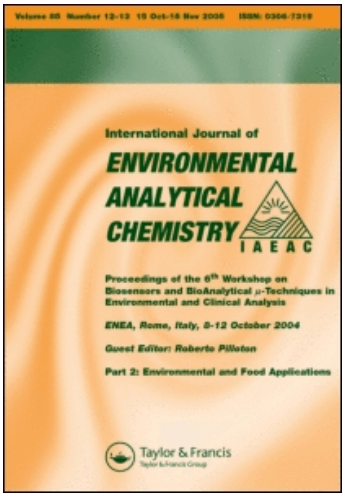

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A review of: "The Handbook of Environmental Chemistry"

Ernest Merian

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Book Review

THE HANDBOOK OF ENVIRONMENTAL CHEMISTRY by Otto Hutzinger, University of Amsterdam and 52 authors from 8 countries, Springer-Verlag Berlin

Volume 1 "*The Natural Environment and the Biogeochemical Cycles*," Part A contains 258 pages (including a subject index of 4 pages, which is however not very satisfactory), 54 figures, 59 tables and many equations, as well as valuable literature reference added to each chapter, linen, format 248 × 170 mm, ISBN 3-540-09688-4, 1980, DM 98.-resp. US $57.90, Part B will be published in 1981.

As the experienced editor writes in the preface, one of the first objectives of environmental chemistry must be the study of the environment and of natural chemical processes, which occur in the environment. This goal is well achieved in this first volume, which deals with reactions, pathways, distribution, equilibria, thermodynamics and kinetics. Since science can contribute in two areas to the risk assessment of chemicals—in the area of toxicology and in the area of chemical exposure—the fate of chemical compounds is very important. Test methods and models help in the basic understanding by graduate students and by practising scientists in industry as well as government and regulatory bodies. However, the parts A of volume 1, 2 and 3 do not deal with analytical chemistry and ecotoxicological testing and their strength and limitations. Nevertheless this handbook closes a gap, and allows a quick and reliable look into the chemistry and the physical behaviour of natural and anthropogenic compounds in the environment. The series can be highly recommended, especially also in view of the excellent and competent co-authors.

Volume 1, Part A is divided into 9 chapters (The Atmosphere—The Hydrosphere—Chemical Oceanography—Chemical Aspects of Soil—The Oxygen Cycle—The Sulfur Cycle—The Phosphorous Cycle—Metal Cycles and Biological Methylation—Natural Organohalogen Compounds). In the chapter "Metal Cycles" one finds especially information about biogeochemical cycles of mercury, lead and tin. Biomethylation possibilities—for instance involving the cobalt complex cobalamin—are discussed in detail. Some classification possibilities are given for the other metals and elements. Since anthropogenic halogenated compounds are one

of the most important pollutants, it is interesting to see in the last chapter, that marine organisms (bacteria, algae, sponges etc) can produce a wide variety of halogenated natural products.

Volume 2 "*Reactions and Processes*," Part A contains 307 pages (including a subject index of 5 pages), 66 figures, 27 tables and many equations, as well as valuable literature references added to each chapter, linen, format 248 × 170 mm, ISBN 3-540-09689-2, DM 126.-, US $74.40, Part B will be published in 1981.

Volume 2 deals with physical factors such as transport and adsorption, and chemical, photochemical and biochemical reactions in the environment, as well as some aspects of pharmacokinetics and metabolism within organisms. Part A is divided into 13 chapters (Transport and Transformation of Chemicals: A Perspective—Transport Processes in Air—Solubility, Partition Coefficients, Volatility, and Evaporation Rates—Adsorption Processes in Soil—Sedimentation Processes in the Sea—Chemical and Photo Oxidation—Atmospheric Photochemistry—Photochemistry at Surfaces and Interfases—Microbial Metabolism—Plant Uptake and Metabolism—Metabolism and Distribution by Aquatic Animals—Laboratory Microecosystems—Reaction Types in the Environment). In this volume one finds information about the most important physico-chemical and biological processes, which are important for natural and anthropogenic chemicals introduced into nature. These have to be kept in mind, for instance when modelling. The volume concludes with a table of 42 pages, in which biotransformation processes—which tend to make chemicals more polar and more water-soluble—are logically presented (organism, compound, metabolite, reference).

Volume 3 "*Anthropogenic Compounds*," Part A contains 274 pages (including a not very specified subject index of 4 pages), 61 figures, 72 tables and many formulae, as well as valuable literature references added to each chapter, linen, format 248 × 170 mm, ISBN 3-540-09690-6, DM 98.-, US $57.90, Part B will be published in 1981.

Volume 3 deals with anthropogenic compounds, their chemical backgrounds, production methods and information about their use, their environmental behaviour, analytical methodology and some aspects of their toxic effects. Part A is divided into 9 chapters (Mercury—Cadmium—Polycyclic Aromatic and Heteroaromatic Hydrocarbons—Fluorocarbons—Chlorinated Paraffins—Chloroaromatic Compounds Containing Oxygen—Organic Dyes and Pigments—Inorganic Pigments—Radioactive Substances).

ERNEST MERIAN