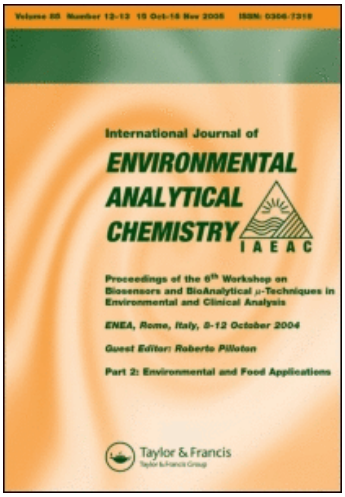

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BOOK REVIEWS

ENVIRONMENTAL ENDOCRINE DISRUPTORS: A HANDBOOK OF PROPERTY DATA, by L. H. Keith, 1232 pages, John Wiley & Sons, Inc., New York, (1997). ISBN 0–471–19126–4. £ 245.00.

This book provides background information on chemical, physical, and toxicological properties of 67 suspected environmental endocrine disruptors (EEDs). The chemicals were selected on the basis of their inclusion in one or more of the priority lists from the Centers for Disease and Control (CDC) in Atlanta, U.S. Environmental Protection Agency, World Wildlife Fund Canada, and the approximately 50 chemicals discussed in the book "*Our Stolen Future*" by Theo Colborn. The book includes a small introduction with basic information on how and why the endocrine disrupting chemicals were selected, and the format followed for each one of the 67 entries, namely chemical name, synonymous and identification numbers, chemical and physical properties, environmental reference materials and literature citations, hazardous properties, medical symptoms of exposure, toxicological information, production, use, and pesticide labeling details. The final part of the book includes the references cited (909), and three appendices with information on abbreviations, a glossary of medical terms and a glossary of risk assessment related terms.

In summary, the book is a comprehensive compilation of chemicals, currently classified as EEDs or suspected EEDs, which may be an useful search tool for environmental chemists, toxicologists, zoologists, ecologists, etc. Electronic version of the data compiled in this publication is also available on CD-ROM, which contains the same information as the book. In addition, all the terms in the three Appendices are hyperlinked to their primary sources of information. Nevertheless, although the book is well organized and it contains valuable data on hazardous properties and toxicological effects of the selected chemicals, and despite the fact of the endocrine disruption matter being an intensely developing field, the publication would greatly benefit from the inclusion of relevant references

addressing why these chemicals are nowadays classified as EEDs or how do they exert their endocrine disrupting action are missed.

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PESTICIDE RESIDUES IN FOOD, by G. Fong, H. Moye, J. Seiber and J. Toth, 374 pages, John Wiley & Sons Ltd., Chichester, UK (1999). ISBN 0–471–57400–7. £ 70.00

The present book provides an overview of the different analytical methods currently used for the determination of pesticide residues. The book is directed to provide two types of information: (i) basic and general analytical chemistry, which includes scientifically accurate analytical terms and (ii) an introduction to the most common methods of sample preparation and detection. The information is clearly presented and offers the opportunity to appraise the basis and techniques for pesticide analysis.

The first chapter of the book is specifically devoted to give information on pesticide residues in the environment and, overall, it gives an overview of the method setup and quality parameters involved. In the next section, from chapters two to five, the authors detail the main techniques used to analyze pesticides, and include extraction and clean-up and various gas and liquid chromatographic techniques for their determination. Special emphasis is also given to mass spectrometry, although little information is given on its application to pesticide analysis in food. Moreover, it is a pity that liquid-chromatography coupled to mass spectrometry, widely applied for pesticide monitoring, is not highlighted. An alternative to chromatographic techniques is the ELISA, which is described in chapter six and gives the basis of its functioning and main advantages. However, this chapter neither contains information on the application of ELISA to pesticide analysis in food, possible cross reactivities, sensitivity, problems associated with the technique, etc.

It is worth mentioning that the present book collects useful information in the last chapter on regulatory aspects, where the author combines nicely the methodology used to analyze pesticides in foods and laboratory requirements.

To conclude, this book is a classical analytical book that gives very useful and clear information on current analytical methodologies for pesticide residues but without going into detail on the applicability of the methods described for the

analysis of pesticides in foods, outcome and problems associated with the techniques. The title, therefore, may be slightly misleading.

