

Toxicological chemistry; a guide to toxic substances in chemistry, by S.E. Manahan, Lewis Publishers, Inc., 1989, £35.70, xiii + 317 pages, ISBN 0-87371-149-1

A book of this type is difficult to write successfully, since it has really too wide an audience, ranging from chemists interested in the hazards associated with the compounds they are using for a reaction, to industrial hygienists and those interested in environmental pollution, who may have little formal training in chemistry. I am not convinced that this author has succeeded in his aim of reaching this audience, or that he has spent his time and pages as profitably as he might have done.

The book opens with a general introduction to toxicology and toxicological chemistry. This is one of the best sections of the book, giving definitions and meaning to the terms used in this field. The next chapter on "Fundamentals of Chemistry" is less successful; 24 pages would hardly be an adequate introduction to someone who knew little of chemistry, and it certainly does not provide an adequate basis for comprehension of the subsequent chapters. Chemists will find it entirely trivial. Chapters 3 and 4 deal, respectively, with exposure to toxic substances and their biochemical action and transformations; these are a good introduction, but go little beyond the basics, and some of the examples chosen are a little obscure.

Chapter 5 deals with "Toxic Elements", but this seems to be a rather nebulous concept, and most of the chapter actually deals with elements such as lead, most of the compounds of which are toxic. The next chapter deals with organometallics and organometalloids. The author seems to have some doubts about the compounds he should include in this classification, since he includes isopropyl titanate, and sodium and potassium alkoxides. Some sections, such as those on organolead, organomercury and organoberyllium compounds, are quite useful, but other areas leave much to be desired. It is implied that alkyl lithium compounds and Grignard reagents are true ionic compounds. The main hazards considered by most organometallic chemists in their use are in any case not toxicological, and merit little space here. Time would more usefully have been devoted to a more detailed consideration of the toxicology of metal carbonyls, which rates only a few sentences, but which has enormous practical and industrial importance. Chapter 7 considers toxic inorganic compounds. The choice of examples is rather limited and idiosyncratic; for example phosgene and related compounds are not discussed, nor are the well-known toxic effects of chromium salts, which received only cursory discussion in Chapter 5.

Chapters 8–13 deal with the toxicity of a range of types of organic compounds, including hydrocarbons, and compounds containing oxygen, nitrogen, halogens sulphur or phosphorus. Coverage again is patchy; carbon tetrachloride is dealt with in detail, but chloroform receives only a brief mention. Insecticidal compounds are generally well treated, which suggested to me that this book might be of most interest to environmental scientists. The final chapter considers toxic natural products, of bacterial, floral and animal origins.

The book is generally well produced and clearly laid out, though I did notice a number of typographic errors. The index is adequate. The diagrams and figures are well-drawn, but many are presented in a very elementary form, with every atom and bond, including those to hydrogen shown.

This book has clearly been built around a specific University course in environmental and toxicological chemistry, probably given to a group of students which

includes many students not majoring in chemistry, and perhaps not even majoring in a science subject. Many excellent books in all areas derive from such origins, but it is important to ensure that personal tastes are submerged in the general needs of the subject. I am not sure that this has been done in this case. This book may make interesting background reading for the environmental scientist or industrial hygienist, but chemists and biochemists will not find much that is new to them, and will find the approach rather pedestrian.

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