

February 2013 • 168 pages • Paperback

ISBN: 9781780400587

Ebook ISBN: 9781780400594

IWA Members Price: £59.25/US\$106.65/€79.99

Non Members Price: £79.00/US\$142.20/€106.65

Health Related Water Issues

Best Practice Guide on the Control of Arsenic in Drinking Water

Editors: Prosun Bhattacharya, Dragana Jovanovic and David Polya



This *Best Practice Guide on the Control of Arsenic in Drinking Water* arises from the knowledge collected by the European Research Network COST Action 637 involving 27 European countries and the USA. Besides the large number of important papers, reports and reviews already available on various aspects of arsenic occurrence in

environment, water and food and related human exposure, this book fills a gap in the field concerning assessment of risks, implications, challenges, and actions required by public health managers. It focuses only on the key aspects of risk assessment, management and communication

relevant to higher levels of arsenic in drinking water, which are geological factors, the extent of arsenic occurrence, total exposure of arsenic and the role of drinking water, including regulatory aspects as well as technical (treatment) issues. The *Best Practice Guide on the Control of Arsenic in Drinking Water* tries to raise public awareness on this subject, which seems to be low and risks are being underestimated in a number of regions. This is especially valid for Europe although less for other regions which are typically more contaminated with arsenic.

The referred practices conform to the recommendations of the World Health Organisation (WHO), the European Food Safety Authority (EFSA) and the U.S. Environmental Protection Agency (EPA). It is a useful guide for drinking water suppliers, experts of municipalities, public health authorities, drinking water regulators and non-governmental organisations.

This title belongs to Best Practice Guides on Metals and Related Substances in Drinking Water

September 2014 • 120 pages • Paperback

ISBN: 9781843393856

Ebook ISBN: 9781780404929

IWA Members Price: £45.00/US\$81.00/€60.75

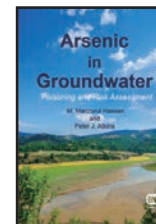
Non IWA Members Price: £60.00/US\$108.00/€81.00

Student Price: £37.50/US\$67.50/€50.63

Health Related Water Issues

Arsenic in Groundwater: Poisoning and Risk Assessment

Authors: M. Manzurul Hassan, and Peter J. Atkins



The main focus of *Arsenic in Groundwater: Poisoning and Risk Assessment* is to explore the untold stories of groundwater arsenic in view of its poisonous nature for human health, social implications, exposure and risk assessment, worldwide concentrations with space-time dimension, micro level GIS application in spatial arsenic

concentration, policy response and mitigation options, and water right and legal issues of safe drinking water. There are very few books on arsenic issues and almost all the books are mainly based on geology, geochemistry and health issues. There is a gap in spatial, social and legal issues of arsenic toxicity, and the lack of literature on GIS-based modeling for spatial risk of arsenic contamination is a serious methodological limitation. Therefore, this book is a departure for health geography with a social science and legal context.

The book deals with the arsenic issue within a social science point framework, with the context being set by environmental and legal considerations. Due consideration is given to the methodological issues of spatial, quantitative and qualitative enquiries on arsenic poisoning, for instance using GIS to investigate the distribution of arsenic-laced water in space-time to uncover the pattern of variations over scales from metres to kilometres. The production of spatial risk maps provides an indication to researchers, policy makers, and politicians of possible long-term strategies of mitigation. Qualitative methodological approaches uncover the hidden issues of arsenic poisoning on human health and their social implications as well as their coping strategies and adaptation in the face of community and in-family ostracism.

Contents:

- Introduction
- Worldwide Distribution of Groundwater Arsenic Poisoning
- Spatial Arsenic Concentrations and Mapping
- Arsenic and Health Impact: People's Experience and Adapting Strategy
- Arsenic and Risk Assessment: Spatial

* For Ebook Prices please see page 2

Investigation and Dose-Response Analysis
 • Social Implications of Arsenic Poisoning: A Qualitative Enquiry
 • Policy Response and Arsenic Mitigation
 • Environmental Justice and Legal Issues of Drinking Water
 • Summary and Conclusion
This title is co-published with CRC Press
November 2014 • 304 pages • Hardback
ISBN: 9781780400204
IWA Members Price: £51.00/US\$91.80/€68.85
Non Members Price: £67.75/US\$121.95/€91.46

Health Related Water Microbiology

Cryptosporidium Literature Review
 Author: Una Ryan



This report provides a review of the literature on Cryptosporidium and helps to identify the findings and formulates the key research questions. It covers these central questions:

- What are the sources/carriers of human pathogenic strains and what are the key species for a range of catchments?
- What is the contribution of pre and post weaned cattle and sheep to catchment contamination?
- What data on animal management practices (including vegetation management of riparian zones) is available?
- What are the different climatic zones across catchments and how will this impact on the survival and transmission of Cryptosporidium?

Contents:

- Introduction
- Background and Relevance
- Objectives
- Final Report
- What are the Sources/Carriers of Human Pathogenic Strains and What are the Key Species for a Range of Catchments?
- What is the Contribution of Pre and Post Weaned Cattle and Sheep to Catchment Contamination?
- What Data on Animal Management Practices (Including Vegetation Management of Riparian Zones) is Available?
- What are the Different Climatic Zones Across Catchments and How will this Impact on the Survival and Transmission of Cryptosporidium?
- What are the Key Research Gaps?
- Conclusions and Perspectives

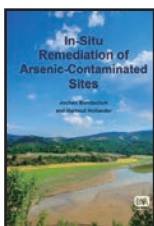
Co-published with WaterRA

February 2014 • 54 pages • Paperback
ISBN: 9781780406206
Ebook ISBN: 9781780406213
IWA Members Price: £52.50/US\$94.50/€70.88
Non Members Price: £69.99/US\$125.98/€94.49

Health Related Water Microbiology

In-Situ Remediation of Arsenic-Contaminated Sites

Authors: Jochen Bundschuh and Hartmut Hollander



This textbook provides an introduction, the scientific background, case studies and future perspectives of in-situ arsenic remediation technologies for soils, soil water and groundwater at geogenic and anthropogenic contaminated sites.

The case studies present in-situ technologies about natural arsenic, specifically arsenate and arsenite, but also about organic arsenic compounds. The book covers geochemical, microbiological and plant ecological solutions for arsenic remediation and:

- provides information to fulfil the increasing need for in-situ arsenic removal in the subsurface
- combines discussion of theoretical background, commercial case studies, recent research results and future perspective

In-Situ Remediation of Arsenic-Contaminated Sites is a textbook for (post-)graduate students and researchers in the field of Environmental Sciences and Hydrogeochemistry and also researchers, engineers, environmental scientists and chemists, toxicologists, and medical scientists.

Contents:

- Introduction to In-Situ Remediation
- Fundamentals and Background
- Background of In-Situ Remediation
- Remediation Rechnologies
- Case Studies
- Soils (Unsaturated Zone)
- Geogenic Contaminated Sites
- Mining-Related Contaminated Sites
- Anthropogenic Contaminated Sites
- Technical Sustainability of In-Situ Remediation
- Ecological Sustainability of In-Situ Remediation
- Economical Sustainability of In-Situ Remediation
- Modeling of In-Situ Remediation Methods and Prediction

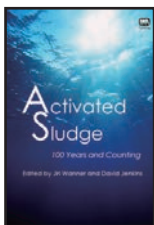
Co-Published with CRC Press

July 2014 • 200 pages • Hardback
ISBN: 9781780406343
IWA Members Price: £49.50/US\$89.10/€66..83
Non Members Price: £66.00/US\$118.80/€89.10

History of Water & Wastewater

Activated Sludge - 100 Years and Counting

Editors: David Jenkins and Jiri Wanner



Activated Sludge - 100 Years and Counting covers the current status of all aspects of the activated sludge process and looks forward to its further development in the future. It celebrates 100 years of the Activated Sludge process, from the time that the early developers presented the seminal works that led to its

eventual worldwide adoption. The book assembles contributions from renowned world leaders in activated sludge research, development, technology and application. The objective of the book is to summarise the knowledge of all aspects of the activated sludge process and to present and discuss anticipated

future developments. The book comprises invited papers to be delivered at the conference "Activated Sludge...100 Years and Counting!" held in Essen, Germany, June 12th to 14th, 2014.

Activated Sludge - 100 Years and Counting is of interest to researchers, engineers, designers, operations specialists, and governmental agencies from a wide range of disciplines associated with all aspects of the activated sludge process.

Contents:

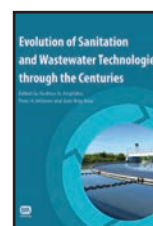
- *Ardern and Lockett Remembrance*, Glen Daigger
- *Wastewater Treatment Requirements through the Years*, Herman Hahn
- *Process Development*, David Stensel, Jacek Makinia
- *Process Microbiology/Ecology*, Per Halkjær Nielsen, Katherine D. McMahon
- *Macro-nutrient Removal (Nitrogen)*, Charles Bott, Paul Pitt, Kartik Chandran
- *Macro-nutrient Removal (Phosphorus)*, James L. Barnard, Yves Comeau
- *Micro-constituent Removal*, Hansruedi Siegrist, Adriano Joss, Thomas A. Ternes
- *Aeration and Mixing*, Martin Wagner, Michael K. Stenstrom
- *Air Emissions*, Jay Witherspoon, Michael D. Short, Kate Simmonds, Ben van den Akker, E. Maddon, Richard M. Stuetz
- *Solids Separation*, Jiri Wanner, Andrea Jobbagy
- *Secondary Clarifiers*, Denny Parker, Wolfgang Günther, Britt-Marie Wilén
- *Energy Considerations*, Helmut Kroiss, Cao Ye Shi
- *Automation and Control*, Gustaf Olsson, Zhiguo Yuan, Changwon Kim
- *Modeling*, George Ekama, Imre Takacs
- *Hybrid Systems*, Hallvard Odgaard, Kim Helleshoj Sorensen, Magnus Christensson
- *Membrane Systems*, Simon Judd, Tamas Zsirai, George Crawford
- *Industrial Wastewater Treatment*, K.-H. Rosenwinkel, Peter Cornel, Willy Verstraete, Siegfried E. Vlaeminck
- *Planning and Design*, Burkhard Teichgräber
- *Economics of Activated Sludge Process*, Norbert Jardin, Julian Sandino
- *The Next 100 Years*, Mark van Loosdrecht, Ye Shi Cao, Yuen Long Wah, Harry Seah

June 2014 • 288 pages • Hardback
ISBN: 9781780404936
Ebook ISBN: 9781780404943
IWA Members Price: £74.25/US\$133.65/€100.24
Non Members Price: £99.00/US\$178.20/€133.65

History of Water & Wastewater

Evolution of Sanitation and Wastewater Technologies through the Centuries

Editors: Andreas N. Angelakis, Peter A. Wilderer and Joan Bray Rose



Most of the technological developments relevant to water supply and wastewater date back to more than to five thousand years ago. These developments were driven by the necessity to make efficient use of natural resources, to make civilizations more resistant to destructive natural elements, and to improve the standards of

life, both at public and private level. Rapid technological progress in the 20th century created a disregard for past sanitation and wastewater and stormwater technologies that were considered to be far behind the present ones. A great deal of unresolved problems in the developing

* For Ebook Prices please see page 2

world related to the wastewater management principles, such as the decentralization of the processes, the durability of the water projects, the cost effectiveness, and sustainability issues, such as protection from floods and droughts were intensified to an unprecedented degree.

New problems have arisen such as the contamination of surface and groundwater. Naturally, intensification of unresolved problems has led to the reconsideration of successful past achievements. This retrospective view, based on archaeological, historical, and technical evidence, has shown two things: the similarity of physicochemical and biological principles with the present ones and the advanced level of wastewater engineering and management practices.

Evolution of Sanitation and Wastewater Technologies through the Centuries presents and discusses the major achievements in the scientific fields of sanitation and hygienic water use systems throughout the millennia, and compares the water technological developments in several civilizations. It provides valuable insights into ancient wastewater and stormwater management technologies with their apparent characteristics of durability, adaptability to the environment, and sustainability. These technologies are the underpinning of modern achievements in sanitary engineering and wastewater management practices. It is the best proof that "the past is the key for the future".

Evolution of Sanitation and Wastewater Technologies through the Centuries is a textbook for undergraduate and graduate courses of Water Resources, Civil Engineering, Hydraulics, Ancient History, Archaeology, Environmental Management and is also a valuable resource for all researchers in these fields.