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APPLICATIONS OF SOLID PHASE MICROEXTRACTION, RSC Chromatography Monographs, edited by J. Pawliszyn, 655 pages, Royal Society of Chemistry, Cambridge, UK (1999). ISBN 0–85404–525–2, £ 49.50.

As indicated in the Introduction, sample preparation has received little attention in the past, research interests being preferentially placed on the instrumental separation and identification techniques.

This book brings an introduction to the reader to a range of successful SPME applications developed by a number of recognized research gropus. Through 56 chapters different basic aspects of the technique as well as environmental, food, forensic, clinical and pharmaceutical applications are covered. Calibration and quantitation by SPME, coatings and interfaces and physicochemical measurements of sorption phenomena on dissolved humic organic matter or estimation of partition coefficients and the hydrophobicity of organic compounds are presented. Environmental applications of SPME include air sampling, water and waste water analysis of a broad range of analytes (pesticides, PAHs, organometallics) and the direct solid analysis. With respect to food, fragrance and pheromone applications, chapters include the description of a number of analytical methods for food and plant volatiles, and pesticides. Relevant applications on isolation of drugs and poisons in biological fluids as well as on reaction monitoring and on biodegradation of contaminated materials are also included. Related techniques such Infrared (IR) Spectroscopy and near IR fiber-optic evanescent field absorption spectroscopy for *in situ* monitoring of non polar organic compounds in water are other relevant applications included in this interesting book.

In summary, chemists from research institutions and industry will find details on a large variety of procedures to foresee the feasibility of using SPME technology in solving their analytical problems.

ANALYTICAL SOLID-PHASE EXTRACTION, by J.S. Fritz, 209 pages, Wiley-VCH, New York (1999). ISBN 0–471–24667–0, £ 41.95.

This book describes what is necessary to know about this emerging extraction technique. All major aspects of SPE are covered: basic principles, historical perspective, materials and equipment, extraction of organic solutes from aqueous samples, extraction of polar solutes from apolar organic solutions, ion exchange SPE, extraction of metal ions, use of membrane disks, solid-phase extraction on microscale and semimicroscale. Therefore, it covers most of the fields of application of both conventional (i.e. XAD) and new SPE formats (i.e. SPME). Each section is illustrated with the recent literature (until 1997). Only the extraction of organometallic species and immunochemical (e.g. immunoaffinity chromatography) and molecular imprinted polymers are missing. Selected applications mostly in the field of environmental analysis are also included.

This is a highly recommended publication for analytical chemists and technicians involved in trace analysis. An introductory book that should be present in university and industry libraries.

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SOLID-PHASE EXTRACTION, Principles and Practice, by E.M. Thurman and M.S. Mills, 344 pages, Wiley-Interscience, New York (1998). ISBN 0–471–61422-X. £ 50.00.

This is Vol. 147 of the series on Chemical Analysis, edited by J.D. Winefordner. It provides a relevant understanding of how solid-phase extraction (SPE) works, information on the chemistry and the mechanisms of interaction, and several examples and applications of SPE in the environment, clinical and natural products.

The book begins with a technical (columns, apparatus, sorbents, etc.) and historical overview of SPE (Chapter 1). Chapter 2 covers extensively the theory of sorption and isolation in SPE. Synthesis of different sorbents are explained as well as the sorption and elution mechanisms (reversed, normal, ion exchange and mixed mode). Chapter 3 contains a six-step approach to methods development, a well execution of the SPE recovery experiment, troubleshooting and optimizing conditions for the previous experiment and how to do a critical evaluation of published methods.

Chapters 4, 5 and 6 focus on the different methods of extraction (reversed-phase, normal phase and solid-phase extraction, respectively) with several examples and very good tables describing the common sorbents available for each method. Next three chapters are devoted to the development of effective applications in three different fields, environmental, clinical and natural products. In each chapter an extensive explanation over different molecule's structure and sample matrix is described to determine which mechanism of isolation and separation will be the most appropriate. A fundamental approach to do a good selection of sorbents is also given.

In chapter 10, the major trends on automation are discussed. A good description of different equipments is also described. Chapter 11 deals with SPE disks (particle loaded membranes), with a good table that gives the variety of sizes, formats, and packings available for SPE disks. Last chapter describes the different innovations on SPE, namely solid-phase microextraction (SPME), matrix solid-phase dispersion (MSPD) and semipermeable membrane devices (SPMD).

