

published while four are under publication, eight are in preparation and four more are proposed. I have published reviews of several of the published books. All were informative, well written and well referenced. This book is no exception.

In this book, the authors discuss in depth "... waste characteristics, control technologies, management strategies, facility innovations, process alternatives, costs, case histories, effluent standards, and future trends for the major hazardous industrial operations, and in-depth presentation of methodologies, technologies, alternatives, regional effects, and global effects of important pollution control practice that may be applied to the industrial operations."

The editors note that the book can serve both as a college textbook as well as a reference for hazardous waste managers. Perhaps personally, I am not sure of its utility as an engineering course textbook. The text is mainly descriptive and contains very little mathematical analysis usually found in engineering texts. Moreover, there are no problems or student exercises provided.

Surprisingly, incineration which is commonly used in hazardous waste disposal is discussed very briefly. A chapter devoted to this technology would have been useful.

The foregoing is a relatively minor criticism of the book. The book does contain a great deal of useful information.

There are many positive features to note in this book. A few of them are discussed below.

- (1) A review of hazardous waste generator status and regulatory requirements that industry is required to follow for storage, manifests, shipping and emergency preparation, and response. As examples of waste handling, the authors cover the management of hazardous wastes from medical offices and photography wastes from graphic arts companies. The chapter ends with a short review of recycling hazardous waste as refuse-derived fuel.
- (2) Pollution prevention is the topic of Chapter 5. Its benefits, laws governing, technologies involved therein and feasibility analysis are the subjects of this chapter.
- (3) The sins of the past are returning the haunt future plant operations. This is the topic of Chapter 7 which is entitled "Site Remediation and Groundwater Decontamination." This reasonably short (35 page) chapter covers the topic adequately. However, I found the inclusion of the 8-page glossary odd.

To finalize this review, I will simply list the titles of the chapters in this book. The reader will note that the first seven chapters are general methods of addressing hazardous waste problems while the last five chapters deal with wastes of specific industries:

- (1) Implementation of industrial ecology for industrial hazardous waste management.
- (2) Bioassay of industrial waste pollutants.
- (3) In-plant management and disposal of industrial hazardous substances.
- (4) On-site monitoring and analysis of industrial pollutants.
- (5) Pollution prevention.
- (6) Stormwater management and treatment.

- (7) Site remediation and groundwater decontamination.
- (8) Treatment of metal finishing wastes.
- (9) Treatment of photographic processing wastes.
- (10) Treatment of timber industry wastes.
- (11) Explosive waste treatment.
- (12) Treatment of landfill leachate.

Gary F. Bennett*

The University of Toledo, Department of Chemical and Environmental Engineering, Mail Stop 305, Toledo, OH 43606-3390, United States

*Tel.: +1 419 531 1322; fax: +1 419 530 8086.

E-mail address: gbennett@eng.utoledo.edu

1 December 2006

Available online 8 January 2007

doi: 10.1016/j.jhazmat.2006.12.080

Advanced Physicochemical Treatment Processes, L.K. Wang, Y.-T. Hung, N.K. Shamma (Eds.), Handbook of Environmental Engineering, vol. 4 Humana Press, Totowa, NJ (2006). 710 pp., US\$ 165.00, ISBN: 1-588-29-361-0

In this book, the authors clearly and concisely discuss strategies for abating water pollution. Each of the 18 chapters is devoted to a single technology, wherein the authors review in detail a variety of process combinations along with technical and economic evaluations.

I was impressed by the uniformity of approach adopted for all the chapters, indicating to me, strong involvement and control of the writing process by the editors. Although each chapter is unique, they all (or at least most) share common topic headings/information such as: (1) background, (2) equipment descriptions, (3) theory as needed, (4) design process, (5) descriptive flow diagrams, (6) worked design examples and (7) cost data. Finally, I note there were an appropriate (but not exhaustive) number of references at the end of each chapter, many of which refer to publications of the senior editor.

To say the least, the list of chapter topics is impressive. Discussion of each topic, though not exhaustive, is comprehensive and well done. The chapter titles are as follows: (1) Potable water aeration, (2) Air stripping, (3) Adsorptive bubble separation and dispersed air flotation, (4) Powdered activated carbon adsorption, (5) Diatomaceous earth precoat filtration, (6) Tertiary microscreening, (7) Membrane filtration, (8) Ion exchange, (9) Fluoridation and defluoridation, (10) Ultraviolet radiation for disinfection, (11) Water chlorination and chloramination, (12) Waste chlorination and stabilization, (13) Dechlorination, (14) Advanced oxidation processes, (15) Chemical reduction/oxidation, (16) Oil water separation, (17) Evaporation processes, and (18) Solvent extraction, leaching, and supercritical extraction.