Contents:

- The Very Early (Pre Historian) Sanitary Sewers and Drainage Systems, e. g. in Babylonia and Mesopotamian Empires, in Bronze Ages, in Ancient South Asia and especially in Indus (Harappan) civilizations, and in Ancient Egypt.
- The sanitation and Wastewater and Stormwater Management in Historical Times, e. g. Drainage and Sewage Management in Ancient Greece
- Sanitation in Ancient Athens, Greece
- Water Borne Diseases and Hippocrates
- Drainage and Sewage Management in Roman times
- Evolution of Sanitation Services in Rome city's Between Urban Development and Environmental Quality
- Water Supply and Sewerage System of Diocletian's Palace in Split
- The Evolution of Sanitation in the Rural Area of Southwest China: with Case of Dai Villages of Jing Hong, Yunnan Province
- The History of Sanitation and Wastewater Management in Cyprus
- The History of Sanitation and Wastewater Management in Portugal
- History of Sanitation in Tunisia since the Roman Times
- History of the Sewerage System in Barcelona, Spain: From its Origins to the Cerdà Plan
- Sanitation and Health in Ancient civilizations
- Influence of the Roman and Muslim Cultures on the Evolution of Wastewater and Stormwater Systems in the south Mediterranean
- Revisiting Technical and Social aspects of wastewater management in Ancient Korea
- Sanitation and Wastewater Management in Modern Times, e.g. the Prague Sewerage System: A Short History and the Importance of Role of William Heerlein Lindley
- Evolution of Soil Treatment Practice for the Management of Wastewaters
- The History of Hydroponic Systems for Waste Water Treatment and Reuse
- "Progress through revolutions": the Historical Development of Sanitation from Latrine to Centralized and Decentralized Wastewater Treatment Plants

- The Evolution of Sanitation and Wastewater Management Throughout the Centuries: A Short Overview and Comparisons

June 2014 • 500 pages • Paperback

ISBN: 9781780404844

Ebook ISBN: 9781780404851

IWA Members Price: £86.25/US\$155.25/€116.44

Non Members Price: £115.00/US\$207.00/€155.25

Membrane Technology

Development of Predictive Tools for Membrane Ageing

Author: Pierre LeClech



This study increases our current understanding on the degradation/ageing mechanisms occurring on porous membranes used in the water and wastewater industries. Accelerated membrane degradation was obtained through both static and consecutive ageing protocols on the pilot-scale, and a range of carefully selected characterisation and analytical techniques was used to characterise the nascent changes faced by the membrane material.

The report covers four interrelated sections:

- critical assessment of characterisation techniques,
- static accelerated ageing
- consecutive accelerated ageing
- consecutive ageing of industrially-aged membranes. This final report summarises the aims, objectives, outcomes and limitations of the individual work packages, along with some recommendations for future work.

Co-published with WaterRA

February 2014 • 196 pages

ISBN: 9781780406251

Ebook ISBN: 9781780406558

IWA Members Price: £66.75/US\$120.00/€90.00

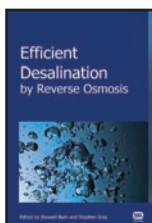
Non Members Price: £89.00/US\$160.00/€120.00

Membrane Technology

Efficient Desalination by Reverse Osmosis

A Best Practice Guide to RO

Authors: Stewart Burn and Stephen Gray



Efficient Desalination by Reverse Osmosis provides a complete guide to best practice from pre-treatment through to project delivery. It is written for utility managers & professionals.

Contents:

- The Process of RO
- How it Operates
- Need for Pre-treatment
- General Fouling Considerations
- Appropriate Use
- Pre-treatment Technologies for Reverse Osmosis
- Groundwater
- Wastewater
- Seawater
- Industrial Water
- Reverse Osmosis - Process, Design and Applications
- Design Flux
- RO Process Design Recirculation
- Stages
- Split Permeates

- Groundwaters
- Seawater
- Wastewater
- Industrial
- Fouling Issues in Reverse Osmosis Scale
- Biofouling
- Organic Fouling
- Disposal
- The Energy Efficiency of Reverse Osmosis
- Energy Recovery Systems (High and Low Pressure)
- Seawater
- Other Waters
- Role of Renewable Energy
- Reverse Osmosis Beneficiation
- Improving RO by the Addition of Membrane Distillation, Pervaporation and Forward Osmosis)
- Reverse Osmosis by-products
- Brine Management a Value Added Product
- Higher Water Recovery
- MD, Seeded Precipitation etc
- Impacts of Reverse Osmosis on the Environment
- Marine Waters
- Wastewaters
- Reverse Osmosis Economics and Financing
- Project Delivery
- The Future of Reverse Osmosis
- Small Scale Systems
- Process Control (Scaling Control)
- Large Scale Designs
- SeaHero
- Reduced Chemical Use

November 2014 • 256 pages • Hardback

ISBN: 9781780405056

Ebook ISBN: 9781780405049

IWA Members Price: £66.75/US\$120.15/€90.11

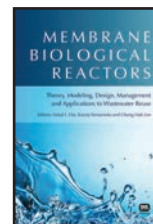
Non Members Price: £89.00/US\$160.20/€120.15

Membrane Technology

Membrane Biological Reactors

Theory, Modelling, Design, Management and Applications to Wastewater Reuse

Editors: Faisal I. Hai, Kazuo Yamamoto and Chung-Hak Lee



In recent years the MBR market has experienced unprecedented growth. The best practice in the field is constantly changing and unique quality requirements and management issues are regularly emerging.

Membrane Biological Reactors: Theory, Modelling, Design, Management and Applications to Wastewater Reuse

comprehensively covers the salient features and emerging issues associated with the MBR technology. The book provides thorough coverage starting from biological aspects and fundamentals of membranes, via modelling and design concepts, to practitioners' perspective and good application examples.

Membrane Biological Reactors focuses on all the relevant emerging issues raised by including the latest research from renowned experts in the field. It is a valuable reference to the academic and professional community and suitable for undergraduate and postgraduate teaching in Environmental Engineering, Chemical Engineering and Biotechnology.

Contents:

- Introduction
- Process Fundamentals
- Hydraulics of Membrane Bioreactor
- Effluent Quality and Various Water Reuse
- Removal of Emerging Trace Organic

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- Contaminants by Membrane Bioreactors
- Impacts of Hazardous Events on Performance
- Membrane Bioreactor Process, Facility Design and Operation and Maintenance
- Cost Benefit and Environmental Life Cycle Assessment
- Modeling Studies
- Aeration and Extractive Membrane Biological Reactors
- Anaerobic MBRs
- Hybrid Processes, New Generation Membranes and MBR Designs
- Commercial Technologies and selected Case Studies

November 2013 • 425 pages • Hardback

ISBN: 9781780400655

Ebook ISBN: 9781780401331

IWA Members Price: £96.25/US\$173.25/€129.94

Non Members Price: £129.00/US\$232.20/€174.15

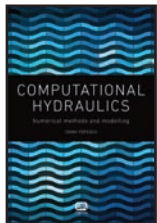
Student Price: £70.95/US\$127.71/€95.78

Modelling & Statistics

Computational Hydraulics

Numerical Methods and Modelling

Author: Ioana Popescu



Computational Hydraulics introduces the concept of modelling and the contribution of numerical methods and numerical analysis to modelling. It provides a concise and comprehensive description of the basic hydraulic principles, and the problems addressed by these principles in the aquatic environment. Flow equations, numerical and analytical solutions are included.

The necessary steps for building and applying numerical methods in hydraulics comprise the core of the book and this is followed by a report of different example applications of computational hydraulics: river training effects on flood propagation, water quality modelling of lakes and coastal applications.

The theory and exercises included in the book promote learning of concepts within academic environments. Sample codes are made available online for purchasers of the book.

Computational Hydraulics is intended for undergraduate and graduate students, researchers, members of governmental and non-governmental agencies and professionals involved in management of the water related problems.

Contents:

- Modelling Theory and its Application
- Numerical Methods Introduction
- Modelling of Water Related Problems
- Discretisation of the Fluid Flow Domain
- Time Discretisation
- Finite Difference Methods
- Finite Volume Methods
- Properties of Numerical Methods
- River Training Effects on Flood Propagation
- Water Quality Modelling of Lakes
- Coastal Related Applications

July 2014 • Pages: 300 • Paperback

ISBN: 9781780400440

Ebook ISBN: 9781780400457

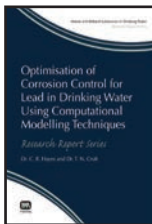
IWA Members Price: £74.25/US\$133.65/€100.24

Non Members Price: £99.00/US\$178.20/€133.65

Modelling & Statistics

Optimisation of Corrosion Control for Lead in Drinking Water Using Computational Modelling Techniques

Authors: Colin Hayes and T N Croft



In many respects, lead in drinking water has become a forgotten problem, since the mid-1980s when a range of environmental controls were implemented to reduce exposure to lead. This is largely because the sampling protocols, that underpin regulatory controls, are mostly inadequate and have tended to under-estimate the

amount of lead that can be present in drinking water (IWA, 2010).

Optimisation of Corrosion Control for Lead in Drinking Water Using Computational Modelling Techniques shows how compliance modelling has been used to very good effect in the optimisation of plumbosolvency control in the United Kingdom, particularly in the optimisation of orthophosphate dosing. Over 100 water supply systems have been modelled, involving 30% of the UK's water companies. This "proof-of-concept" project has the overall objective of demonstrating that these modelling techniques could also be applicable to the circumstances of Canada and the United States, via three case studies.

This report is the first in the Research Report Series that is being published by the IWA Specialist Group on Metals and Related Substances in Drinking Water.

Contents:

- Introduction
- Description of the Computational Compliance Models
- Simulation of Water Flow in a Pipe Using Computational Fluid Dynamics
- Calibration and Validation
- Case study: City A (US)
- Case study: City B (CA)
- Case study: City C (US)
- Investigations into Sequential Sampling
- Discussion
- Conclusions
- Calibration Data
- Examples of Model Output

This title belongs to Metals and Related Substances in Drinking Water: Research Report Series

January 2013 • 80 pages • Paperback

ISBN: 9781780404783

Ebook ISBN: 9781780404790

IWA Members Price: £66.75/US\$120.15/€90.11

Non Members Price: £89.00/US\$160.20/€120.15

Monitoring & Control

Tuning Biological Nutrient Removal Plants

Author: Ken Hartley



Tuning Biological Nutrient Removal Plants increases interest in tuning to enhance both performance and capacity, to provide insight into typical plant operating characteristics, and to stimulate operators' interest in studying the behaviour of their own plants. The book focuses on understanding of plant behavioural characteristics so

that optimum performance can be achieved and maintained.

Tuning Biological Nutrient Removal Plants is carefully organized to cover:

- influent and effluent characteristics;
- process fundamentals;
- individual process characteristics;
- overall plant characteristics;
- the evolutionary operation approach to tuning.

The approach is practical and the use of mathematics is kept to a minimum and information is supplied in graphical and tabular form. Real operating data from a wide range of plant experiences is included. The book draws on the generosity of many Australian plant owners in permitting their plant data to be incorporated. Not all process types are covered but the tuning principles expounded are universally applicable.

The capacity and performance capabilities of a plant are not fixed; both are amenable to on-going enhancement through systematic and enthusiastic effort. The book will help to set new benchmarks in plant operation.

Tuning Biological Nutrient Removal Plants is a valuable resource for sewage treatment operations and operations support personnel, sewage process design engineers - operating authorities, consultants, contractors, operators of industrial wastewater treatment plants and sewage treatment lecturers in chemical engineering departments and other training organisations.

Contents:

- What is Tuning?
- Influent and Effluent Characteristics
- Flow Characteristics
- Mass Loading Characteristics
- Sewer Transformations
- Effect of Primary Treatment
- Effluent Characteristics
- Biological Nutrient Removal - Process Fundamentals
- The Basic Process
- Kinetics of Biological Processes
- Solids Retention Time
- Carbon Removal
- Nitrogen Removal
- Phosphorus Removal
- Supplementary Chemical Dosing, Alkalinity and pH
- Rules of Thumb
- Sludge Settleability
- Characterising Settleability
- Settling Rates
- Factors Affecting Settleability
- Effect of SVI on Effluent Quality
- BNR Flowsheets
- Reactors
- Mixing
- Aeration
- Compartmentalised Reactors
- Oxidation Ditches
- Membrane Bioreactors
- Sequencing Batch Reactors
- Secondary Clarifiers
- Description

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- Mass Balances
- Operating Diagrams
- Effluent Quality
- Clarifier Stress Testing
- Sludge Processes
- Overview
- Aerobic Digestion
- Sludge Dewatering
- Plant Characteristics
- Mass Balances
- Operational Process Capacity
- Capacity Envelopes
- Energy Consumption
- Automatic Control
- Evolutionary Operation
- Learning
- Application to Sewage Treatment Plants
- Long-Term Improvement
- EVOP Procedures
- Faux-EVOP
- A Note on the Statistics of Variability
- Chemicals: Useful Properties
- Abbreviations

May 2013 • 256 pages • Paperback

ISBN: 9781780404820

Ebook ISBN: 9781780404837

IWA Members Price: £66.75/US\$120.15/€90.11

Non Members Price: £89.00/US\$160.20/€120.15

Urban Drainage/Sewerage

Water Footprinting in the Urban Water Sector

Editor: Kylie Hyde



The term water footprinting can be used to describe an emerging set of tools that can be applied to obtain information about the consumption and degradation of fresh water over a defined period of time. The impact that the consumption and degradation of fresh water resources has on the environment and society can be assessed using a number of tools.