Each chapter contains an extensive list of references and suggested books for reading. This book will serve as an important tool for students, laboratory technicians, environmental and clinical scientists, and in general, for everybody who is involved in SPE technique.

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ORGANIC INDOOR AIR POLLUTANTS, edited by T. Salthammer, 328 pages, Wiley-VCH, Weinheim, Germany (1999). ISBN 3–527–29622–0. £ 85.00

The aim of the book is to give a comprehensive overview on the sources and analysis of organic pollutants in indoor air. The book is divided into four parts dealing with the measurement of organic indoor pollutants, environmental test chambers and cells, the release of organic compounds from indoor materials as well as investigation concepts and quality guidelines for organic air pollutants. Sampling and determination of VOCs, wood preservatives, PAHs and PCBs, and biological contaminants, as well as primary and secondary emissions from automobile interiors, floor coverings, wood-based furniture and houshold and consumer products are some of the items covered. Chapters are concise but very well documented, with references until the same 1999. The book is accurately presented, and certainly fills a gap in the literature where many sources of information are spread into reports not easy to find.

The book is addressed to chemists, biologists and people involved in both research and surveillance activities. It is also an appropriate introductory guide to this very topical subject. Therefore, it is highly recommneded for industry and academic environmental laboratories as well as regulatory bodies.

METHODS OF SEAWATER ANALYSIS, edited by K. Grasshoff, K. Kremling and M. Ehrhardt, 600 pages, Wiley-VCH Verlag GmbH, Weinheim, Germany (1999), ISBN 3–527–29589–5, £ 140,00.

This is the third, completely revised and extended edition of the book first published in 1976. Multiauthored chapters provide a comprehensive coverage of the analysis of sea water parameters and chemical species. They include: sampling; filtration and storage; determination of salinity, pH, oxygen, hydrogen sulphide, dimethyl sulphide, thiosulfate and sulphur, total alkalinity and dissolved inorganic carbon, carbon dioxide partial pressure, nutrients, major and trace constituents, natural radioactive tracers, dissolved organic carbon and nitrogen by high temperature combustion and ultraviolet photooxidation, particulate organic carbon and nitrogen, adsorption and clean-up of lipohilic organic seawater concentrates, petroleum residues, organochlorine compounds, volatile halocarbons, amino acids and carbohydrates, humic acids and photosynthetic pigments.

Classical topics, such as DOC, nutrients or metals, have been thoroughly updated and expanded. The chapter on trace elements, for example, has more than 100 pages and 250 references. On the other hand, new chapters, for example on the analysis of DMS and pigments or the determination of partial pressure of CO_2, have been added, according to the current development of marine sciences. The book combines the presentation of the fundamentals of the different topics with the practical aspects of the analytical procedures that, according to the authors experience, may produce more reliable results in everyday work.

This, certainly continues to be the reference book for marine scientists and environmental chemists, and cannot be absent from the libraries of specialized research and higher education institutions.

ENCYCLOPEDIA OF ENVIRONMENTAL ANALYSIS AND REMEDIATION, edited by R.A. Meyers, 5400 pages, J. Wiley & Sons, New York, USA (1998). ISBN 0–471–11708–0, £ 1670.00

This complete eight-volume encyclopedic treatment of all aspects of the environment, includes information on specific pollutants, the instruments and analyt-

ical techniques used, sampling methods, remediation methodologies, pollution control, risk assessments and regulatory and management issues. Atmospheric, water, soil, biological and global environmental issues, hazardous waste remediation and water reclamation, laws and regulations, are the general areas covered. The about 300 entries written by almost 500 experienced authors from all around the world constitute the most comprehensive and up-dated compendium actually available on environmental analysis and remediation. Each subject receives an extensive coverage (around 20 large-format pages) providing the professional needed information. Each entry makes extensive use of illustrations and tables, as well as cross referencing. A very detailed and useful subject index is provided at the end of the encyclopedia.

