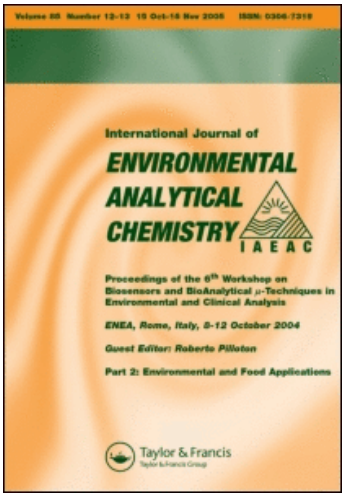

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Book Reviews

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Book Reviews

THE HANDBOOK OF ENVIRONMENTAL CHEMISTRY PART B, by Otto Hutzinger, University of Amsterdam and 25 authors from 10 countries, Springer-Verlag Berlin, 1982.

We have already earlier informed about Part A (published 1980) of this excellent handbook. Part B is now also available in 3 volumes:

Volume 1 "The Natural Environment and the Biogeochemical Cycles, Part B" contains 317 pages (including a subject index for Part A and B of 13 pages, which is however not very complete), 43 figures, 41 tables, many equations, a list of symbols, and valuable literature references added to each chapter, linen, format 248 × 170 mm, ISBN 3-540-11106-9, DM 168.00, resp US$ 74.60.

Volume 2 "Reactions and Processes, Part B" contains 205 pages (including a subject index of 9 pages), 63 figures, 43 tables, many equations, and valuable literature references added to each chapter, linen, format 248 × 170 mm, ISBN 3-540-11107-7, DM 98.00, resp US$ 43.60.

Volume 3 "Anthropogenic Compounds, Part B" contains 210 pages (including a subject index of 10 pages), 33 figures, 54 tables, and valuable literature added to each chapter, linen, format 248 × 170 mm, ISBN 3-540-11108-5, DM 116.00, resp US$ 51.60.

Environmental chemistry is concerned with reactions in the environment. It is about distribution and equilibria between environmental compartments. It is about reactions, pathways, thermodynamics and kinetics. Part B continues and completes this information of natural chemical processes and of the new additional

dimension through industrial activities (production, storage, transport, use and ultimate disposal) given in Part A. These goals are again well achieved in Part B. Perhaps there is one gap, because there is not too much said about burning of coal and other combustion processes, which contribute substantially to the environmental chemistry of the metals treated.

Volume 1, Part B is divided into 6 chapters (Basic Concepts of Ecology—Natural Radionuclides in the Environment—the Nitrogen Cycles—the Carbon Cycle—Molecular Organic Geochemistry—Radiation and Energy Transport in the Earth Atmospheric System). During changes of ecosystems developmental and mature stages are discussed. The presentation about the carbon cycle includes valuable information about photosynthesis, about standing crops and primary production of ecosystems, and about the carbon dioxide problem. The chapter about molecular organic geochemistry informs in an extremely short way especially about specific natural higher molecular hydrocarbons in fossil fuel, and their use as markers.

Volume 2, Part B is divided into 9 chapters (Basic Principles of Environmental Photochemistry—Experimental Approaches to Environmental Photochemistry—Aquatic Photochemistry—Microbial Transformation of Organic Compounds—Hydrophobic Interactions in the Aquatic Environment—Interactions of Humic Substances with Environmental Chemicals—Complexing Effects on Behavior of Some Metals—the Disposition and Metabolism of Environmental Chemicals by Mammalia—Pharmacokinetic Models).

Volume 3, Part B is divided into 6 chapters (Lead—Arsenic, Beryllium, Selenium and Vanadium—C_1 and C_2 Halocarbons—Halogenated Aromatics (PCB, PCT, PCN and PBB)—Volatile Aromatics (especially benzene, toluene and xylenes)—Surfactants). One finds valuable specific information about production (source, use and shipment), analytical methods, transport behaviour in the environment, chemical and biological reactions in the environment, environmental fate and effects. Of special use is the individual discussion of accumulation and metabolism. It is a great progress that the reader can find facts about speciation, since chemical and physical forms of pollutants determine effects. It may be a certain drawback that in some chapters practically only North American literature is used and is given. Nevertheless a good access of principles is possible.

