

nor do they contain anything not published many times before in the literature. The latest reference is 5 years old (in the first two articles) while the third chapter lacks references. However, I found this last chapter most interesting as it was out of my normal area of reading.

Chapter 4 is entitled "Thermal Methods of Waste Treatment." In it, the author clearly, with the help of numerous diagrams and photographs, covers the topic within the limited span of 30 pages. He discusses, although briefly, equipment, costs, and emissions. Incineration devices described include furnaces for combustion, gasification, pyrolysis, waste treatment in melts, and plasma methods of waste treatment (of the combustion methods discussed in this chapter, plasma received the most detailed attention).

Lastly, I must mention a chapter entitled "Advanced Wastewater Treatment Technologies." While editor of this journal, I received numerous papers on emerging processes. The authors approach this topic with the following introductory sentences: "Research on the use of electrochemical methods for the treatment of industrial wastewater has demonstrated that many pollutants, organic and inorganic, can be effectively removed by anodic oxidation or cathodic reduction or in a bulk solution by electro-generated media. Electrochemical techniques are more reliable than many conventional processes and are gaining popularity for the treatment of industrial wastewater." The electrochemical processes discussed in this chapter include electro-oxidation (direct and indirect), electro-reduction, electro-coagulation, and Fenton and electro-Fenton processes. Discussions are given of current efficiency and energy consumption. The final part of the chapter discusses photocatalytic methods which are currently a "hot" research topic.

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Jay H. Lehr, Jack Keeley (Eds.), Water Encyclopedia: Ground Water, John Wiley, Hoboken, NJ, 2005 (US\$ 350 [this volume], US\$ 1250 [5-volume set], 8.5 in. × 11 in. format), 860 pages, ISBN 0-471-73637-2 [this volume], ISBN 0-471-44164-3 [complete set].

Without water there is no life. Given that statement, the importance of this book and its companion volumes is self-evident especially to readers of this journal. This volume, the first in a five-volume set, contains approximately 175 entries dealing solely with groundwater and all its aspects. Lehr notes

that groundwater "... accounts for 97% of the world's fresh-water and serves as the base flow for all streams, springs and rivers". He further notes that "in the United States, one half the population relies on groundwater for its drinking water and is the sole source of supply for 20 of the 100 largest cities". He goes on to note that "90% of rural America is totally dependent on groundwater".

Nowhere is the importance of groundwater more evident than where this review is being written—in Canada, not far from Walkerton, the scene of a major tragedy several years ago. In Walkerton, the town's well became contaminated with *E. coli* that resulted in several deaths and an untold number of sicknesses. The result was a major change in government regulations that affected water treatment plant design, operation and analysis.

The editors have assembled a broad list of contributors from around the world. They have presented a comprehensive coverage of the topic as evidenced by the following statement in the preface:

"Along with straightforward descriptions of basic groundwater concepts (drawdown around pumping wells, hydraulic head, field capacity, and flow), the reader is introduced to more complex subjects (isotope technologies, aquifer tests, in situ remediation, tritium dating, modeling, and geophysical properties). There are also articles for more practical applications (well maintenance, subsurface drainage, nitrate contamination, tracer tests, well yields, and drilling technologies)".

There is even a section on windmills.

Needless to say, groundwater contamination, its source, impact and transport are not ignored as evidenced by a selection of topics included in the book:

- Reactive transport in the saturated zone: case histories for permeable reactive barriers,
- Transport of reactive solute in soil and groundwater,
- Vapor transport in the unsaturated zone,
- Applications of soil vapor data to groundwater investigations,
- Groundwater vulnerability to pesticides: statistical approaches.

Finally, I note that this volume (the first in the series) has two indices. The first index is for this volume, while the second 136 pp. index is a cumulative index for the entire series of five volumes. Inclusion of this set in reference library collections is, in my opinion, almost mandatory.

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Jay H. Lehr, Keeley Jack (Eds.), *Water Encyclopedia: Domestic, Municipal, and Industrial Water Supply and Waste Disposal*, John Wiley and Sons, Hoboken, NJ, 2005 (968 pages, US\$ 350 [this volume], US\$ 1250 [5-volume set], 8.5 in. × 11 in. format), ISBN 0-471-73637-2 [this volume], ISBN 0-471-44164-3 [complete set].

Critically reviewing this book and one of its companions (Ground Water) was a daunting, almost impossible task. In this volume, more than 125 contributors generated 218 sections and a 30-page index. The amount of material published in this 8.5 in. × 11 in., 968-page book was overwhelming. I spent several hours paging through the book, reading sections of interest (especially those sections dealing with those areas in which I have the greatest technical familiarity).

Lehr and Keeley have assembled a comprehensive compilation of articles contributed by a worldwide group of scientists and engineers. Each article appears to be well written and as a group they certainly are well referenced. Indeed, many sections have both a list of cited references as well as a reading list. In addition to written invited contributions from individuals, the editors have included articles written by organizations such as found below:

- A description is included of the U.S. EPA's pretreatment program, 1973–2003: 30 Years of Protecting the Environment
- 1962 U.S. Public Health Service Standards

The book is divided into four major sections as noted below:

- Drinking water supply: 16 articles
- Municipal water supply: 113 articles
- Industrial water: 19 articles
- Waste water treatment: 70 articles

Since industrial water treatment is an area of interest, I will include the topic headings of sections of interest to me as an illustration of the topics discussed in the book:

- Magnetic water conditioning
- Industrial cooling water—biofouling
- Industrial cooling water—corrosion
- Economics of industrial water demands
- Evaluation of toxic properties of industrial effluents by on-line respirometry

The articles are of variable length, which, given the book's format and large number of contributors is not surprising. However, the articles I read were well written; given the fairly large number of articles submitted from non-English speaking countries, that was no simple accomplishment. Lehr and Keeley are to be complimented on their editing.

There was an article entitled "The State of the Water Industry 2004" by Steve Maxwell. It had much information that I had not seen before on the number, size, and financial aspects of 40 publicly traded water companies. Also included was an inclusion of recent company acquisitions and mergers. I note the above again to illustrate the book's broad coverage.

In closing let me note that this is a comprehensive coverage of the topic. I strongly urge that it be purchased for all reference libraries.

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