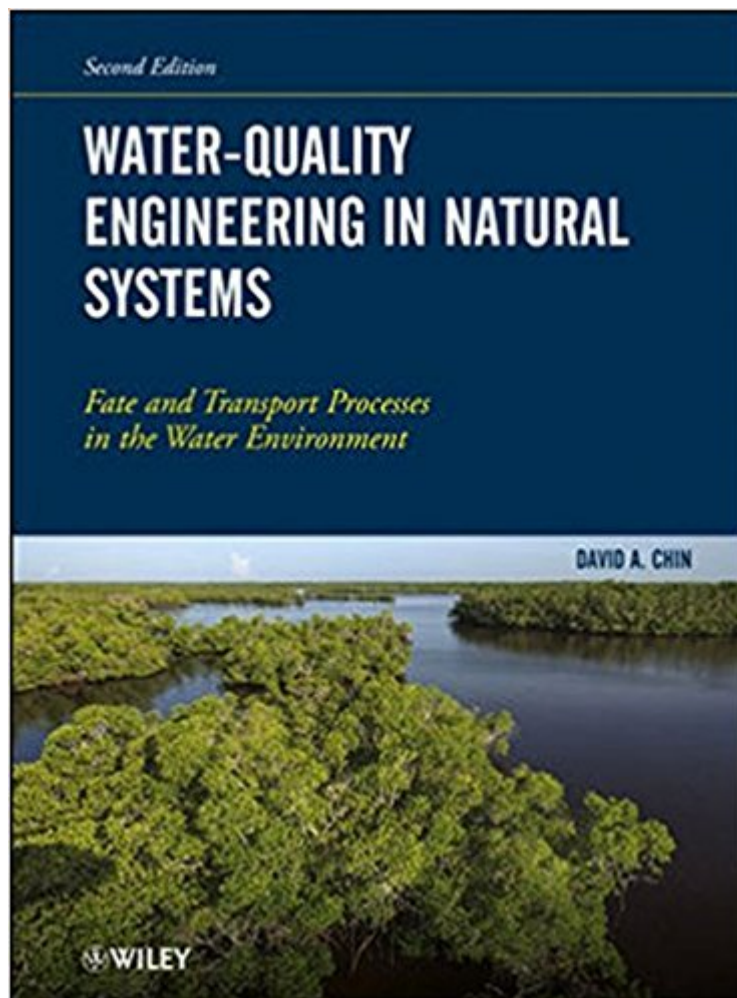




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Water-Quality Engineering In Natural Systems: Fate And Transport Processes In The Water Environment



Synopsis

Provides the tools needed to control and remediate the quality of natural water systems Now in its Second Edition, this acclaimed text sets forth core concepts and principles that govern the fate and transport of contaminants in water, giving environmental and civil engineers and students a full set of tools to design systems that effectively control and remediate the quality of natural waters. Readers will find coverage of all major classes of water bodies. Moreover, the author discusses the terrestrial fate and transport of contaminants in watersheds, underscoring the link between terrestrial loadings and water pollution. *Water-Quality Engineering in Natural Systems* begins with an introduction exploring the sources of water pollution and the control of water pollution. It then presents the fundamentals of fate and transport, including the derivation and application of the advection–diffusion equation. Next, the text covers issues that are unique to: Rivers and streams Groundwater Watersheds Lakes and reservoirs Wetlands Oceans and estuaries The final two chapters are dedicated to analyzing water-quality measurements and modeling water quality. This Second Edition is thoroughly updated based on the latest findings, practices, and standards. In particular, readers will find new methods for calculating total maximum daily loads for river contaminants, with specific examples detailing the fate and transport of bacteria, a pressing problem throughout the world. With end-of-chapter problems and plenty of worked examples, *Water-Quality Engineering in Natural Systems* enables readers to not only understand what happens to contaminants in water, but also design systems to protect people from toxic pollutants.

Book Information

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Customer Reviews

“This book is obviously a very valuable tool for the specialists in the field, for researchers, and students for enlarging their horizon on water-quality engineering in natural systems.”

(Environmental Engineering and Management Journal, 1 April 2013)

“This well-organized, comprehensive book is intended to be used as the sole water quality textbook for upper-level undergraduate and graduate courses, but it would also make an excellent reference for environmental engineering professionals. Summing Up: Highly recommended. Upper-division undergraduates through professionals/practitioners.” (Choice, 1 August 2013)

FOCUSING ON CONTAMINANT FATE AND TRANSPORT, DESIGN OF

ENVIRONMENTAL-CONTROL SYSTEMS, AND REGULATORY CONSTRAINTS

This textbook details the fundamental equations that describe the fate and transport of contaminants in the water environment. The application of these fundamental equations to the design of environmental-control systems and methodologies for assessing the impact of contaminant discharges into rivers, lakes, wetlands, ground water, and oceans are all covered. Readers learn to assess how much waste can be safely assimilated into a water body by developing a solid understanding of the relationship between the type of pollutant discharged, the characteristics of the receiving water, and physical, chemical, and biological impacts. In cases of surface runoff from urban and agricultural watersheds, quantitative relationships between the quality of surface runoff and the characteristics of contaminant sources located within the watersheds are presented. Some of the text's distinguishing features include its emphasis on the engineering design of systems that control the fate and transport of contaminants in the water environment, the design of remediation systems, and regulatory constraints. Particular attention is given to use-attainability analyses and the estimation of total maximum daily loads, both of which are essential components of water-quality control in natural systems. Readers are provided with a thorough explanation of the complex set of laws and regulations governing water-quality control in the United States. Proven as an effective textbook in several offerings of the author's class "Water Quality Control in Natural Systems," the flow of the text is carefully structured to facilitate learning. Moreover, a number of practical pedagogical tools are offered: Practical examples used throughout the text illustrate the effects of controlling the quality, quantity, timing, and distribution of contaminant discharges into the environment. End-of-chapter problems, and an accompanying solutions manual, help readers assess their grasp of each topic as they progress through the text. Several appendices with useful reference material are provided, including current U.S. Water Quality Standards. Detailed bibliography guides readers

to additional resources to explore particular topics in greater depth. With its emphasis on contaminant fate and transport and design of environmental-control systems, this text is ideal for upper-level undergraduates and graduate students in environmental and civil engineering programs. Environmental scientists and practicing environmental/civil engineers will also find the text relevant and useful.

I purchased this book for a reference for the PE Civil exam. It covers topics I couldn't find in other text books, mainly relating to processes and quality of natural waters. I thought about selling it back after I passed the exam, but decided to keep it because the information covered is great. It is heavy on fate and transport process equations.

Excellent book, from first page to last...

This book is simply the best book on fate and transport in the water environment. I have used other available books (e.g., Thomann and Mueller, Fischer et al, Schnoor, etc.) but they are all outdated and less comprehensive and less useful than this one.

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