

*Soil Pollution, Processes and Dynamics*, by B. Yaron, R. Calvet, R. Prost, Springer, Berlin, 1996, 313 pp., 105 figures and 46 Tables, £92.50, ISBN: 3-540-60927-X

The preface notes that the soil is the medium through which pollutants move from the land surfaces to groundwater. The book addresses a basic overview of the processes governing the behavior of pollutants as affected by soil constituents and environmental factors. The book consists of four parts and 10 chapters:

- 1 Part I: The Interacting Materials
  - 1.1 Chapter 1: The Soil as a Porous Medium
  - 1.2 Chapter 2: The Soil Pollutants
1. Part II: Pollutants Partitioning Among Soil Phases
  - 1.1 Chapter 3: Pollutants-Soil Solution Interactions
  - 1.2 Chapter 4: Volatilization into the Soil Atmosphere
  - 1.3 Chapter 5: Retention of Pollutants on and Within the Soil Solid Phase
1. Part III: Pollutant Behavior in Soils
  - 1.1 Chapter 6: Reversible and Irreversible Retention -Release and Bound Residues
  - 1.2 Chapter 7: Transformation and Metabolite Formation
  - 1.3 Chapter 8: Pollutants Transport in the Soil Medium
1. Part IV: Prediction and Remediation
  - 1.1 Chapter 9: Modeling the Fate of Pollutants in the Soil
  - 1.2 Chapter 10: Risks and Remedies

As can be concluded from the Contents, the authors present a comprehensive, but not exhaustive review of the current knowledge concerning soil pollution. One of the consequences is that the book is descriptive rather than profoundly mathematical. For example, the boundary conditions of the presented differential equations (describing transport) are not discussed and solutions not derived. Nonequilibrium transport models are presented, but I have missed correlations for the mass transfer coefficients (these have my warm interest). On the other hand, the authors illustrate various interesting processes via a number of examples from the literature and from their own results.

Summarizing, the book covers a broad field, is clearly written and hence, may serve (under-)graduate students in the fields of agricultural, chemical, civil and environmental engineering, and also serve as an introduction book to specialists.

H.J.H. Brouwers

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*Microbial Transformation and Degradation of Toxic Organic Chemicals*, L.Y. Young and C.E. Ceriglia Eds.

The book is organised in four parts. It starts with a discussion of microbial versatility and contaminant types. Part two covers the microbiology and biochemistry of contaminant biodegradation with chapters on petroleum hydrocarbons, reductive dechlorination of PCBs, cometabolism of chlorinated aliphatic hydrocarbon solvents, halogenated

aromatics, PAHs, anaerobic degradation of non-halogenated aromatics (such as BTEX, phenol and cresols) and the capabilities of lignolytic fungi. Part three moves on to bioremediation applications including: biotreatment of process water and bioremediation of chlorinated organics, coal tar and petroleum hydrocarbons. The book concludes with a final section on future trends. Included here are: the use of molecular biology tools to monitor the process of bioremediation, genetically engineered microorganisms and risk assessment.

The book contains a lot of useful information, but suffers from a significant amount of duplication of material between the authors. This stems from the structure of the book, but could have been avoided by tighter editing. There are many instances where the basic microbiology and biochemistry covered in part two are repeated in the applications section (part three). This is most evident in the chapters entitled "Cleanup of petroleum hydrocarbon contamination in soil" and "In situ processes for bioremediation of BTEX and petroleum fuel products". Both chapters are very good in their own right, but the repetition is irritating.

Chapter two "Chemical contamination of the environment: sources, types and fate of synthetic organic chemicals" is the most disappointing chapter. It is mainly a catalogue of chemicals which have been detected in the environment and contains several mistakes (eg. methyl tertbutyl ether is incorrectly classified as an aromatic hydrocarbon). There is a very small section (four pages) on contaminant fate. It would have been far more useful to cover contaminant behaviour in the environment and how this affects biodegradation.

The inclusion of a chapter on risk assessment in a book of this type is to be applauded. All too often, it is assumed that a site should be cleaned-up (e.g., bioremediated), simply because it is contaminated, without any reference to the risk posed by that contamination to human health and the environment. The chapter concentrates on how toxicity and carcinogenicity of chemicals are assessed, but unfortunately fails to address the source–pathway–receptor concept which is key to assessing risk.

This book is one of many on the topic of bioremediation of organic contaminants in the environment that have been published in the last couple of years. Despite the reservations discussed above, it would be a useful addition to the library of those working in the field.

G. Lethbridge

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*Financial Evaluation of Environmental Investments*, by Tuula Moilanen and Christopher Martin, published by IChemE, 1998, 177 pages, ISBN 0-85295 365-B

The authors state that their book "seeks to help managers to answer the key question about an environmental investment - what is impact on the bottom-line of the company". This is a formidable challenge to undertake, and perhaps it is understandable that, after reading the book, I am still far from confident that I could carry out an evaluation with the rigour that their methodology implies.