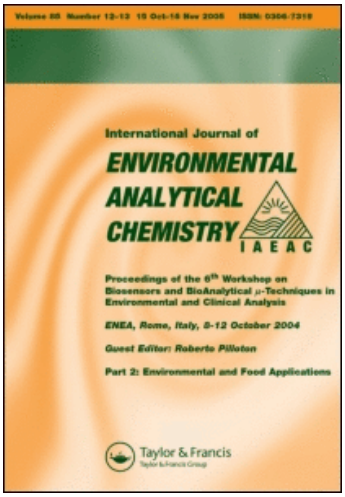

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Book Reviews

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Book Reviews

THE PESTICIDE CHEMIST AND MODERN TOXICOLOGY, by S. Kris Bandal, Gino J. Marco, Leon Golberg and Marguerite L. Leng, A.C.S. (Symposium Series 160 (1981), 582 pages (including figures and tables, literature references added to each chapter, and a subject index of 18 pages at the end of the volume), linen, format 234 × 160 mm, ISBN 0-8412-0636-8). American Chemical Society, Washington, D.C. 20036, US $38.00.

Every four years the A.C.S. Division of Pesticide Chemistry sponsors a symposium, concerned with pesticide metabolism, analysis and residues. In the last years perception of the toxicological problems due to chemicals has changed radically. The third conference took place in Downingtown, Pennsylvania, in June 1980. The current concern about safety evaluation of pesticide chemicals, and the toxicological significance of nanogram amounts of pesticides that can be detected using sophisticated analytical techniques, has given a new and broader dimension to the sciences of pesticide chemistry and toxicology. The proceedings are divided—problem oriented—into five sections, and one has therefore some difficulties to find conclusions related to groups of chemicals. The volume deals with developments in toxicology, especially as it relates to carcinogenicity, and details about analytical studies—including problems of uncertainty—needed to support safety evaluation of pesticides while focusing on good laboratory practice. Results of a special workshop on the regulatory aspects in the United States, in Europe, in Canada and in Asia are also included. The papers were given by 12 scientists from industry and by 18 scientists from governmental offices or universities. Only three authors are from outside of the United States. Most of the important summaries to each chapter were written by industrial delegates. Of special interest is a report on discussion groups and workshops, which deals with the actual problems of regulatory guidelines, metabolite significance (analytical vs toxicological), analytical aspects, mutagenicity testing and communicating technical information.

The larger part of the volume is, however, related to the older, first generation of pesticides, probably because there is more knowledge and experience, and may be because they were more persistent which means that long-term effects are more obvious. In the index one finds for instance the key-

word "Organochlorine", but not the descriptors "Organophosphate" and "Carbamate", which would interest in view of the larger quantities used nowadays. The term "Neurological effects of pesticide exposure" referes only to one short paragraph of 16 lines related to an accident with Kepone, and organophosphates and Paraquat are not even mentioned in this paragraph.

The first eleven chapters focus on toxicological aspects and include such topics as the revolution in and the widening concepts of toxicology, the mutagenic and carcinogenic potential of pesticides, and organ specificity in toxic action. The second section concentrates on biochemical aspects such as pharmacokinetics, metabolic aspects of pesticide toxicology, and the biochemical analysis of chemical carcinogenesis. The third section deals with the analytical aspects of the pesticide chemistry and toxicology, the analysis of pesticidal trace contaminants, and the problems scientists experience daily regarding these analytical studies. The reader does not find too many informations regarding useful modern methods, but is rather confronted with the problems of separation, identification, measurement and interpretation. Practical examples are analysis of very complex mixtures (such as PCB's, chlorinated dibenzodioxins and chlorinated dibenzofuranes) and nitrosation of pesticides in soil, water and plants. Statistical tools are also described. It can be concluded that analytical chemistry values at trace levels are nevertheless better than the results of the actual biological testing.

The fourth section focuses on pesticide regulation in Europe, Canada and China and details environmental and industrial viewpoints of toxicology and pesticide regulation. The last section familiarizes the reader with the topics of the various discussion groups and workshops that convened during the conference from which the book is derived.

ERNEST MERIAN

DICTIONNAIRE CONTEXTUEL ANGLAIS-FRANÇAIS DE LA CHROMATOGRAPHIE, by Robert Serré, 1057 Riviera Drive, Ottawa, Ontario K1K 0N7, Canada, 1981 (106 pages, stiff paper cover, format 222 × 150 mm, ISBN 0-9690950-2-3). Kaice-Tec Reproduction Ltée, Ottawa, Ontario K1B 3S1.

