have preferred a few more key references throughout the book [the reviewer's academic bias is revealed here].

GARY F. BENNETT

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Hazardous Wastes: Sources, Pathways, Receptors. Richard J. Watts, Wiley, New York, 1998, US$89.95, 764 pp., ISBN: 0-471-00238-0

This book was written to be used as a text ''...to provide senior and engineering M.S. students with the scientific principles of hazardous waste management and engineering.'' To this end, the author develops material covering the following topics:

- terminology, nomenclature, and properties of hazardous wastes and materials;
- behavior of hazardous chemicals in surface impoundments, soils, groundwater, and treatment systems;
- assessment of the toxicity and risk associated with exposure to hazardous chemicals;
- strategies to find information on nomenclature, transport and behavior, and toxicity for hazardous compounds; and
- application of the scientific principles of hazardous wastes to their management, remediation, and treatment.

Watts divided the book into four major sections:

- Sources
- Pathways
- Receptors
- Management and Design Applications

In the preface, the author states his goal was ''...to develop material that would be fundamental in nature and tried to design a text that would be an educational document rather than a training manual''. In my estimation, he has succeeded in meeting that goal.

The book is comprehensive in its treatment and goes well beyond most texts in its treatment of the basic science underlying hazardous waste generation, treatment, and disposal. Indeed, I was surprised by the depth of treatment in several areas, but I will cite only three here:

- the comprehensive discussion of organic chemistry,
- the discussion of nuclear waste, and
- the treatment of microbes, microbial reactors and biochemical pathways.

All three topics were uniquely and comprehensively discussed. The unique aspect is that few, if any, texts I have reviewed treat all three of these topics in such depth, i.e., in a most comprehensive manner.

Watts has discussed both remediation and disposal in the last two chapters, but he has limited his treatment of this topic as (I am informed) he is authoring another text entitled *Hazardous Wastes; Minimization, Remediation, Treatment and Disposal*, with its focus on engineering design.

Pedagogical techniques that enhance the book's utility as a text include:

- preamble to each chapter outlining its contents;

- summary (at the end of each chapter) reviewing the important points and concepts in the chapter;
- extensive number of problems (both qualitative and quantitative) at the end of each chapter; and last;
- good reference lists (extensive but not exhaustive).

My overall evaluation is that Watts has authored one of the best textbooks I have seen recently. I predict it will be utilized in numerous university courses. If I were teaching a course on the topic, I would adopt *Hazardous Wastes: Sources, Pathways, Receptors* without hesitation.

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