

Book reviews

Environmental Engineers' Handbook, 2nd edn., David H.F. Liu (2nd edn. Ed.) Bela G. Liptak (handbook Ed.) and Paul Al Bouis (special consultant), CRC Press, Boca Raton, FL, 1997, US\$129.00, 1431 pp., ISBN: 0-8493-9971-8.

This handbook first appeared in 1974 in three volumes. In the second edition, the editor (who unfortunately died before this second edition's appearance) created a monumental book that will be a legacy to his memory—1431 pp., 8-1/2 × 11 inch format, 81 contributors, 11 chapters and 200 sections.

The main emphasis of the book is pollution control/treatment/abatement, air pollution, groundwater and surface water pollution, wastewater treatment and disposal, solving hazardous waste problems, and hazardous waste management and disposal. There is little in the environmental engineering field left out.

It is true that I found no topic I searched for left out, but I did find very limited treatment of some selected topics of interest to me. For example, oil removal was discussed in less than 1/2 page and API (gravity–oil water separation) was not discussed at all. The air stripping (for VOC removal) discussion was limited to a single paragraph. Conversely, many topics (such as in stream pH measurement) were thoroughly covered, containing information I had not seen before.

Being an academic (and an editor), I scrutinized the bibliographies. Their quality was variable from non-existent to very old (the 'old' sections probably were not rewritten for this book) and finally to adequate. As I have stated in numerous reviews, it is easy to criticize a book for what the authors/editors did not include and in this case, given the totality of what the editors tried to accomplish, that's easy. But given the goal (I believe) of a comprehensive handbook and because of the book's coverage of all the important environmental topics, they have, in my opinion, achieved their goal (in my opinion).

To that end, I list the titles of the 11 major sections:

- Environmental laws and regulations
- Environmental impact assessment
- Pollution prevention in chemical manufacturing
- Standards
- Air pollution
- Noise pollution

- Wastewater treatment
- Removing specific water contaminants
- Groundwater and surface water pollution
- Solid waste
- Hazardous waste

One feature I appreciated was a table at the beginning of each section (i.e., equipment applications). This section listed: type of design, application, limitations, treatment time, efficiency, etc. Not so useful, however, in my opinion, was a list of manufacturers as such lists grow quickly out of date. A user needing a list of commercial vendors is better referred to the annual industrial directory of pollution control magazine.

Personally, I am not sure how useful the book will be to practicing engineers. It really depends on the topic of interest to a reader among the almost infinite number of topics in the book. For someone who wants a guide (or overview) of an environmental topic (or process), the book will be useful. Its purchase by academic libraries, I believe, is a must.

GARY F. BENNETT

PII S0304-3894(98)00093-4

Developing Industrial Water Pollution Control Programs: A Primer, W. Wesley Eckensfelder, Technomic Publishing Co., Inc., Lancaster, PA, 1997, \$79.95, 218 pp., ISBN: 1-56676-536-6.

This book, authored by one of the leading experts in water pollution control, was written for the non-engineer—managers, lawyers and regulators. It is described by the author as a ‘basic description of industrial water pollution’ control.

Simplistic the book is—but well-written. Suitably illustrated, and covering all the essential water pollution control topics (especially treatment processes), this book would serve well as the text for non-engineering water pollution course.

My criticisms are minor. First, an editor’s eye spotted that the titles on Figures 95 and 96 had been mixed; not hard to do when one figure depicts reverse osmosis and the other ultrafiltration.

My major criticism is the lack of references. Admittedly the material presented is well known and given the author’s experience, he could have (and probably did) written the book from memory. But, aside from 15 references (mainly texts) cited at the end of the book, to allow the reader to obtain more detailed information on the subject, no other references are found.

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Rapports Scientifiques et Techniques. RST 04. Published by INERIS, France (November, 1996) (in French). *Les Phénomènes d'explosion résultant de la combustion de gaz, de vapeurs et de brouillards dans des appareils clos*.

This report is in the series 'Rapports Scientifiques et Techniques' published by INERIS, the French organisation. It is a review intended for use by safety engineers and others involved in engineering, and presents the current knowledge on explosions of gases, vapours and mists in a confined space.

Following the review of incidents in Chapter 2, Chapter 3 lists definitions of important characteristics of explosive atmospheres, and Chapter 4 discusses some of these—explosibility limits, flash point etc—in more detail. Chapter 5 discusses deflagrations and detonations, and the two important explosion characteristics—maximum explosion pressure and maximum rate of pressure rise—and the effect of vessel volume and shape, turbulence and other factors on these. The effect of volume on rate of pressure rise is described by the cube root law and advice on venting given in Chapter 8 is simply to recommend NFPA 68 guidance without further comment.

Chapter 6 discusses ignition sources—flames, hot surfaces, mechanically generated sparks, static electricity etc—in some detail. Chapter 7 then discusses the consequences of an explosion — the behaviour of the blast wave and fragments. Three methods are described for blast-wave behaviour—the TNT-equivalence, a method by Baker and the BK WAVE model—and the shortcomings of the predictions discussed. The behaviour of fragments is described in terms of Baker's method, one from the 'TNO Yellow Book' and a method developed by INERIS. Again, the success of these methods is critically discussed.

Chapter 8 discusses explosion prevention—avoidance of explosive atmospheres, elimination of ignition sources—and protection techniques such as venting, suppression and prevention of flame propagation.

A series of Appendices give some data on explosibility characteristics of gases and vapours, applications of blast wave behaviour techniques, descriptions of explosimeters and electrical apparatus for explosive atmospheres.

This report is written at a level that is just right for its intended audience. It covers the relevant knowledge well, although I thought the explosion protection techniques content could have been expanded, the weight given to it is not as heavy as is given to the consequences of an explosion where protection fails.

All in all, a very useful document with important and clearly presented information for safety engineers.

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