

industry wastes. The longest chapters refer to the wastes of the Inorganic Chemicals industry (30 pages) and the Organic Chemicals industry (66 pages).

Among disposal methods, deep well disposal, incineration, and land and sea disposal, have individual chapters, with some of the newer or less widely practised methods being covered more briefly in one short chapter.

In the chapters dealing with the individual wastes from a particular industrial sector, a brief description is usually given of the processes producing the wastes followed by an alphabetic listing of the various wastes with a discussion of suggested treatment and disposal methods.

Clearly in a book of this size coverage of any individual waste stream and its treatment is, inevitably, often brief, but in most cases a reference is given to a more detailed paper in the literature. The literature covered by the author is almost entirely from the United States and leans heavily on US Patent specifications together with various US Government reports. It is perhaps, unfortunate that many — if not all — of these references to the patent literature are uncritical and often no comment is made on the process except to repeat the description and the main claims from the specification. Thus it is hard to separate the ideas from the practice as there is little information on the actual performance of the processes described. This concentration on the published literature gives an unbalanced view of the actual practices used, for the disposal of hazardous wastes. In most countries disposal to land remains the fate of most industrial waste (90% being so disposed in the UK), and the technologically advanced methods which take up much of the space in this book tend to be used only for a few intractable materials.

Nevertheless the book does provide a most useful and comprehensive compendium of concepts which can be considered for the disposal of some of the more hazardous wastes produced by industry. It is very up-to-date, containing literature references to the end of 1975. This is highly commendable.

That the coverage is almost exclusively of the US literature is of lesser importance but is a draw-back. The main disadvantages of the volume as a reference book lies in the absence of an index. The publishers have however produced good contents pages and the arrangement within the chapters is, in general, logical so that the lack of an index is less tiresome than it might be — but it remains an irritant.

Despite its rather high cost it is an invaluable book, and should be on the shelves of every waste disposal contractor, public official concerned with waste disposal and others who have an interest in the disposal of hazardous wastes. Indeed it could be read with profit by anyone involved in waste disposal.

E.E. FINNECY

Chemistry of Hazardous Materials by Eugene Meyer, Prentice-Hall Inc.
Englewood Cliffs NY, 1976.

“Chemistry of Hazardous Materials” is a book intended to teach fire-

fighters the basic science of hazardous materials. The early chapters deal with basic theory, though the author never uses SI units, perhaps due to the book's American origin. More information on cryogenic materials, in the heat section, would have been desirable. The student is introduced very quickly to the concepts of atoms and molecules, which is rapidly followed by the Lewis theory of valency. In my experience many students will find this confusing and some material would be better left till the student understands acids, bases and salts.

Oxidation-reduction can be understood at different levels; a rapid treatment of the electron theory will again create difficulties for some students. On the other hand Change of State is very important to fire-fighters and could merit a more extended treatment.

The chapters on various types of dangerous materials are useful and well written, especially the chapter on water reactions. I could find no authority for a reaction quoted where lithium displaces sodium from sodium chloride!

The chapter on toxicity is useful. It is not made very clear that carbamates work by an anti-cholinesterase mechanism, also a short account of breathing apparatus is not very useful to fire-fighters who must know much more on this topic than is found in the chapter.

On organic chemistry it needs to be stated clearly that there is a traditional naming system and also the IUPAC system, which run parallel. Fire-fighters (and even organic chemists) can readily be confused by synonyms for the same material. In the chapter on plastics, polyurethanes get very superficial treatment in view of the amount of research on this topic. More information on plastics in fire and less on synthesis of the materials would have been preferable.

In the Radiation section the units are defined in non-SI terms and the old Relative Biological Effectiveness terminology is used instead of Dose Equivalent. Whether we like it or not, greys and becquerels should be mentioned at least!

The book is a useful one on dangerous materials in many ways, but often goes rapidly into theory and even indulges in theory not really necessary to fire-fighters; this theoretical treatment could cause non-chemist students some difficulty.

D. A. SMITH

Hydrogen Technology for Energy by David A. Mathis, Noyes Data Corporation, Park Ridge, NJ, 1976.

Hydrogen Technology for Energy is the ninth volume in a series of technology reviews published by Noyes Data Corporation. This volume is intended to be an up to date statement of the technologies available and associated problems involved with the use of hydrogen as an energy carrier. All the data