The authors note in the preface that this book is a companion volume to "*Physicochemical Treatment Processes*" (vol. 3 in their series) which covers a large group of other treatment processes such as screening, comminution, equalization, neutralization,

etc. I agree with their statement in the preface that together, both books provide a comprehensive treatment of physicochemical processes. The book ends with the longest list of conversion factors I have seen published in a text—more than 50 pages. To say the least this list is comprehensive, but maybe too much so. This section could have been reduced in size.

Gary F. Bennett*

The University of Toledo, Department of Chemical and Environment Engineering, Mail Stop 305, Toledo, OH 43606-3390, USA

* Tel.: +1 419 531 1322; fax: +1 419 530 8086.

E-mail address: gbennett@eng.utoledo.edu

14 December 2006

Available online 8 January 2007

doi: 10.1016/j.jhazmat.2006.12.079

Handbook of Chemical Technology and Pollution Control, M.B. Hocking, third ed., Academic Press, San Diego, CA (2006). 818 pp., Price: US\$ 99.95, ISBN: 0-12-088796-7

The first edition of this book was published in 1986. This edition is a thoroughly modern update that incorporates concerns for both sustainability and health protection. The author is a professor in Sweden, but earlier in his career he worked as a research scientist involved in process development and emission control for Dow Canada.

Hocking begins with five general chapters which are titled:

- (1) Background and technical aspects
- (2) Air quality measurement and effects of pollution
- (3) Air pollution control priorities and methods
- (4) Water quality measurement
- (5) Raw water processing and wastewater treatment

The five foregoing chapters contain an excellent summary of the problems of and solutions to air and water pollution control. For example, the fifth chapter discusses both municipal water treatment and wastewater treatment. The author even includes a discussion sludge handling and disposal. Briefly discussed are techniques for treating industrial waste liquids.

While the foregoing chapters do not discuss their topics in great detail, they do so concisely in approximately 30 pages for each topic. The only major “waste topic” not having its own chapter was hazardous waste; only one page was devoted to this topic. Personally, I thought it deserved its own chapter.

Following the generalized chapters come industry-specific topics. By title, these chapters are:

- Natural and derived sodium and potassium salts
- Industrial bases by chemical routes
- Electrolytic sodium hydroxide, chlorine, and related commodities
- Sulfur and sulfuric acid
- Phosphorus and phosphoric acid
- Ammonia, nitric acid and their derivatives

- Aluminum and compounds
- Ore enrichment and smelting of copper
- Production of iron and steel
- Production of pulp and paper
- Fermentation and other microbiological processes
- Petroleum production and transport
- Petroleum refining
- Petrochemicals
- Condensation (step-growth) polymer theory
- Commercial polycondensation (step-growth) polymers
- Addition (chain reaction) polymer theory
- Commercial addition (vinyl-type) polymers

The reader will note that the chapters are of two types. One type is industry specific; for example, Chapter 18 entitled “Petroleum Refining” has the following six major sections: (1) Composition of conventional petroleum, (2) Desalting and distillation, (3) Molecular modification for gasoline production, (4) Manufacture of lubricating oils, (5) Fuel oils, asphalts, and pitches, and (6) Refinery emission control. Information is provided on the basic chemistry of petroleum refining as well as process descriptions that includes flow diagrams and emission control processes.

Copious references are provided for each chapter. For example, 87 references are provided for the chapter discussed above while the book itself contains more than 1300 references.

The second type of chapter involves basic chemicals. Chapter 6, “Natural and Derived Sodium and Potassium Salts,” is an example of that category. This chapter’s three sections are entitled: (1) Sodium chloride, (2) Potassium salts, and (3) Sodium sulfate. For example, the author discusses salt production by solar techniques and mining.

I was pleased to see student problems at the end of each chapter; these are excellent, I might add. Each chapter has, in addition to numerous references, a list of books suggested for further reading.

Two of the five appendix sections contain further information. They are entitled: (1) Information related to soil pollution topics and (2) Relevant technical websites by topic. The first section was a surprising addition as it does not seem to fit the book’s major topic. The second lists numerous useful websites.

In summary, this is a well written book with a great deal of information that would make an excellent text for a course on industrial chemical technology as well as being a useful supplemental text for a pollution control course.

Gary F. Bennett*

The University of Toledo, Department of Chemical and Environment Engineering, Mail stop 305, Toledo, OH 43606-3390, USA

* Tel.: +1 419 531 1322; fax: +1 419 530 8086.

E-mail address: gbennett@eng.utoledo.edu

18 December 2006

Available online 8 January 2007

doi: 10.1016/j.jhazmat.2006.12.078