Water footprinting tools have predominantly been applied within the agricultural and industrial sectors. The approaches are being increasingly utilised, in particular by corporations in the food and beverage industries. Limited applications involving the urban water system are evident to date.

Water Footprinting in the Urban Water Sector provides:

- an overview of the Urban Water Sector through a summary of the trends and challenges facing the sector and some information concerning the variations in the sector across the globe.
- a summary of the urban water system by defining the possible scope, boundaries, flows and impacts.
- an overview of a number of common approaches and their development with summaries of example applications
- a research strategy that contains a map of knowledge, a summary of key issues, challenges and knowledge gaps, suggested research priorities and some suggested actions

This title belongs to GWRC Report Series

February 2013 • 160 pages

Ebook only

Ebook ISBN: 9781780404806

IWA Members Price: Pay Per View Only

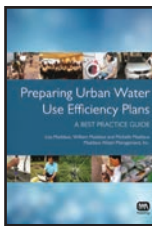
Non Members Price: Pay Per View Only

Urban Drainage/Sewerage

Preparing Urban Water Use Efficiency Plans

A Best Practice Guide

Author: Lisa Maddaus, William Maddaus and Michelle Maddaus, Maddaus Water Management Inc.



Many communities are facing water scarcity in developing and developed countries alike. There are numerous publications and on-going research studies documenting the changes in our climate and potential for worsening shortages in our future. Meeting future potable water demands as communities

continue to grow will rely heavily on using our existing water resources more efficiently. *Preparing Urban Water Use Efficiency Plans* provided detailed approaches to developing and implementing a water conservation plan. This book covers the broad spectrum of conservation planning for urban communities including achieving more efficiency from:

- Residential domestic uses
- Commercial and governmental facilities use
- Industrial uses
- Pricing
- Water Loss Control Programs

The steps in the Guide clearly outline and provide sample calculations to aid determining which water use efficiency activities are financially justifiable to undertake. The end result is a plan that policy decision makers can adopt and fund, and that water service provider staff can implement to help increase their community's water reliability. It includes numerous case studies and a Microsoft Excel based software tool to allow planners to evaluate the business case for implementing various water conservation activities.

This book is an essential resource for professionals in water and wastewater resources mainly planners and engineers. It is also a useful guide for Post Graduate and Undergraduate students.

November 2013 • 128 pages • Paperback

ISBN: 9781780405230

Ebook ISBN: 9781780405247

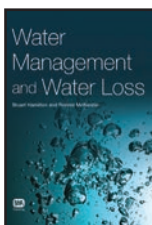
IWA Members Price: £63.75/US\$114.75/€86.06

Non Members Price: £85.00/US\$153.00/€114.75

Utility Management

Water Management and Water Loss

Editors: Stuart Hamilton and Ronnie McKenzie



Water Management and Water Loss contains a selection of papers and articles written by various internationally recognised specialists in the field of water loss reduction. The articles have been drawn together from IWA conferences during the past 5 years and provide details of how water losses from Municipal

distribution systems can be reduced. The book provides useful background information and reference materials to help explain the different approaches and interventions that are used to reduce water losses. Numerous real case studies are provided that highlight the processes and methodologies employed around the world to reduce water losses.

Water Management and Water Loss covers many aspects of water loss control including, pressure management, leak detection and repair, Internal

plumbing losses and retrofitting, community involvement and education/awareness, schools education and leak repair projects.

June 2014 • 100 pages • Paperback

ISBN: 9781780406350

Ebook ISBN: 9781780406367

IWA Members Price: £59.25/US\$106.65/€79.99

Non Members Price: £79.00/US\$142.20/€106.65

Utility Management

Sewage Treatment Plants

Economic Evaluation of Innovative Technologies for Energy Efficiency

Editors: Konstantinos P. Tsarakakis and Katerina Stamatelatou



Sewage Treatment Plants: Economic Evaluation of Innovative Technologies for Energy Efficiency aims to show how cost saving can be achieved in sewage treatment plants through implementation of novel, energy efficient technologies or modification of the conventional, energy demanding treatment facilities

towards the concept of energy streamlining. The book brings together knowledge from Engineering, Economics, Utility Management and Practice and helps to provide a better understanding of the real economic value with methodologies and practices about innovative energy technologies and policies in sewage treatment plants.

Contents:

- The principles of Economic Evaluation and Cost Benefit Analysis Implemented in Sewage Treatment Plants
- Economic Evaluation of Innovative Technologies Aiming to Increase the Energy Efficiency of the Sewage Treatment Plants
- Instrumentation, Monitoring and Real-Time Control Strategies for Efficient Sewage Treatment Plant Operation
- Process Integration to Improve Carbon, Nitrogen and Phosphorus Removal with Less Aeration Requirements and Less Sludge Production
- Bioreactor Development with Less Aeration Requirement
- Improvement of Anaerobic Digestion of Sewage Wastewater and Sludge
- Development of Microbial Fuel Cells for Electricity Production from Sewage
- Nutrient Recovery from Sewage
- Cost Saving Management Strategies or Policies
- Economic Evaluation of Innovative Technologies Aiming to Increase the Energy Efficiency of the Sewage Treatment Plants: Case studies

July 2014 • 350 pages • Paperback

ISBN: 9781780405018

Ebook ISBN: 9781780405025

IWA Members Price: £74.25/US\$133.65/€100.24

Non Members Price: £99.00/US\$178.20/€133.65

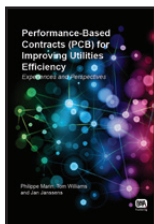
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Utility Management

Performance-Based Contracts (PBC) for Improving Utilities Efficiency

Experiences and Perspectives

Authors: Philippe Marin, Tom Williams and Jan Janssens



Performance-Based Contracts (PBC) for Improving Utilities Efficiency: Experiences and Perspectives is a compendium of articles written by members of the PBC taskforce. It focuses on new approaches without delegated management to private operator i.e. service contracts, consulting contracts, alliance approach, public-private

partnership. It also mentions new design and generation of more traditional PPPs, (MC, lease, concession), where a larger proportion of performance-based design is being applied. *This title belongs to Scientific and Technical Report Series*

November 2014 • 180 pages • Paperback

ISBN: 9781780405957

Ebook ISBN: 9781780405964

IWA Members Price: £66.75/US\$120.15/€90.11

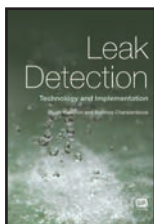
Non Members Price: £89.00/US\$160.20/€120.15

Utility Management

Leak Detection

Technology and Implementation

Editors: Stuart Hamilton and Bambos Charalambous



Ageing infrastructure and declining water resources are major concerns with a growing global population. Controlling water loss has therefore become a priority for water utilities around the world. In order to improve efficiencies, water utilities need to apply good practices in leak detection.

Leak Detection: Technology and Implementation assists water utilities with the development and implementation of leak detection programs. Leak detection and repair is one of the components of controlling water loss. In addition, techniques are discussed within this book and relevant case studies are presented. The book provides useful and practical information on leakage issues.

Contents:

- Introduction
- The Technology Matrices
- Acoustic Principles
- History of Acoustics
- Leak Detection Technologies
- Other Techniques
- Optimization Tools for Leak Location
- Optimization Principle
- System Evaluation
- Field Data Process
- Optimization Analysis
- Post-optimization Analysis
- Case Studies
- Useful and Practical Information on Leakage Issues

July 2013 • 112 pages • Paperback

ISBN: 9781780404707

Ebook ISBN: 9781780404714

IWA Members Price: £56.25/US\$101.25/€75.94

Non Members Price: £75.00/US\$135.00/€101.25

Water & Wastewater Reuse

Potable Water Solutions

Beyond Reverse Osmosis

Editors: Stewart Burn, Stephen Gray and Don Begbie



Potable Water Solutions: Beyond Reverse Osmosis is a practical handbook for evaluating desalination technology and solutions, covering use and implications, supplies and treatment. It is written for utility managers & professionals.

Contents:

- Future Water Demands, Use and the Implications of Climate Change

- Alternate Water Supplies - Desalination vs. the Rest
- Groundwater Treatment
- Rainwater Tanks
- Stormwater Capture and Reuse
- Reservoir Management
- Indirect/Direct Potable Reuse

June 2014 • 250 pages • Hardback

ISBN: 9781780404608

Ebook ISBN: 9781780404615

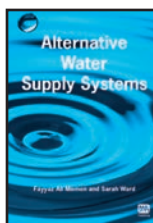
IWA Members Price: £66.75/US\$120.15/€90.11

Non Members Price: £89.00/US\$160.20/€120.15

Water & Wastewater Reuse

Alternative Water Supply Systems

Editors: Fayyaz Ali Memon and Sarah Ward



Owing to climate change related uncertainties and anticipated population growth, different parts of the developing and the developed world (particularly urban areas) are experiencing water shortages or flooding and security of fit-for-purpose supplies is becoming a major issue. The emphasis on decentralized alternative water

supply systems has increased considerably. Most of the information on such systems is either scattered or focuses on large scale reuse with little consideration given to decentralized small to medium scale systems. *Alternative Water Supply Systems* brings together recent research into the available and innovative options and additionally shares experiences from a wide range of contexts from both developed and developing countries.

Alternative Water Supply Systems covers technical, social, financial and institutional aspects associated with decentralized alternative water supply systems. These include systems for greywater recycling, rainwater harvesting, recovery of water through condensation and sewer mining. A number of case studies from the UK, the USA, Australia and the developing world are presented to discuss associated environmental and health implications.

The book provides insights into a range of aspects associated with alternative water supply systems and an evidence base (through case studies) on potential water savings and trade-offs. The information organized in the book is aimed at facilitating wider uptake of context specific alternatives at a decentralized scale mainly in urban areas.

This book is a key reference for postgraduate level students and researchers interested in environmental engineering, water resources management, urban planning and resource efficiency, water demand management, building

service engineering and sustainable architecture. It provides practical insights for water professionals such as systems designers, operators, and decision makers responsible for planning and delivering sustainable water management in urban areas through the implementation of decentralized water recycling.

Contents:

- Rainwater Harvesting
- Performance and Economics of Internally Plumbed Rainwater Tanks in Australia
- Evaluating Rain Tank Pump Performance at a Micro-component Level
- Rainwater Harvesting for Stormwater Management
- International Charging and Incentive Schemes for Rainwater Harvesting Systems
- Socio-Technical Aspects of Decentralised Rainwater Harvesting Systems
- The value of Linking Behaviour Change at Home with Rainwater Harvesting in Schools
- The Potential of Self Supply in Uganda's Rakai District: Assessing Domestic Rainwater Harvesting Storage Cost and Geographic Availability
- Greywater Treatment and Reuse
- Membrane Processes for Greywater Recycling
- Extensive Treatment of Greywater
- Domestic Rainwater Harvesting, Greywater Reuse and Health
- Greywater Reuse: Risk Identification, Quantification and Management
- Greywater Recycling: Guidelines for Safe Adoption
- Condensate Recovery and Sewer Mining for Non-Potable Applications
- Air Conditioning Condensate Recovery and Reuse for Non-Potable Applications –
- I: Background, Quantity, Feasibility and Sustainability
- Conditioning Condensate Recovery and Reuse for Non-Potable Applications –
- II: Quality, Recovery and Case Studies
- Introduction to Sewer Mining: Technology & Health Risks
- Getting Sewer Mining off the Ground: Financial Perspectives
- Implications of Wastewater Treatment and Reuse Systems
- Fugitive Gas Emissions and Ecological Footprint of Decentralised Wastewater Treatment Plants
- Risk Mitigation for Wastewater Irrigation Systems in Low-Income Countries: Opportunities and Limitations of the WHO Guidelines
- The Growing Burden of Poor Quality Irrigation Water – Can it Qualify as an Alternative Water System?
- Large Scale Wastewater Reuse Systems and Energy
- Decision Making and Case Studies on Alternative Water Supply Systems
- The Socio-Technology of Potable and Non-Potable Water Reuse
- Designing Co-Governance Processes for Alternative Water Systems
- Decision Support Systems for Smart Building Water Cycle Management
- Moving from Building-Scale to District-Scale – San Francisco's Non-Potable Water Program
- The Queen Elizabeth Olympic Park Water Recycling System

August 2014 • 672 pages • Hardback

ISBN: 9781780405506

Ebook ISBN: 9781780405513

IWA Members Price: £108.75/US\$195.75/€146.81

Non Members Price: £145.00/US\$261.00/€195.75

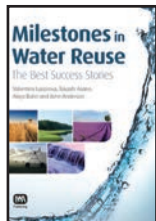
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Water & Wastewater Reuse

Milestones in Water Reuse

The Best Success Stories

Editors: Valentina Lazarova, Takashi Asano, Akica Bahri, and John Anderson



Milestones in Water Reuse: The Best Success Stories illustrates the benefits of water reuse in integrated water resources management and its role for water cycle management, climate change adaptation and water in the cities of the future. Selected case studies are used to illustrate the different types of water reuse, i.e. agricultural

irrigation, golf course and landscape irrigation, urban and industrial uses, environmental enhancement, as well as indirect and direct potable reuse. The various aspects related to water reuse are covered, including treatment technologies, water quality, economics, public acceptance, benefits, keys for success and main constraints.