Scientists and engineers engaged in research and development efforts will find the infomation necessary to support their research. This include the definition of pollutants, their dispersion pathways and analytical methods, as well as surveys of present remediation technologies. In addition, engineers and regulatory agencies will find relevant information necessary to evaluate the disposal and clean-up as well as the storage of the large variety of residues generated by the modern society. Government officials at the state, regional and local levels, will obtain well up-dated information for preparing and evaluating environmental compliance documentation and monitoring and remediation efforts. Finally, the Encyclopedia will satisfy the need for self-teaching of any aspect of environmental chemistry.

REACTIVE HALOGEN COMPOUNDS IN THE ATMOSPHERE, edited by P. Fabian and O.N. Singh, 227 pages, Springer -Verlag, Heidelberg (1999). ISBN 3–540–64090–8. DM 229.00

This is vol. 4 part E of the Handbook of Environmental Chemistry, a collection that has published since 1980 almost 40 volumes in 5 sections on the natural environment and biogeochemical cycles (1), reactions and processes (2), anthropogenic compounds (3), air pollution (4) and water pollution (5).

The present one deals with reactive halogen compounds, mainly halomethanes both natural and anthropogenic, that are found in the atmosphere today. Sources, sinks and atmospheric budgets, global distributions, chemical pathways and the environmental impact of bromine, chlorine, fluorine and iodine species are described in the first four chapters. In the next four a review on the present knowledge of their properties, applications, production, sales as well as international regulations related to the Montreal Protocol is provided. Both academic and industrial views are included with a large coverage of the latest develop-

ments in the area. In summary, a general overview to get a proper insight into the field.

PRACTICAL ENVIRONMENTAL ANALYSIS, by M. Rajodevic and V.N. Bashkin, 466 pages. The Royal Society of Chemistry, Cambridge, U.K. (1999), ISBN 0–85404–594–5. £ 32.00

A large number of books already exists that cover different basic and practical aspects of environmental analytical chemistry, but this is unique in terms of the audience to which is addressed. The book is especially intended for providing undergraduates or even secondary school students with adapted information on practical environmental analysis. The topics covered include analysis of rain water, air, water, soil, sludge, sediment, dust and plant material. As the main aim of the book is to serve as an educational tool at the low level it is strongly biased for practical reasons towards inorganic analysis.

After a general and illustrative presentation of the basic principles and environmental problems of application in each compartment, each chapter describes the most common sampling and analytical procedures, and concludes with practical exercises, complementary reading, and, interestingly, suggestions for experimental projects easy to be performed by students. The book ends with appendices on safety, laboratory practice, environmental standards and statistical tables. In summary, the subject and content of this book will guarantee a warm welcome from students, technicians and lecturers alike.

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STRUCTURE AND SURFACE REACTIONS OF SOIL PARTICLES, edited by P.M. Huang, N. Senesi and J. Buffle, 492 pages, IUPAC Series on Analytical and Physical Chemistry of Environmental Systems, vol. 4. John Wiley & Sons, Chichester, UK (1998). ISBN 0-471-95936-7. £ 120.00.

Soil structure plays an important role on the environmental processes affecting ions and toxic compounds. During the last decade, new theoretical developments and experimental techniques have enhanced significantly our knowledge of the importance of soils as a matrix affecting the environmental fate of pollutants and our capabilities to study molecular processes occuring on soil particles. A com-

prehensive overview of the basics of structure and surface reactions of both soil particles and colloids are addressed in this book.

Part I deals with aspects related to soil structure. Special emphasis is given to recent theoretical developments that use the fractal approach to describe aggregation and adsorption processes, a fast developing topic, which has become a central issue in soil physics and chemistry. Part II is devoted to recent developments in atomic force microscopy and other microscopic and spectroscopic techniques for the study of surface reactions at the molecular scale on soil particles. These surface reactions and other molecular processes such as diffusion in soils and humics are covered in Part III. Even though the coverage of the field is complete, sometimes, there is a lack of integration of the three sections of the book. Thus, for example, it is not clear in Part III how the new instrumental techniques covered in Part II have modified our vision of surface reactions on soils. This weakness is not so much a limitation of the book, but rather an opportunity for the reader to identify potential topics for research. Indeed, scientific progress often comes from the integration of diverse techniques and theories, such those covered in the present book. Overall this is complete guide to the analysis of soils and a useful introduction to molecular processes in soils. This book should be recommended to environmental and soil scientists with a wide range on interests, from soil restoration to the environmental fate of pollutants.

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