the industrial toxicologist by helping the laymen with whom he/she works to understand the problem. Perhaps the preface states it best:

> "This book is intended as an introduction to industrial toxicology. It is intended for the person who needs to understand the basic principles and practices of industrial toxicology without becoming an expert in the field and is the first step for the individual who wishes to pursue the field in depth. The nonspecialist is introduced to the vocabulary and practices of toxicology, allowing him or her to understand available sources of information about the hazards of chemicals in use and to appreciate the implications of government regulations. Furthermore, the book provides insight into the processes used to determine toxicity and thereby to set safety standards for the workplace."

The book is divided into three separate sections of approximately four chapters each:

Section 1. Basic Toxicology
- Kinds of toxic effects
- Generating safety recommendations
- Toxicants and the human body

Section 2. Hazards in the Workplace
- Inhalation toxicology
- Solvents
- Metals
- Plastics
- Elastomers
- Adhesives

Section 3. Regulations and Protection
- Government
- Monitoring plant atmosphere
- Protecting the worker

The book is well written, clear, concise and easy to read. It provides good explanations of health effects of chemicals and contains much data on specific chemicals. It would be an excellent book for an undergraduate course in safety and health or for the engineer who wishes to read on his own about the topic. I strongly recommend this book to both groups.

GARY F. BENNETT

Principles of Hazardous Material Management, by R.D. Griffin, Lewis Publishers, Chelsea, MI, 1988, ISBN 0-87371-145-9, 212 pp., $45.00.

Like many other books, this one evolved from the frustrations of a lecturer who could find no suitable text for his course. What Griffin desired was a text to provide a framework for his students to allow them to understand the mul-

tidisciplinary nature of hazardous materials, how they can affect human health and how their risks can be reduced.

In the main, I think the author has succeeded in doing just that. But in my view the text has two major problems: (1) it is just too short and (2) it lacks quantification.

Regarding the first point, I would have welcomed significant expansion of many of the chapters to amplify the points the author has made. Groundwater and the problems it can cause or the problem waste can cause for it are well known, but industrial contamination of water and wastewater is not. Air toxics are discussed reasonably well but current ambient air quality and air quality standards of common pollutants are not. More data are needed to illustrate the "air" problem. A minor point here: particles (particularly of a size less than 10 μm) are never defined either in the text or in the glossary of the text. The second major criticism is that the book lacks quantitative examples, although the opportunity to use them is abundant. For example, Griffin could have given numerical examples for aeration system designs for the treatment of groundwater or for computation of the flow of groundwater itself; he did not. Moreover, it is surprising that, in a book designed as a text, the author has not suggested student problems or exercises; they would be most useful to the instructor.

Finally, I found the reference section too short and quite incomplete. Griffin could well expand his reference list.

As I said initially, the book has many interesting aspects. The various chapters deal with:

(1) Principles of toxicology
(2) Risk assessment
(3) Air pollution and air toxics
(4) Groundwater
(5) Transportation of hazardous materials
(6) Waste characterization and analytical methods
(7) Waste treatment and disposal
(8) Management

Of the above topics, only the transportation chapter seems out of place in a text of this type. Personally, I would eliminate it in favour of expanded chapters on (solid) waste treatment. And I would eliminate the "not so useful" 40 plus pages devoted to federal regulatory approaches and California regulatory approaches unless they were better discussed and integrated in the book.

GARY F. BENNETT