These international case studies highlight the best practices for the implementation of water reuse and provide the perspective for the integration of water recycling projects in the future, both for megacities and rural areas. *Milestones in Water Reuse: The Best Success Stories* demonstrates that planned water reuse is a cost competitive and energy-saving option to increase water availability and reliability.

This book provides policy makers and regulators with a good understanding of water reuse and helps them to consider recycled water as safe and how it can be used. It is intended to be read by all people in the water sector and shows how water reuse is safe, economically viable, and environmentally friendly and can provide high social benefits.

Contents:

- *Introduction: Challenges of Sustainable Water Reuse and Choice of Water Reuse Applications* Valentina Lazarova and Takashi Asano
- *Production of Multiquality Recycling Water for Reuse Purposes: Lessons Learned from the 15-Year Experience of the EDUARD C. LITTLE Water Recycling Facility (USA)* Joe Walters, Gregg Oealker and Rich Nagel
- *Role of Water Reuse for the City of Future (Singapore)* Lim Mong Hoo and Harry Seah
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- *Integration of Wastewater Reuse, for the Sustainable Management of Water Resources in Cyprus (Cyprus)* Iacovos Papaicovou, Athina Papatheodoulou
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- *Water for Life: Diversification and Water Reuse are Key Ingredients in Sydney's Integrated Water Plan (Australia)* John Anderson
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Valentina Lazarova, Vincent Sturny and Gaston Tong Sang

- *The Exciting Challenge of Water Reuse in the Regional Community of Madrid (Spain)* Avelino Martínez Herrero, Jesús Díez de Ulzurrun Mosquera, Gregorio Arias Sánchez and Andrés Deza de la Casa
- *Water Reuse in Hawaii: City and County of Honolulu (USA)* Scott A. Edwards
- *Australia's Urban and Residential Water Reuse Schemes (Australia)* John Anderson
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- *Closing loops - Industrial Water Management in Germany* Prof. Karl-Heinz Rosenwinkel and Axel Borchmann
- *The Role of Industrial Reuse for the Sustainability of Water Reuse Schemes: the Example of San Luis Potosi (Mexico)* Alberto Rojas, Lucina Equihua, Carlos Arevalo and Fernando Gonzalez
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- *Creation of a New Recreation Water Environment: the Example of Beijing Olympic Park (China)* Hong-Ying HU, YingXue SUN (Tsinghua University, China), Josef Lahnsteiner (WABAG), and Yiping GAN (the Beijing Drainage Group, China)
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- *Orange County Groundwater Replenishment System (California)* R. Chalmer, P. Mehul and D. Thompson
- *Lessons Learned from the Torreele Groundwater Recharge (Belgium)* Emmanuel Van Houtte
- *The Occoquan Experience - First and Most Mature Planned, Surface Water, Potable Reuse Project in the World (USA)* Robert Angelotti
- *The water Reuse Scheme of Western Corridor (Australia)* Troy Walker et al
- *More than 40 Years of Direct Potable Reuse Experience in Windhoek, (Namibia)* J. Lahnsteiner, P. du Pisani, J. Menge, J. Esterhuize

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IWA Members Price: £74.25/US\$133.65/€100.24

Non Members Price: £99.00/US\$178.20/€133.65

Water & Wastewater Treatment

Experimental Methods in Wastewater Treatment

Editors: M.C.M. van Loosdrecht, J. Keller, P.H. Nielsen, C.M. Lopez-Vazquez, and D. Brdjanovic



Over the past twenty years, the knowledge and understanding of wastewater treatment has advanced extensively and moved away from empirically based approaches to a fundamentally-based first principles approach embracing chemistry, microbiology, and physical and bioprocess engineering, often involving

experimental laboratory work and techniques. Many of these experimental methods and techniques have matured to the degree that they have been accepted as reliable tools in wastewater treatment research and practice. For sector professionals, especially a new generation of young scientists and engineers entering the wastewater treatment profession, the quantity, complexity and diversity of these new developments can be overwhelming, particularly in developing countries where access to advanced level laboratory courses in wastewater treatment is not readily available. In addition, information on innovative experimental methods is scattered across scientific literature and only partially available in the form of textbooks or guidelines. This book seeks to address these deficiencies. It assembles and integrates the innovative experimental methods developed by research groups and practitioners around the world. *Experimental Methods in Wastewater Treatment* forms part of the internet-based curriculum in wastewater treatment at UNESCO-IHE and, as such, may also be used together with video records of experimental methods performed and narrated by the authors including guidelines on what to do and what not to do. The book is written for undergraduate and postgraduate students, researchers, laboratory staff, plant operators, consultants, and other sector professionals.

May 2015 • 300 pages • Hardback

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Ebook ISBN: 9781780404752

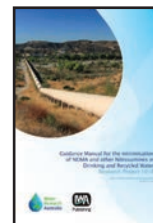
IWA Members Price: £74.25/US\$133.65/€100.24

Non Members Price: £99.00/US\$178.20/€133.65

Water & Wastewater Treatment

Guidance Manual for the Minimisation of Nitrosamines in Drinking and Recycled Water

Authors: Gayle Newcombe, Jim Morran, Julie Culbert, Con Kapralos



N-nitrosodimethylamine (NDMA) is a nitrogen-containing organic compound that has known carcinogenic properties. NDMA has been a health concern for some industries for a number of years as it is used in rubber formulations, as a fire retardant, antioxidant, additive for lubricants and softener of copolymers; it is also a

degradation product of dimethylhydrazine, an additive to rocket fuel. Most people are exposed to NDMA via a number of diverse routes including cigarette smoke (actively or passively) and processed foods, for example smoked meat products. However, it has only come to the attention of the international water industry since it was recognised as a disinfection by-product (DBP) of chloramination or chlorination in the presence of ammonia.

The aim of this guidance manual is to answer commonly asked questions about this emerging issue, such as:

- how do they come to be in drinking water and recycled water and what
- concentrations are "normal"?
- what regulatory/guidance levels have been imposed in Australia and elsewhere?
- how are they formed? What are the risk factors for the occurrence of nitrosamines in my system?
- what can we do to control them?
- what are the implications for the drinking and recycled water industry, and in particular for public health?

This Guidance Manual has a companion document, Generic Management Plan for Nitrosamines in Drinking Water, which provides provide background information on the group of

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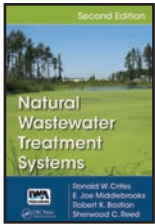
organic contaminants, nitrosamines.
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IWA Members Price: £37.50/US\$67.50/€50.63
Non Members Price: £49.99/US\$89.98/€67.49

Water & Wastewater Treatment

Natural Wastewater Treatment Systems

Second Edition

Authors: Ronald W. Crites; E. Joe Middlebrooks; Robert K. Bastian



This new edition examines all changes and advancements that have taken place since the previous edition published in 2005. It outlines the planning, feasibility assessment, and site selection processes unique to natural processes as well as the basic process responses and interactions governing natural systems. It examines the

systems in detail, discussing wastewater pond systems, free water surface constructed wetlands, subsurface and vertical flow constructed wetlands, land treatment, sludge management, and onsite wastewater systems. They illustrate the practical aspects through numerous examples and data tables. Fully revised and updated to reflect the advancements in the field since the publication of the first edition:

- Presents detailed coverage of all natural wastewater treatment systems
- Covers flow rate, overland flow, and soil aquifer treatment systems of land treatment and reuse
- Discusses dewatering, disposal, conditioning, and reuse methods of sludge management
- Provides performance data on the removal of constituents such as nutrients, metals, pathogens, trace organics, and endocrine-disrupting chemicals

Co-published with CRC Press

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Non Members Price: £114.00/US\$205.20/€153.90

Water & Wastewater Treatment

Faecal Sludge Management

Systems Approach for Implementation and Operation

Editors: Linda Strande, Mariska Ronteltap and Damir Brdjanovic



It is estimated that literally billions of residents in urban and peri-urban areas of Africa, Asia, and Latin America are served by onsite sanitation systems (e.g. various types of latrines and septic tanks). Until recently, the management of faecal sludge from these onsite systems has been grossly neglected, partially as a result of them being

considered temporary solutions until sewer-based systems could be implemented. However, the perception of onsite or decentralized sanitation technologies for urban areas is gradually changing, and is increasingly being considered as long-term, sustainable options in urban areas, especially in low- and middle-income countries that lack sewer infrastructures. This is the first book dedicated to faecal sludge management. It compiles the current state of knowledge of the rapidly evolving field of

faecal sludge management, and presents an integrated approach that includes technology, management, and planning based on Sandec's 20 years of experience in the field.

Faecal Sludge Management: Systems Approach for Implementation and Operation addresses the organization of the entire faecal sludge management service chain, from the collection and transport of sludge, and the current state of knowledge of treatment options, to the final end use or disposal of treated sludge. The book also presents important factors to consider when evaluating and upscaling new treatment technology options.

The book is designed for undergraduate and graduate students, and engineers and practitioners in the field who have some basic knowledge of environmental and/or wastewater engineering.

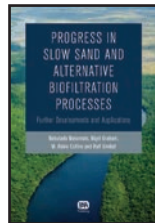
May 2014 • 500 pages • Hardback
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Non Members Price: £125.00/US\$225.00/€168.75

Water & Wastewater Treatment

Progress in Slow Sand and Alternative Biofiltration Processes

Further Developments and Applications

Editors: Nobutada Nakamoto, Nigel Graham, M. Robin Collins and Rolf Gimbel



This book provides a state-of-the-art assessment on a variety of biofiltration water treatment systems from studies conducted around the world. The authors collectively represent a perspective from 23 countries and include academics/ researchers, biofiltration system users, designers, and manufacturers.

Progress in Slow Sand and Alternative Biofiltration Processes: Further Developments and Applications offers technical information and discussion to provide perspective on the biological and physical factors affecting the performance of slow sand filtration and biological filtration processes. Chapters have been submitted from the 5th International Slow Sand and Alternative Biological Filtration Conference, Nagoya, Japan in June 2014.

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Non Members Price: £129.00/US\$232.20/€174.15

Water & Wastewater Treatment

Applications of Activated Sludge Models

Editors: D. Brdjanovic, S.C.F Meijer, C.M. Lopez-Vazquez, C.M. Hooijmans, and M.C.M. van Loosdrecht



In 1982 the International Association on Water Pollution Research and Control (IAWPRC), as it was then called, established a Task Group on Mathematical Modelling for Design and Operation of Activated Sludge Processes.

The aim of the Task Group was to create a common platform that could be used for the future development of models for COD and N removal with a minimum of complexity. As the collaborative result of the work of several modelling groups, the Activated Sludge Model No. 1 (ASM1) was published in 1987, exactly 25 years ago. The ASM1 can be considered as the reference model,

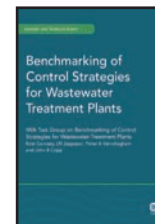
since this model triggered the general acceptance of wastewater treatment modelling, first in the research community and later on also in practice. ASM1 has become a reference for many scientific and practical projects, and has been implemented (in some cases with modifications) in most of the commercial software available for modelling and simulation of plants for N removal. The models have grown more complex over the years, from ASM1, including N removal processes, to ASM2 (and its variations) including P removal processes, and ASM3 that corrects the deficiencies of ASM1 and is based on a metabolic approach to modelling. So far, ASM1 is the most widely applied. *Applications of Activated Sludge Models* has been prepared in celebration of 25 years of ASM1 and in tribute to the activated sludge modelling pioneer, the late Professor G.v.R. Marrafs. It consists of a dozen of practical applications for ASM models to model development, plant optimization, extension, upgrade, retrofit and troubleshooting, carried out by the members of the Delft modelling group over the last two decades.