There is, no doubt, a gap in general and scientific vocabularies, where newer terms used in environmental research are mostly not included. A working group of the Commission of the European Communities (Chairman: Ir. L. de Lavieter, Study and Information Centre TNO on Environmental Research, TNO Complex Zuidpolder, Postbus 186, 2600 AD Delft, The Netherlands) is working out a combined (Multilingual) Descriptor System with about 2000

terms in the six languages of the Communities. This valuable indexing system for environmental research catalogues contains important keywords, which are however still relatively general. It was a very useful idea of Robert Serré to produce a complete English-French dictionary of 375 specific terms used in the fields of gas, liquid and thin layer chromatography. This special area of analytical chemistry—which is very important in environmental research—merits this effort. It is hoped that somebody is completing the dictionary by including also German translations, and other analytical terms.

This dictionary is even more useful, because Robert Serré gives short definitions for each descriptor in English and in French, and additionally one relevant literature reference in each of the two languages. There are also some cross-references to other similar terms included. After the extended English-French part, one finds an index of 528 French equivalent descriptors (sometimes one English term refers to more than one French expression), and this index refers to the main part, and allows therefore correct French-English translations, but also to find the definitions. Of good use is also the additional list with explanations of 110 English and French abbreviations for methods, instrumentation, results, physical terms and institutions in the field, in an area, where even specialists have difficulties nowadays to understand every abbreviation.

ERNEST MERIAN

METAL POLLUTION IN THE AQUATIC ENVIRONMENT, by U. Förstner and G. T. W. Wittmann, 1979 (486 pages (including 102 figures and 94 tables, a very comprehensive list of literature references of 75 pages and a subject index of 12 pages at the end of the volume), linen format 248 × 175 mm, ISBN 3-540-09307-9). Springer-Verlag, Berlin, Heidelberg, New York, 2nd edition DM98-US $46.70.

There are quite a few monographs about elements and metals in the environment, and in food and drinking water, including their health effects. Very often plants and animals—their uptake and their risks—are forgotten, or if one deals with animals only experimental animals and/or meat producers (cattle, chicken) are discussed. It was indeed a need to present once the relevant information about water, sea and sediment pollution with metals, and about their impacts on aquatic organisms, such as microorganisms, algae, molluscs, mussels, crustaceas and other invertebrates, fish and aquatic and (related to drinking water) terrestrial mammals.

The book is of great value to those environmental scientists who are dedicated to keeping the resources of the hydroshere renewable. As the size of the world population becomes larger and as the uses of materials and energy show parallel increase, the rivers, coasts and oceans must be considered as a

resource, the ability of these waters and the sediments below them to accommodate wastes must be assessed continually. The literature of the important field of aquatic chemistry has changed from compilation of compositional tables to studies of the chemical reactions occuring. Human society in part is determining the nature of aquatic systems. Sometimes only a catastrophe initiates a concern about a pollution: The Minimata Bay episode identified methyl mercury as a dangerous contaminant in the marine system. In order to determine the degree of heavy metal enrichment it is essential to establish suitable norms and criteria. The book emphasizes the importance of determining interactions between sediment and water interfaces and possible interrelationships between different heavy metal species. Although an evaluation of different analytical techniques—especially in connection with water analysis—lies beyond the scope of the study, it is hoped that further research relating to heavy metal pollution is stimulated. Attention is also drawn to hitherto unresolved problems—such as those associated with chemical specification, the availability and toxicological properties of different species, the uptake mechanisms of metals by organisms, and the remobilization of heavy metals from sediments.

The volume is divided into eight chapters: Introduction—Toxic Metals—Metal Concentrations in River, Lake and Ocean Waters—Metal Pollution Assessment from Sediment Analysis—Metal Transfer Between Solid and Aqueous Phases—Heavy Metals in Aquatic Organisms—Trace Metals in Water Purification Processes—Concluding Remarks (Disposal Versus Reuse, Alternative Materials), and end with two appendices: Heavy Metals in Freshwater, and Heavy Metal Concentrations in Organisms. Especially the latter table with concentrations of As, Hg, Zn, Cd, Pb, Cr, Fe, Mn, Sb and Co found in many specific organisms (including information about locality and references) is of great value.

One finds almost all the relevant hydrogeologic information—including sources of inputs and newest interpretations of fluxes—and results of measurements of metal concentrations in waters, sediments and organisms and their organs, as well as water quality criteria and toxicological tolerance levels. In a new edition one should however not only find drinking water criteria, but also discuss the proposals for regulations in the U.S.A. and in European Communities for the safety of water organisms and their reproduction (see for instance the publications of Prof. Dr. Manfred Ruf, München). In the last chapter the necessity and the possibilities to replace disposal by reuse and to find alternative materials to metals are analysed, which is important. For instance in the lower Rhine River sediments more than 90% of Cu, Zn, Pb, Hg and Cd originate from man-made sources. The volume can be highly recommended as a standard handbook, and the good index helps to find the crucial subjects in which the user is interested.

ERNEST MERIAN