HANDBOOK ON ATMOSPHERIC DIFFUSION by Steven R. Hanna, Gary A. Briggs and Rayford P. Hosker, Jr., Atmospheric Turbulance and Diffusion Laboratory, National Oceanic and Atmospheric Administration, Oak Ridge, Tennessee, 108 pages (including 7 pages of references, 2 pages for an author index and 3 pages for a subject index), 67 figures, many equations, a few tables, paper binding, format 280 × 215 mm, ISBN 0-87079-127-3, National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161, U.S.A., US$ 10.75

The book should be helpful to those who must make problem-solving calculations of atmospheric diffusion. Especially engineers, consulting companies, planners, and meteorologists thus find valuable information and guidelines when they are confronted with clean air acts, or just with increased environmental consciousness. It is said that the number of pages was purposely limited to make the book more usable. The book presents thus best current formulas (the detailed theoretical derivation may be taken from the references) for problem solving and simple descriptions of the principles of analysis. A few problems are provided after each chapter.

The book is structured into the 13 chapters:
—Meteorology
—Plume Rise
—Source Effects
—Gaussian Plume Model for Continuous Sources
—Statistical Models for Diffusion from Continuous-Point Sources
—Puff Diffusion
—Simularity Models of Diffusion
—Gradient Transport (K) Models
—Urban Diffusion Models
—Removal Mechanisms
—Cooling Tower Plumes and Drift Deposition
—Air-Pollution Meteorology in Complex Terrain
—Long-Range Transport and Diffusion.

Chemical differentiation is practically limited to behaviour of carbon monoxide and $SO_2 \cdot NO_x$ and metal compounds are not treated for the specific behaviours. The application of inert tracers,

such as ^{85}Kr and SF_6 to study long-range transport dicussed is certainly of greater interest.

ERNEST MERIAN
Therwil, April 1983

CHROMATOGRAPHY AND MASS SPECTROMETRY IN BIOMEDICAL SCIENCES, edited by Alberto Frigerio, Mario Negri Institute of Pharmacological Research, Milan (Italy)
Volume 1 (Analytical Chemistry Symposia Series, Volume 13), 278 pages (including 128 figures, 46 tables, and a two side author index), linen, format 248 × 171 mm, ISBN 0-444-42016-9, Elseviers Scientific Publishing Company, Amsterdam, 1983, US$72.25, dfl. 170.-
Volume 2 (Analytical Chemistry Symposia Series, Volume 14), 506 pages (including 252 figures, 67 tables, and a two side author index), linen, format 248 × 171 mm, ISBN 0-444-42154-8, Elseviers Scientific Publishing Company, Amsterdam, 1983, US$106.50, dfl. 250.-

The two volumes include 6 plenary lectures, 55 studies, and 14 poster presentations in the areas of latest applications of chromatography, mass spectrometry and chromatography mass spectrometry in biochemistry, medicine, toxicology, drug research, forensic science, clinical chemistry, and environmental sciences (identification of metabolites and pollutants). The papers were presented at the 1st and at the 2nd International Conferences in these fields at Venice (June, 1981) and at Bordighera (June, 1982). The 3rd Symposium in the series—which will be devoted more to applications in nutritian science—is to take place at Montreux (June, 1983). Although main emphasis is given to drug and clinical studies, endogenous compounds, and biomedical studies (with valuable information on newest techniques), about one fourth of the volumes is related to developments in methodology and to environmental studies.

The environmental studies include applications to municipal waste water and sludge, to atrazine metabolite isolation, to detection of alkyl disulphides, to the separation of plutonium from americum-241, to aliphatic aldehydes in biological samples, to polychlorinated naphthalenes in soil samples, to metabolism of omethoate (a phosphororganic compound) in soil and sugar beet, to separation of

some polymers from compost, humic substances and enzymatic oxidation produced from phenols, to GC-separation of polycyclic aromatic hydrocarbons in airborne particulate matter with nematic liquid crystals as liquid phase, to quantitative analysis of HCH-isomers in environmental samples, and to clean-up techniques for quantitative determinations of PCB's in fish. In this latter study procedures for extraction, clean up with Florisil cartridges and GC determination are described.

Some newer developments in methodology involve for instance comparisons of different methods, combinations of chromatography and electrophoresis, application of liquid chromatography to chronobiological problems, automated head-space gas chromatography, preparation of biological samples for the gas chromatographic determination of organo-chlorine insecticides, combined gas chromatography—Fourier transform infrared spectroscopy, quantitative ion-exchange thin layer chromatography, scouting on thin-layer plates, enrichment and transmission factors in GC-MS, application of mass fragmentography, and tandem mass spectrometry.

The two volumes give valuable ideas and details on recent studies to specialists in the fields of analytical chemistry. One misses however an introduction and some comments. It is also a draw-back that no subject indices are included to find relevant matters of interest in the somewhat arbitrary collection, and that not all the papers in these proceedings have an abstract or a summary. It would at least help in future volumes, if some structuring in chapters could be foreseen.

ERNEST MERIAN
March 1983