June 2014 • 400 pages • Hardback
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Non Members Price: £110.00/US\$198.00/€148.50

Water & Wastewater Treatment

Benchmarking of Control Strategies for Wastewater Treatment Plants

Editors: Krist V Gernaey, Ulf Jeppsson, Peter A Vanrolleghem and John B Copp



Wastewater treatment plants are large non-linear systems subject to large perturbations in wastewater flow rate, load and composition. Nevertheless these plants have to be operated continuously, meeting stricter and stricter regulations.

Many control strategies have been proposed in the literature for improved and more efficient operation of wastewater treatment plants. Unfortunately, their evaluation and comparison – either practical or based on simulation – is difficult. This is partly due to the variability of the influent, to the complexity of the biological and biochemical phenomena and to the large range of time constants (from a few minutes to several days). The lack of standard evaluation criteria is also a tremendous disadvantage. To really enhance the acceptance of innovative control strategies, such an evaluation needs to be based on a rigorous methodology including a simulation model, plant layout, controllers, sensors, performance criteria and test procedures, i.e. a complete benchmarking protocol.

This book is a Scientific and Technical Report produced by the IWA Task Group on Benchmarking of Control Strategies for Wastewater Treatment Plants. The goal of the Task Group includes developing models and simulation tools that encompass the most typical unit processes within a wastewater treatment system (primary treatment, activated sludge, sludge treatment, etc.), as well as tools that will enable the evaluation of long-term control strategies and monitoring tasks (i.e. automatic detection of sensor and process faults). Work on these extensions has been carried out by the Task Group during the past five years, and the main results are summarized in *Benchmarking of Control Strategies for Wastewater Treatment Plants*. Besides a description of the final version of the already well-known Benchmark Simulation Model no. 1 (BSM1), the book includes the Benchmark Simulation Model no. 1 Long-Term (BSM1_LT) – with focus on benchmarking of process monitoring tasks – and the plant-wide Benchmark Simulation Model no. 2 (BSM2). A CD-ROM Appendix containing benchmarking software developed by the Task

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Group, simulation results and detailed technical reports describing all aspects of the benchmark systems is also included.

This title belongs to Scientific and Technical Report Series

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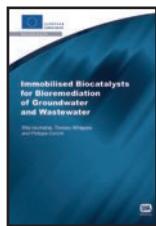
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Non Members Price: £69.00/US\$124.20/€93.15

Water & Wastewater Treatment

Immobilised Biocatalysts for Bioremediation of Groundwater and Wastewater

Editors: Rita Hochstrat, Thomas Wintgens and Philippe Corvini



The European project MINOTAURUS explored innovative bio-processes to eliminate emerging and classic organic pollutants. These bio-processes are all based on the concept of immobilization of biocatalysts (microorganisms and enzymes) and encompass bioaugmentation, enzyme technology, rhizoremediation with halophytes,

and a bioelectrochemical remediation process.

The immobilization-based technologies are applied as engineered ex situ treatment systems as well as natural systems in situ for the bioremediation of groundwater, wastewater and soil. The selection and application of tailored physico-chemical, molecularbiological and ecotoxicological monitoring tools combined with a rational understanding of engineering, enzymology and microbial physiology is a pertinent approach to open the black-box of the selected technologies. Reliable process monitoring constitutes the basis for developing and refining biodegradation kinetics models, which in turn improve the predictability of performances to be achieved with technologies.

Immobilised Biocatalysts for Bioremediation of Groundwater and Wastewater delivers insight into the concepts and performance of a series of remediation approaches. A key strength of this book is to deliver results from lab-scale through to piloting at different European reference sites. It further suggests frameworks for structuring and making evidence-based decisions for the most appropriate bioremediation measures.

Contents:

- Introduction – Motivation for the Project
- Micropollutants
- Environmental Biotechnology Options
- Methods
- Analytical Methods/Performance Assessment
- Chemical Methods
- Immobilisation Techniques
- Technologies
- Wastewater Treatment
- Groundwater Remediation
- Assessment Tools for Feasibility of Technologies

This title belongs to the European Water Research Series

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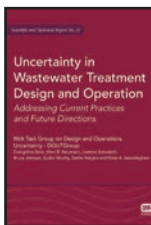
Non Members Price: £89.00/US\$160.20/€120.15

Water & Wastewater Treatment

Uncertainty in Wastewater Treatment Design and Operation

Addressing Current Practices and Future Directions

Editors: Evangelina Belia, Marc B. Neumann, Lorenzo Benedetti, Bruce Johnson, Sudhir Murthy, Stefan Weijers and Peter A. Vanrolleghem (IWA Task Group on Design and Operations Uncertainty - DOUTGroup)



Uncertainty in Wastewater Treatment Design and Operation aims to facilitate the transition of the wastewater profession to the probabilistic use of simulators with the associated benefits of being better able to take advantage of opportunities and manage risk.

There is a paradigm shift taking place in the design

and operation of treatment plants in the water industry. The market is currently in transition to use modelling and simulation while still using conventional heuristic guidelines (safety factors). Key reasons for transition include: wastewater treatment simulation software advancements; stricter effluent requirements that cannot be designed for using traditional approaches, and increased pressure for more efficient designs (including energy efficiency, greenhouse gas emission control).

There is increasing consensus among wastewater professionals that the performance of plants and the predictive power of their models (degree of uncertainty) is a critical component of plant design and operation. However, models and simulators used by designers and operators do not incorporate methods for the evaluation of uncertainty associated with each design. Thus, engineers often combine safety factors with simulation results in an arbitrary way based on designer 'experience'. Furthermore, there is not an accepted methodology (outside modelling) that translates uncertainty to assumed opportunity or risk and how it is distributed among consultants/contractors and owners.

Uncertainty in Wastewater Treatment Design and Operation documents how uncertainty, opportunity and risk are currently handled in the wastewater treatment practice by consultants, utilities and regulators. The book provides a useful set of terms and definitions relating to uncertainty and promotes an understanding of the issues and terms involved. It identifies the sources of uncertainty in different project phases and presents a critical review of the available methods. Real-world examples are selected to illustrate where and when sources of uncertainty are introduced and how models are implemented and used in design projects and in operational optimisation. *Uncertainty in Wastewater Treatment Design and Operation* defines the developments required to provide improved procedures and tools to implement uncertainty and risk evaluations in projects. It is a vital reference for utilities, regulators, consultants, and trained management dealing with certainty, opportunity and risk in wastewater treatment.

This title belongs to Scientific and Technical Report Series

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Water & Wastewater Treatment

Handbook of Environmental Odour Management

Editors: Franz-Bernd Frechen, Jean-Michel Guillot, Richard M. Stuetz, Anton P. van Harreveld



Complaints due to odour annoyance have become a major issue for wastewater treatment plant, waste management, landfill, intensive livestock and other industrial operators as the repeated release of unpleasant odorous emissions can constitute a nuisance to a local population.

Traditionally, odour management

has been maintained by the use of buffer distances between industry and receptors or by the installation of odour abatement systems that both collect and disperse the emission or treat the emission to acceptable level to limit receptor impact. With the expansion of suburbia and the associated encroachment, residents and industry are coming into closer proximity than in the past. This interaction is unpredictable, complex and difficult to address. Integrated odour impact management approaches involving improved measurement and understanding of odorous emissions, their impact on local receptors, treatment performance and integration in local community relations programs are needed to meet the potential impact due to population growth and increasing global urbanisation.

Contents:

- What is Odour and How do Humans Perceive Odours
- Introduction: Why Smell?
- Chemoperception in Evolution
- The Human Olfactory Sense
- Characterising Odours
- The Impact of Environmental Odours on Communities
- What Makes Odours Annoying?
- The Public Health Relevance of Odour Exposure
- Methods for Measuring Odour Annoyance
- Risk Factors for Nuisance Sensitivity
- Dose-effect Relationships for Odour Exposure and Annoyance
- Methods of Odour Measurement and Assessment of Odour Emissions and Exposure
- Measurement of Odours
- Odour Exposure Assessment
- Odour Regulation and Policy
- General Approaches to Odour Regulation
- Examples of Odour Regulation Policies
- Odour Management
- Odour Emission Control
- Odour Release and Dispersion Optimisation
- Odour Release Dispersion Optimisation
- Masking and Neutralising Agents
- Community Relations and Conflict Resolution
- Regulatory Relations
- The Odour Management Plan
- Sectorial Odour Guides
- Wastewater Systems
- Municipal Waste Treatment
- Composting
- Livestock Production
- Industrial Processes

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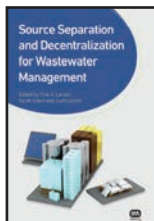
Non Members Price: £105.00/US\$189.00/€141.75

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Water & Wastewater Treatment

Source Separation and Decentralization for Wastewater Management

Editors: Tove A. Larsen, Kai M. Udert and Judit Lienert



Is sewer-based wastewater treatment really the optimal technical solution in urban water management? This paradigm is increasingly being questioned. Growing water scarcity and the insight that water will be an important limiting factor for the quality of urban life are main drivers for new approaches in wastewater management.

Source Separation and Decentralization for Wastewater Management sets up a comprehensive view of the resources involved in urban water management. It explores the potential of source separation and decentralization to provide viable alternatives to sewer-based urban water management.

During the 1990s, several research groups started working on source-separating technologies for wastewater treatment. Source separation was not new, but had only been propagated as a cheap and environmentally friendly technology for the poor. The novelty was the discussion whether source separation could be a sustainable alternative to existing end-of-pipe systems, even in urban areas and industrialized countries.

Since then, sustainable resource management and many different source-separating technologies have been investigated. The theoretical framework and also possible technologies have now developed to a more mature state. At the same time, many interesting technologies to process combined or concentrated wastewaters have evolved, which are equally suited for the treatment of source-separated domestic wastewater.

The book presents a comprehensive view of the state of the art of source separation and decentralization. It discusses the technical possibilities and practical experience with source separation in different countries around the world. The area is in rapid development, but many of the fundamental insights presented in this book will stay valid.

Source Separation and Decentralization for Wastewater Management is intended for all professionals and researchers interested in wastewater management, whether or not they are familiar with source separation.

Contents:

- Part 1: The advantages of source separation and decentralization: Energy, Nutrients (N and P), Water scarcity, Micropollutants, Costs of infrastructure, Decentralization in industrialized countries, Sanitation in developing countries.
- Part 2: The challenges of source separation and decentralization: Implementation in cities, Hygiene, Recycling of nutrients to agriculture, Potential of control and monitoring, Acceptance, Market success.
- Part 3: Potential technologies for source separation: Conceptualizing sanitation systems, Wastewater composition, Treatment of the solid fraction, Aerobic elimination of organics and pathogens, Advanced nitrogen removal, Anaerobic treatment, Electrochemical systems, Transfer into the gas phase, Transfer into the solid phase, Membrane processes, Advanced oxidation, Up-concentration of combined wastewater as an alternative to source separation.
- Part 4: The international experience: Practical experience with source separation and decentralization in Sweden, Germany, Switzerland, Australia, The Netherlands, and in Developing countries.
- Part 5: The paradigm shift. Why question the

prevailing paradigm of wastewater management? How to spur innovation?

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Non Members Price: £125.00/US\$225.00/€168.75

Student Price: £68.00/US\$122.40/€91.80

Water & Wastewater Treatment

Nanotechnology for Water and Wastewater Treatment

Editors: P. Lens, J. Virkutyte, V. Jegatheesan, Seung-Hyun Kim and S. Al-Abed



The rapid development of nanoscience enables a technology revolution that will soon impact virtually every facet of the water sector. Yet, there is still too little understanding of what nanoscience and nanotechnology is, what can it do and whether to fear it or not, even among the educated public as well as scientists and engineers from other disciplines.

Despite the numerous books and textbooks available on the subject, there is a gap in the literature that bridges the space between the synthesis (conventional and more greener methods) and use (applications in the drinking water production, wastewater treatment and environmental remediation fields) of nanotechnology on the one hand and its potential environmental implications (fate and transport of nanomaterials, toxicity, Life Cycle Assessments) on the other.

Nanotechnology for Water and Wastewater Treatment explores these topics with a broad-based multidisciplinary scope and can be used by engineers and scientists outside the field and by students at both undergraduate and post graduate level.

Contents:

- Introduction: Nanotechnology for Water and Wastewater Treatment: Potential and Limitation
- Characteristics and Properties of Nanoparticles
- Physical and Chemical Analysis of Nanoparticles
- Fate and Transport of Nanoparticles/ Nanomaterials, Toxicity Studies
- Nanoparticles and Bioremediation
- Nanosorbents
- Effective Phosphate Removal Using Ca-based Layered Double Hydroxide Materials
- Mg(OH)₂ Nanoadsorbent During Treating the Low Concentration of Cr
- Nano Catalysts
- Visible-light Doped Titania for Water Purification: Nitrogen and Silver Doping
- Doping of Pd Nanocatalysts for PCB Removal
- The Use of Bimetallic Nanosystems to Remove POPs from Soils and Sediments
- Nanomaterials for Disinfection and Microbial Control
- Microbial Manufactured Silver Nanoparticles for Water Disinfection
- Electrospun Nanofibers for Point-of-Use Water Treatment
- Nanomaterials to Enhance Filtration
- Metallic and Ceramic Microreactors
- Enzyme-Immobilized Nanofiltration Membrane to Mitigate Biofouling Based on Quorum Quenching
- Biomimetic Membranes for Water Filtration
- Nano Sensors
- Functionalised Graphene: a Novel Platform for Biosensors
- Lab-on-a-Chip Interferometric Biosensor

Nanotechnology

- Nanosensors for Pathogens
 - Nanomanufacturing: Materials Design and Production
 - Green Synthesis of Nanoparticles and Nanocatalysts
 - Plant-based Nanoparticle Manufacturing
- This title belongs to Integrated Environmental Technology Series*

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Non Members Price: £129.00/US\$232.20/€174.15

Student Price: £80.00/US\$144.00/€108.00

Water & Wastewater Treatment

Basic Water Treatment

Fifth Edition

Authors: Chris Binnie and Martin Kimber



Basic Water Treatment, Fifth edition, is an essential reference and primer on all aspects of water quality and treatment principles and processes.

This accessible introduction and practical guide to water treatment focuses on the issues of most interest to practising engineers, summarising the key issues and criteria in short and accessible

sections, with additional theory to explain and support the treatment processes considered.

Updated, revised and expanded, the fifth edition includes details of the different approaches taken to the ownership, regulation and institutional structures of water supply across the British Isles and a new chapter on sizing of water treatment plants. The technical content has been expanded to include additional processes, such as enhanced coagulation and ceramic membranes, and in other areas, such as ion exchange and contact tank design. Other developing concerns, including chemicals associated with contraceptives and the carbon footprint of water supply, are covered in the new edition.

Basic Water Treatment is an essential resource for water engineers at all levels, a textbook for students, a handbook for engineers or chemists who are new to the industry, and an indispensable guide full of updated practical information for the established practitioner.

Contents:

- Introduction and Structure of British Water Industry
- Quality of Water
- Overview of Water Treatment
- Preliminary Treatment
- Coagulation and Occulation
- Coagulants and Coagulant Aids
- Theory and Principles of Clarification
- Types of Clarifiers
- Filtration
- Membrane Processes
- Other Processes
- Disinfection
- Waterworks Wastes and Sludge
- Private Water Supplies
- Water Safety Plans
- Sizing of Water Treatment Plants
- Water Demand and Use
- Sample Calculations
- Comparison of Different Drinking Water-Quality Standards
- Glossary
- SI Units and Basic Conversion Factors

* For Ebook Prices please see page 2

This title is co-published with ICE Publishing
 September 2013 • 280 pages • Paperback
 ISBN: 9781780405407
 IWA Members Price: £30.00/US\$54.00/€40.50
 Non Members Price: £40.00/US\$72.00/€54.00

Water Policy/Management/Finance/Governance

Water Communication

Introduction and Analysis of Communicating Water Management Issues

Editor: Céline Hervé-Bazin



Water Communication aims at setting a first general outlook at what communication on water means, who communicates and on what topics. Through different examples and based on recent research and contributions, this book presents an original first overview of "water communication". It sets its academic value as one distinct

scientific domain and provides tips and practical tools to professionals. The book contributes to avoid mixing messages, targets and discourses when setting communication related to water issues.

The book facilitates coordination within the water sector and its organizations as water is a wide field of applications where inadequate words and language understanding between its stakeholders is one of the main obstacles today.

Water Communication provides and describes:

- a general outlook and retrospective of the history of the water sector in terms of communication
 - the landscape of organizations communicating on water and classification of topics
 - the differences between communication, information, mediation, raising awareness
 - examples of communication campaigns on water
- Water Communication* is a vital resource for communication managers, utility managers, policy makers involved in water management and students in water sciences and environment.

Contents:

- Introduction
- Overview of Water Management from a Communication Perspective
- History of the Water Discourse
- From Sustainable Development to Local Water Resources
- Words with Water
- What is Water Communication?
- Who?
- Water Messengers
- Targeting Water: from Information to Communication and Mediation
- Where are the Users or ... Who are the Users?
- Examples of Communication Campaigns
- Recommendations

March 2014 • 150 pages • Paperback

ISBN: 9781780405216

Ebook ISBN: 9781780405223

IWA Members Price: £59.25/US\$106.65/€79.99

Non Members Price: £79.00/US\$142.20/€106.65

Water Policy/Management/Finance/Governance

Water Consumption, Tariffs and Regulation

Editors: Francesc Hernandez-Sancho and Maria Molinos-Senante



Water Consumption, Tariffs and Regulation aims to provide a statistical overview about water abstraction, consumption, tariffs and data on sewage and wastewater treatment at an international level. It is mainly based on the statistical information provided by IWA Specialist Group on Statistics and Economics.

The book is structured in three main parts. Part I presents tables and figures relative to water consumption and sanitation status and focuses on water abstraction, water delivered, water consumption and the evolution of sewer connection and wastewater treatment.

Part II focuses on the analysis of water tariffs by investigating the structure of water tariffs by analysing the importance of the variable and fixed charge. It presents drinking water tariffs and illustrates the relationship between tariffs and GDP and also the size of the cities. Finally charges in wastewater are dealt with country by country.

Part III analyses the main aspects relative to water regulation and describes the importance of private operators in the management of the water cycle. Information relative to the principles used to fix drinking water prices is presented with an assessment of access to public water services.

Contents:

- Part I: Water Consumption and Sanitation Status
 - Water Abstraction
 - Water Delivered
 - Water Consumption
 - Wastewater Connection
- Part II: Water Tariffs
 - The Importance of Fixed and Variable Charge
 - Charges in Drinking Water
 - Charges in Drinking Water Per Continent
 - Charges in Wastewater
- Part III: Water Regulation
 - The Importance of Private Operators in Water Cycle Management
 - Principles Used for Fixing Drinking Water Prices
 - Access to Public Water Services

May 2015 • 200 pages • Paperback

ISBN: 9781780404677

Ebook ISBN: 9781780404684

IWA Members Price: £63.75/US\$114.75/€86.06

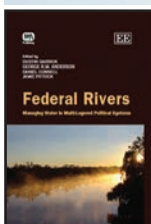
Non Members Price: £85.00/US\$153.00/€114.75

Water Policy/Management/Finance/Governance

Federal Rivers

Managing Water in Multi-Layered Political Systems

Authors: Dustin E. Garrick, George R.M. Anderson, Daniel Connell, and Jamie Pittock



This ground-breaking book provides a comparative perspective on water and federalism across multiple countries. Through a collection of case studies, this book explores the water management experiences and lessons learned in ten federal countries and China. The territorial

division of power in federations, plus the interconnected politics at the national and regional levels, present a classic governance test for waters shared across multiple political jurisdictions. This is increasingly important as democratic transitions have introduced or invigorated federalism across diverse contexts affecting more than 300 major river basins, including over half of the world's international rivers.

Federal Rivers provides a critical analysis of the impact of borders and divided governance on large rivers in federal political systems. The OECD has identified the global water crisis as one of governance and policy fragmentation. Population and economic growth, climatic variability and change, and the diffusion of political power have intensified competition across sectors and regions over water. This is particularly pronounced upstream and downstream jurisdictions at the local, state, national and international levels. *Federal Rivers* explores this issue by examining both the successes and failures of federal regimes in resolving water conflicts and achieving sustainable water management, particularly within river basins. This book appeals not only to scholars of resource management and of federalism, but also to practitioners in government, the private sector and international networks with interests in water policy and federalism.

Contents:

- Introduction
- Federal Rivers: A Critical Overview
- Climate Adaptation in River Management in a Post-stationary World
- Federalism and US Water Policy
- Water Scarcity
- Conflict Resolution, and Adaptive Governance in Federal Transboundary River Basin
- Managing Water in a Federal State: The Canadian Experience; Resilience of River Basin Governance Institutions in the Saskatchewan River Basin of Western Canada
- Water Management and Ecosystems: A New Framework in Mexico
- Main Challenges and Responses to Federalism and Water Security in Brazil
- River Basin Governance and Water Policies in Spain
- Between a Rock and a Hard Place: Re-defining Water Security, Decentralisation and the Elusive Water Pact in Spain
- Allocating Power and Functions in a Federal Design: The Experience of South Africa
- Meeting the Challenges of Equity and Sustainability in Complex and Uncertain Worlds: The Emergence of Integrated Water Resources Management in the Eastern Rivers of South Africa
- Managing Water in India's Federal Framework
- The Hydro-institutional Challenge of Managing Water Economies of Federal Rivers: A Case Study of Narmada River Basin, India
- Inter-jurisdictional Water Management in Pakistan's Indus Basin
- China's Political System, Economic Reform and the Governance of Water Quality in the Pearl River Basin
- Legislative Responses to Water Crises: Administrative Regimes and Institutional Arrangements of Watershed Management in Tai Lake Basin in China
- China's Federal River Management: An Example of Han River
- The Murray Darling Basin
- Water Security in Cross-Border Regions: What Relevance for Federal Human Security Regimes?
- Water Resources Management in Federal Systems

This title is Co-Published with Edward Elgar

February 2014 • 384 pages • Hardback

ISBN: 9781780405995

IWA Members Price: £67.50/US\$121.50/€91.13

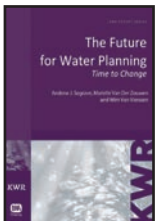
Non Members Price: £90.00/US\$162.00/€121.50

* For Ebook Prices please see page 2

Water Policy/Management/Finance/Governance

The Future for Water Planning: Time to Change

Authors: Andrew James Segrave, Marielle Van Der Zouwen, and Wim Van Vierssen



People and societies conceptualise and experience time in fundamentally different ways. This basic aspect of perception significantly influences the way we frame problems and conceive solutions. This book shows how time perspectives differ across national cultures and across professional roles. It shows how these differences generate ambiguity when it comes to defining problems and devising solutions in the water sector.

This is especially important when dealing with problems such as Sustainable Water Resources Management and Climate Change that involve (culturally and professionally) diverse stakeholders. Response strategies to such problems inherently require concerted action because of the large spatial and temporal scale on which they take place and to minimise the occurrence of conflicting interventions. This disparity between diverse problem perceptions and the need for collective understanding and united action is increasingly recognised as an important concern in the field of water resource management.

The conclusions are important because the time horizons considered in planning and setting research agendas influence what problems are perceived, what questions are asked, and what solutions are sought. In general, more time needs to be invested in framing problems. This is particularly important for participatory planning and transdisciplinary research where the diversity in Motivational Space is greatest. It is recommended that Motivational Space be collectively and explicitly framed from the outset of all planning projects, especially in terms of Temporal Extent. When it comes to setting research agendas it is important to match the Motivational Space of those who prioritize the questions with the goal of the research programme.

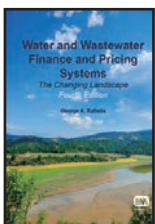
This title belongs to KWR Watercycle Research Institute Series

June 2014 • 120 pages • Paperback
 ISBN: 9781780406121
 Ebook ISBN: 9781780406138
 IWA Members Price: £59.25/US\$106.65/€79.99
 Non Members Price: £79.00/US\$142.20/€106.65

Water Policy/Management/Finance/Governance

Water and Wastewater Finance and Pricing: The Changing Landscape

Fourth Edition
 Author: George A. Raftelis



This new edition of *Water and Wastewater Finance and Pricing: The Changing Landscape* analyses the process for developing an effective financial plan, focusing on components such as public and private sector financing, credit facilities, system development charges, interest rates, cost of debt issuance, and market conditions.

• Fully revised throughout, with new coverage of water reuse pricing, stormwater pricing, computer modelling of financial systems, risk management,

and more

- Provides case studies of utilities that have adopted effective finance and pricing approaches and systems
- Discusses delivery methods for design, construction, and operation of facilities as well as legal, labour, and regulatory issues
- Provides technical and policy insights to utility governing boards

Contents:

- The Changing Landscape of Water and Wastewater Finance and Pricing
- Part One: Financing Water and Wastewater Services
- The First Step: Establishing a Strong Management Foundation
- Developing The Utility's Strategic Financial Plan
- Public Sector Financing Options - Long-Term Financing, Short-Term Financing, and Credit Enhancements
- The Role of Public Private Partnerships and Alternative Delivery Methods
- System Development Charges
- Part Two: Water and Wastewater Pricing
- Water and Wastewater Pricing Process
- Identification of Revenue Requirements
- Determination of Cost of Service
- Designing a Water and Wastewater Rate Structure
- Emerging Pricing Approaches: An Alternative to Traditional Rate Structures
- Designing an Effective Computer Model and Rate Dashboard
- Managing Risks in Rate Design
- Wholesale and Wheeling Rates
- Water Reuse Rates
- Part Three: Selecting the Appropriate Financial and Rate Approach and Gaining Stakeholder Commitment
- Selecting the Appropriate Financial Plan and Rate Design
- Balancing Community Sustainability and Financial Sufficiency
- Public Outreach and Gaining Stakeholder Commitment
- Part Four: Selected Topics
- Benchmarking Water and Wastewater Rates and Charges
- Valuation of Water and Wastewater Utility Assets
- Affordability
- Stormwater Management, Financial Planning and Rates
- Appendices

This title is co-published with CRC Press
 October 2014 • 480 pages • Hardback
 ISBN: 9781780405919
 IWA Members Price: £74.25/US\$133.65/€100.24
 Non Members Price: £99.00/US\$178.20/€133.65

Water Policy/Management/Finance/Governance

Public-private Partnerships in the Water Sector

From Theory to Practice
 Authors: Rui Cunha Marques and Carlos Oliveira Cruz



Ensuring quality and affordability in the water services is a fundamental requirement for the social, economic and environmental development of modern societies. Achieving this goal requires dealing with a large diversity of challenges, such as efficiency, investment, governance, procurement and sustainability, while ensuring the alignment of the stakeholders objectives, often with conflicting expectations. Public-private Partnerships

(PPPs) have emerged as a desirable model for Governments to develop and improve water services, particularly due to the shortage of public financing. Although PPPs have proven to be able to deliver value for money in public services provision, the empirical evidence also shows that there are significant risks in the use of this procurement model. *Public-Private Partnerships in the Water Sector: From Theory to Practice* provides an integrated overview of the life-cycle process for successfully developing and managing PPPs, from the preliminary studies and public tender stage to the contract management and regulation, and also addressing the critical issues on contract design. It provides the theoretical background for the use of PPPs, and addresses the challenging question of implementing and managing PPPs in developing economies. This is a unique manual for those engaged in the water sector and, particularly for Central and Local Governments, private sector operators and academics dealing with the provision of water services and private sector participation in public services.

Contents:

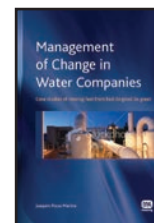
- Introduction to the PPPs
- The Water Sector and the Potential Use of PPPs
- The Design of the PPPs Contracts: the Major Y and N
- The Preliminary Studies and the Public Tender Stage
- The Contract Risk Matrix and the Problem of Renegotiation
- The Contract Management and the Regulation of PPPs
- The Case of Institutionalized PPPs or the Mixed Companies
- The Use of PPPs in the Developing World
- The Worldwide Experience of PPPs in the Water Sector
- Best Practices Case Studies
- Concluding Remarks

August 2014 • 200 pages • Paperback
 ISBN: 9781780406435
 Ebook ISBN: 9781780406442
 IWA Members Price: £66.75/US\$120.15/€90.11
 Non Members Price: £89.00/US\$160.20/€120.15

Water Policy/Management/Finance/Governance

Management of Change in Water Companies

Case Studies of Moving Fast from Bad to Good to Great
 Author: Joaquim Pocas Martins



Management of Change in Water Companies tells real stories of real water companies that went through processes of change and achieved their best results ever in just a few years. It reflects the personal experience of the author from leading processes of change in five different water supply/sewage companies, between 10

and 120 years old and serving from 200,000 to 4,000,000 people.

This practical and effective book shows:

- how to change, modernize and make profitable old-fashioned organizations,
- how to reduce water loss and promote efficiency in water companies,
- how to use the savings to rehabilitate and expand infrastructure without increasing tariffs,
- how to deal with overstaffing,
- how to plan, finance, build and maintain infrastructure,
- how to introduce innovation,
- how to motivate people,
- how to deal with clients, regulators, unions, shareholders, politicians and the press

* For Ebook Prices please see page 2

• how to achieve sustainability.

The case studies provide for instance, how to bring water losses from over 50% to below 20%, how to connect 100,000 existing buildings to a new sewage system in 4 years and how to get millions of people walking along the banks of rehabilitated urban creeks, rivers and beaches.

The book presents case studies, management theory, comparative analysis of situations reported in the literature and the personal experience of an author who has lead a number of successful processes of change in different water companies. Extremely useful and specific software is made available, free of charge, for book purchasers by contacting publications@iwap.co.uk, and providing details of the book's purchase. *Management of Change in Water Companies* is essential reading for water utility managers, national and local governments responsible for water policy as well as those concerned with the management of change and risk management. It is also be useful to readers interested in the areas of pollution control, energy savings and water losses, and stream/beach/river restoration.

September 2014 • 200 pages • Paperback

ISBN: 9781843391951

Ebook ISBN: 9781780406510

IWA Members Price: £51.75/US\$93.15/€69.86

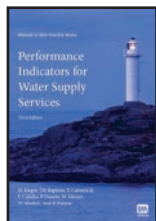
Non Members Price: £69.00/US\$124.20/€93.15

Water Policy/Management/Finance/Governance

Performance Indicators for Water Supply Services

Third Edition

Authors: H Alegre, JM Baptista, E Cabrera Jr, F Cubillo, P Duarte, W Hirner, W Merkel, R Parena



The IWA Performance Indicator System for water services is now recognized as a worldwide reference. Since its first appearance in 2000, the system has been widely quoted, adapted and used in a large number of projects both for internal performance assessment and metric benchmarking. Water

professionals have benefited from a coherent and flexible system, with precise and detailed definitions that in many cases have become a standard. The system has proven to be adaptable and it has been used in very different contexts for diverse purposes. The Performance Indicators System can be used in any organization regardless of its size, nature (public, private, etc.) or degree of complexity and development.

The third edition of *Performance Indicators for Water Supply Services* represents a further improvement of the original manual. It contains a reviewed and consolidated version of the indicators, resulting from the real needs of water companies worldwide that were expressed during the extensive field testing of the original system. The indicators now properly cover bulk distribution and the needs of developing countries, and all definitions have been thoroughly revised. The confidence grading scheme has been simplified and the procedure to assess the results-uncertainty has been significantly enhanced.

In addition to the updated contents of the original edition, a large part of the manual is now devoted to the practical application of the system. Complete with simplified step-by-step implementation procedures and case studies, the manual provides guidelines on how to adapt the IWA concepts and indicators to specific contexts and objectives.

This new edition of *Performance Indicators for Water Supply Services* is an invaluable reference source for all those concerned with managing the performance of the water supply industry, including those in the water utilities as well as regulators,

policy-makers and financial agencies.

This title belongs to Manual of Best Practice Series

September 2014 • 312 pages • Hardback

ISBN: 9781780406329

Ebook ISBN: 9781780406336

IWA Members Price: £85.50/US\$153.90/€115.43

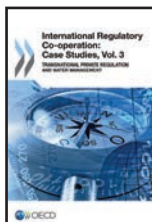
Non Members Price: £114.00/US\$205.20/€153.90

Water Policy/Management/Finance/Governance

Transnational Private Regulation and Water Management

International Regulatory Co-operation: Case Studies, Volume 3

Author: Organisation for Economic Co-Operation and Development (OECD)



The world is becoming increasingly global. This raises important challenges for regulatory processes which still largely emanate from domestic jurisdictions. In order to eliminate unnecessary regulatory divergences and to address the global challenges pertaining to systemic risks, the environment, and human health

and safety, governments increasingly seek to better articulate regulations across borders and to ensure greater enforcement of rules. But, surprisingly, the gains that can be achieved through greater co-ordination of rules and their application across jurisdictions remain largely under-analysed. This volume complements the stocktaking report on International Regulatory Co-operation: Rules for a Global World by providing evidence on regulatory co-operation in the area of transboundary water management and through the fast development of transnational private regulation.

This title belongs to OECD Report Series

June 2013 • 104 pages • Paperback

ISBN: 9781780405520

Ebook ISBN: 9781780405537

IWA Members Price: £22.00/US\$39.60/€29.70

Non Members Price: £29.35/US\$52.83/€39.62

Water Policy/Management/Finance/Governance

Public Private Partnerships in the Water Sector

Innovation and Financial Sustainability

Authors: Cledan Mandri-Perrott and David Stiggers



Public sector funding and resources are often inadequate to meet increasing demands for investment and effective management, and a growing case history shows increasing involvement by the private sector in provision of infrastructure and services through PPP arrangements. The objective of this book is to

determine, and make recommendations on, means of optimizing the use of Public Private Partnerships (PPP) in development of infrastructure whilst ensuring the sustainable long term provision of water and waste water services. The focus is on providing detailed recommendations on contractual issues and contract structures to achieve this objective.

Public Private Partnerships in the Water Sector - Innovation and Financial Sustainability:

• Identifies what is needed to establish effective and

sustainable water and wastewater service reform when using a PPP arrangement, and importantly how those issues can be addressed contractually.

- Provides specific recommendations of a comprehensive and detailed approach to contract drafting to ensure effective, sustainable and long term provision of water and wastewater services, including an approach for adaptation of public procurement procedures for PPP arrangements.
 - Recommends a proposed approach to dealing with the influence of imperfect or unavailable data on the long term effectiveness or sustainability.
- This is a practical and pragmatic book in which the author shares his considerable experience on devising and implementing PPPs in the water sector. It is aimed primarily at practitioners working with developing countries but its recommendations will also be suitable for application in developed countries. It is also a useful reference for postgraduates and academics studying infrastructure development.

Contents:

- Introduction
- Public Private Partnerships - Solutions to Meet Infrastructure Investment and Management Improvement Needs
- Characteristics of Urban and Peri-Urban Water and Wastewater Services
- The Research Problem and Questions Arising
- Methodology of the Research
- Plan of this Research
- Background to the Sector & PPP: Water & Waste Water Service Sector Issues
- Strategic Planning, Policy Considerations & the Country Context
- Social Aspects
- Incorporating Private Sector Participation
- Literature Review and Considerations for PPP in the Provision of Water and Wastewater Services
- Overview of Possible PPP Contract Structures
- Key Requirements for a Successful PPP
- Partnerships between Public and Private Institutions
- Managing the Stages of Development and Implementation of PPPs
- Balance of Costs and Service Standards
- Setting Service Standards and linking to Costs
- Determining Tariffs and Subsidy Requirements
- Performance Indicators
- Main Factors Influencing Effective Development & Operation of PPP Schemes: Performance Monitoring, Legal and Regulatory Issues
- Performance Monitoring
- Legal framework
- Basic Principles of Regulation
- Developing a Regulatory Framework for Effective PPP Agreements
- Understanding and Managing Risk
- Analyzing Responsibilities and Risks
- Common Risks and Responsibilities
- Political and Macroeconomic Risks
- Water Sector Specific Risks
- Risks Associated with Managing the PPP agreement
- Funding and Finance
- Considering Bankability
- Structuring Finance for Water PPP Projects
- Typical financing structure of a Long Term PPP Agreement
- Public Funding
- Support and International Funding Institutions
- Considering and Valuing Contingent Liabilities
- Hedging
- Refinancing
- General Procurement Issues of PPP's
- Principles for Good Procurement and Managing the Bidding Process
- Selection Criteria & Bid Evaluation
- Prequalification
- Choosing the Bidding Process
- Submission, Opening and Comparison of Bids
- European Union Position on PPPs
- Dealing with Existing PPPs and Re-Negotiation
- Why Should Renegotiation and Adaptation Clauses be Considered as Part of the PPP Agreement

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- Legal Issues Related to Renegotiations
- International Business Practices for Renegotiations
- Developing Sustainable PPP Arrangements: Improving Key Contract Provisions
- Contract Form and Risk Allocation
- General Provisions
- Provisions Related to Service Standards and other Obligations
- Provisions Applying to Implementation, Monitoring and Enforcement
- Provisions Applying to Financing
- Provisions Related to Force Majeure & Termination
- Various Standard Contractual Issues
- Maintaining the Economic & Financial Equilibrium of the PPP Agreement
- Dealing with the Long Term Nature of PPP Agreements: Provisions for Periodic, Extraordinary and Emergency Variations
- Periodic Variations in PPP Agreements
- Recommendations for Tariff Indexation and Cost Pass-throughs
- Improving PPP Structures
- New Model: Output-based Long Term PPP Agreement
- New Model: PPP Trust Structure
- Dealing with Imperfect Data
- Identification and Categorisation of Data
- Differentiating Between Data to be Collected at Bid and Post Contract Award Stage
- Recommendations on Dealing with Imperfect Data
- Contractual Provisions to Adjust for the Implications of Imperfect Data
- Improving Procurement Proposals for PPP Agreement
- Enhanced Procurement to Deal with the Data Improvement Period
- Prequalification and Award Recommendations
- The Developer's Remuneration and the Bid Price
- Summary Conclusions and Recommendations
- Annex 1 - European Legal framework and its implications on PPP
- Annex 2 – Sector Specific Risk Matrix

August 2013 • 364 pages • Hardback

ISBN: 9781843393207

Ebook ISBN: 9781780401058

IWA Members Price: £74.25/US\$133.65/€100.24

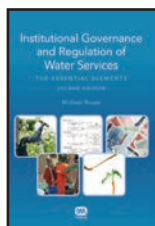
Non Members Price: £99.00/US\$178.20/€133.65

Water Policy/Management/Finance/Governance

Institutional Governance and Regulation of Water Services

Second Edition

Author: Michael Rouse



Institutional Governance and Regulation of Water Services aims to provide the key elements of policy, governance and regulation necessary for sustainable water and sanitation services. On policy matters, it covers important aspects including separation of policy and delivery, integrated planning, sustainable cost recovery,

provisions for the poor, and transparency. Regulation and Regulatory Bodies are presented in their various forms, with discussion of why some form of independent scrutiny is essential for sustainability.

The focus is on what works and what does not, based on consideration of basic principles and on case studies in both developing and developed countries.

The early chapters discuss the key elements, with later chapters considering how these elements have come together in successful reforms of public sector operations. A chapter is devoted to the successful use of the private sector based on lessons learnt from 'failures' of private contracts and the need for

the application of sound procurement principles. The current trend is for a public sector model which benefits from business approaches, the so-called corporatised public utility.

Experience since the publication of the first edition in 2007 reinforces the importance of the key elements for sustainable water services. This second edition brings the material up to date and with some increased emphasis on public participation in its many forms. It refers to the opportunity for progress provided by the UN Declaration of Water and Sanitation as a Human Right, but only if it is implemented in a practical and sustainable way.

Institutional Governance and Regulation of Water Services is aimed at providing an informative source for national and local governments responsible for water policy, for water utility managers, and for students who will be the policy makers of tomorrow. It is a teaching aid for courses on water policy, governance and regulation.

September 2013 • 250 pages • Paperback

ISBN: 9781780404509

Ebook ISBN: 9781780404516

IWA Members Price: £63.75/US\$114.75/€86.06

Non Members Price: £85.00/US\$153.00/€114.75

Student Price: £50.00/US\$90.00/€67.50

Water Resources

Water Security for Better Lives

Author: Organisation for Economic Co-Operation and Development (OECD)



This publication examines the critical issues surrounding water security (water shortage, water excess, inadequate water quality, the resilience of freshwater systems), providing a rationale for a risk-based approach and the management of trade-offs between water and other (sectorial and environmental) policies.

The report sets out a three-step process to "know", "target" and "manage" water risks: (1) appraising the risks, (2) judging the tolerability and acceptability of risks and weighing risk-risk trade-offs, and (3) calibrating appropriate responses.

The publication provides policy analysis and guidance on the use of market-based instruments and the complex links between water security and other policy objectives, such as food security, energy security, climate mitigation and biodiversity protection. *This title belongs to OECD Report Series*

March 2014 • 178 pages • Paperback

ISBN: 9781780405766

Ebook ISBN: 9781780405773

IWA Members Price: £40.46/US\$72.83/€54.62

Non Members Price: £53.94/US\$97.09/€72.82

Water Resources

Water

Managing Water Resources

Author: Organisation for Economic Co-Operation and Development (OECD)



The main impacts on water availability and use are due to human activity. Economic expansion and rising living standards will continue to drive the demand for water in the years to come. Over 90% of the projected population growth by 2050 (3 billion more people) will be in developing countries, often in regions which already are water

scarce. *Water: Managing Water Resources* looks at how issues ranging from infrastructure financing to climate change influence water resources, as well as the importance of water in activities ranging from energy production to agriculture.

This title belongs to OECD Report Series

April 2014 • 140 pages • Paperback

ISBN: 9781780405728

Ebook ISBN: 9781780405735

IWA Members Price: £20.00/US\$36.00/€27.00

Non Members Price: £25.00/US\$45.00/€33.75

Water Resources

Integrated Water Resource Management in Brazil

Editor: Carsten Lorz



The complex interactions between water resources, land-use change and water technologies are a major issue in many emerging countries of Southern America. Usable water resources are affected by natural conditions, such as, strong seasonal contrasts and high climatic variability, and rapid changes of land use and

cover that is caused by the dramatic expansion of agricultural land and urbanization processes.

So far, the effects of the changing climate have had minor effects on water resources. Although regional data is rather scarce, global climate models predict substantial changes in climatic conditions. A further pressure is that demand for water supply and waste water, both in terms of amount and spatial expansion, is increasing rapidly in some regions due to higher population densities caused by natural population growth and migration as well as higher per capita consumption.

Integrated Water Resource Management in Brazil aims to present the results of the joint project IWAS/AGUA DF which deals with problems, causes and solutions in water supply in scope of integrated water resource management in western Central Brazil. The basic idea of the IWRM approach to be presented is to show how natural conditions and human interference are interacting and how technologies as well as concepts might help to manage such water resource systems in a sustainable way.

Contents:

- Introduction and Overview
- Climate, Land Use and Water Resources
- Regional Climate Change in Central Brazil
- Protection and Exploitation of Groundwater Resources in western Central Brazil
- Effects of Land Use/Cover Change on Water Resources in Mesoscale River Basins in western Central Brazil
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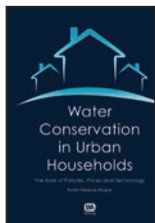
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Water Resources

Water Conservation in Urban Households

Roles of Prices, Policies and Technologies

Author: Sonia Ferdous Hoque



On the one hand, population and economic growth are increasing the demand for water but on the other, environmental consequences of climate change, pollution and over extraction of groundwater are decreasing the world's supply of fresh water. This makes the availability of water for human use one of the greatest global

concerns of this century. Neither levelling growth nor technological innovation can stretch the existing supplies significantly; hence, it is imperative that demand side management techniques such as the use of water efficient fixtures in urban households, appropriate water tariff structure and regulatory policies are used as tools for water conservation.

Conservation of water resources is one of the important aspects of ensuring sustainable development of cities and should incorporate environmental, social and economic dimensions. This book highlights the importance of using water efficiently in urban households, in both developed and developing cities. Specifically, the book focuses on:

- the determinants of water conservation behaviour, including psychological factors such as values, beliefs and attitudes, socio-economic factors such as income, water pricing and policies, environmental factors such as seasonal variations and demographic factors such as household size and age;
- the role of policies such as mandatory water restrictions, labelling of water saving devices and promotion of public awareness;
- the role of water and wastewater tariff structures in achieving the goals of revenue generation, affordability, demand management and equity and the design of conservation oriented rate structures; and
- the role of water saving devices in providing technological solutions to household water conservation. In relation to the above issues, the book provides several detailed case studies of cities to understand the effectiveness of such demand management tools and the lessons learnt. Overall, the book aims to provide a comprehensive overview of the various price and non-price tools that can be used to manage domestic water consumption.

Water Conservation in Urban Households is a one-stop repository of information on water conservation for academics, practitioners and policy makers. The text can be used for teaching and research on water demand management as well as for professional reference by water utility officials. In addition, the appendix of the book contains a database of the current domestic water and wastewater tariffs and monthly bills of selected cities, which will be helpful for those willing to conduct research in this field.

Contents:

- Water conservation – The Answer to Water Shortage in the 21st Century
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Water Resources

Integrated Water Resources Management in a Changing World

Lessons Learnt and Innovative Perspectives

Editors: Dietrich Borchardt and Ralf Ibsich



This volume presents a selection of the main contributions made to the international conference on *Integrated Water Resources Management (IWRM)* entitled *'Management of Water in a Changing World: Lessons Learnt and Innovative Perspectives'* that was held from 12 to 13 October 2011 in Dresden, Germany. The book summarises

the main messages issuing from the conference and contains selected papers which were presented during the conference, either as keynote lectures in plenary sessions or as submitted papers in one of the thematic sessions. The key themes of the book are:

- Water resources in changing environments
- Groundwater management
- Technologies and implementation
- Water management indicators at different scales
- Information and decision support systems
- Water governance: actors and institutions

The book provides an overview on important issues concerning the conceptual framework of integrated water resources management (IWRM). All presentations and abstracts and the corresponding PowerPoint presentations as well as a video recording of the panel discussion are available at the conference website:

<http://www.bmbf.iwrm2011.de>. Readers are encouraged to complete their review of the conference and its messages by consulting this interesting on-line source of accompanying scientific material.

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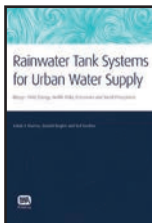
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Water Supply & Distribution

Rainwater Tank Systems for Urban Water Supply

Design, Yield, Energy, Health Risks, Economics and Social Perceptions

Editors: Ashok K Sharma, Donald Begbie and Ted Gardner



Rainwater tank systems have been widely adopted across the world to provide a safe local source of water in underdeveloped rural areas, a substitution for mains water for non-potable end uses in water stressed urban areas, as well as providing flooding control in monsoonal climates such as Korea, or combined sewer

systems such as Germany. The importance of these systems in cities has grown, as water managers seek to provide a range of decentralised solutions to supply constraints of current water supply systems, whilst reducing the impact of urban development on the natural environment, and increasing resilience to the impacts of climate change. Rainwater tank systems are now often implemented under integrated urban water management (IUWM) and water sensitive urban

design (WSUD) philosophies, which take a holistic view of the urban water cycle.

Rainwater Tank Systems for Urban Water Supply is based on a comprehensive, multi-million dollar research program that was undertaken in South East Queensland (SEQ) Australia in response to the Millennium drought when the water supply level in the regions drinking water dams dropped to 17% in July 2007 and the area came close to running out of water. In particular, the book provides insights and detailed analysis of design, modelling, implementation, operation, energy usage, economics, management, health risk, social perceptions and implications for water quality/ quantity of roof water runoff.

The approaches and methodologies included in *Rainwater Tank Systems for Urban Water Supply* inform and validate research programs, and provide insights on the expected performance and potential pitfalls of the adoption of rainwater tanks systems including:

- actual harvested yield and resulting mains water savings,
- optimal sizing for rainwater storages and roof collection systems,
- expected water quality and implications for managing public health risks,
- modelling tools available for decision support,
- operation and management approaches of a decentralised asset at the household scale and community acceptance.

The book is suitable for use at undergraduate and post graduate levels and is of particular interest to water professionals across the globe, who are involved in the strategic water planning for a town, city or a region. It is a valuable resource for developers, civil designers, water planners, architects and plumbers seeking to implement sustainable water servicing approaches for residential, industrial and commercial developments.

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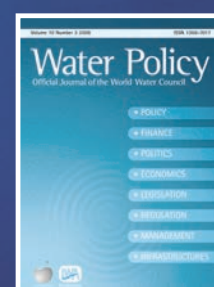
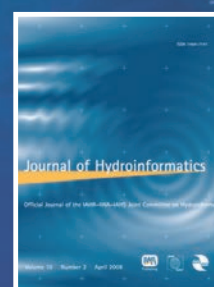
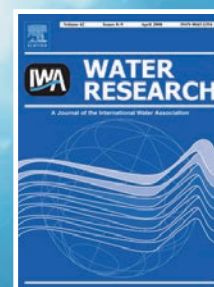
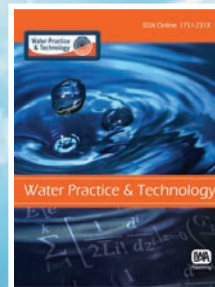
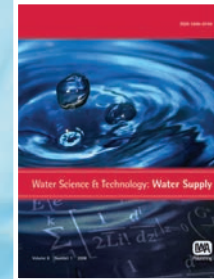
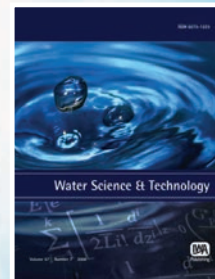
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