

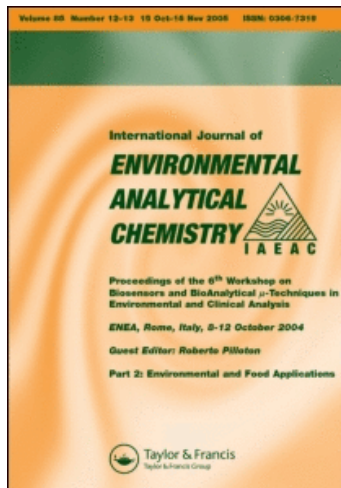
This article was downloaded by:

On: 18 January 2011

Access details: Access Details: Free Access

Publisher Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



International Journal of Environmental Analytical Chemistry

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713640455>

Book Reviews

To cite this Article (1986) 'Book Reviews', International Journal of Environmental Analytical Chemistry, 24: 2, 163 – 167

To link to this Article: DOI: 10.1080/03067318608076466

URL: <http://dx.doi.org/10.1080/03067318608076466>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Book Reviews

ASSESSMENT AND MANAGEMENT OF CHEMICAL RISKS, ACS Symposium Series 239, edited by Joseph V. Rodricks (Environ Corporation, Washington DC 20006) and Robert G. Tardiff (National Academy of Sciences, Washington DC 20037), 184 pages (including 37 figures, 20 tables, and a subject index of 8 pages), linen, format 234 × 161 mm, ISBN 0-8412-0821-2, American Chemical Society, 1155 16 Street NW, Washington DC 20036 (1984), US\$34.95 (for export US\$41.95).

The volume is based on a symposium sponsored by the Division of Chemical Health and Safety at the 184th Meeting of the American Chemical Society, Kansas City, Missouri, September 1982. In two parts—Assessment of Chemical Risks, and Management of Chemical Risks—14 authors (mainly from American universities) in 11 papers delineate both the conceptual and practical bases for risk assessment; examine the traditional uses of animal toxicity and epidemiology data for chemical safety assessment; explore newer concepts of dose-response evaluation; and then describe the joint evolution of the traditional and the newer methodologies of risk assessment. The authors also outline the scientific uncertainties associated with each risk assessment procedure (discussing also new approaches for extrapolations at low doses of chemicals). This introduction to the essential elements of these subjects thus lay the groundwork for an understanding how to make decisions in areas without the benefit of strong historical precedents. *Dr. Norton Nelson, New York 10016* concludes that it may well be, that major improvement is not to be sought in finding more rapid models (for instance for existing toxicity tests) but to develop a synthesis of independent information acquired by ancillary routes. It cannot be expected that the reader finds simple recipes how to answer complex questions, but he gets valuable information on (mathematical) models, hazard indices,

decision tree application, and legal considerations. Scientific assessment of risk is of course limited by substantial scientific uncertainties, and by uncertainties in defining public perceptions (what is socially acceptable? continuous changes of public perceptions must also be considered, especially regarding long term effects), questions which are mentioned, but not yet adequately discussed. Perhaps representatives of (potentially) exposed persons should also take part in such discussions to get more practical results.

ENVIRONMENTAL SAMPLING FOR HAZARDOUS WASTES, ACS Symposium Series 267, edited by Glenn E. Schweitzer and John A. Santolucito (Environmental Protection Agency, Las Vegas, Nevada, U.S.A.), 133 pages (including 40 figures, 34 tables, and a subject index of 5 pages), linen format 234 × 161 mm, ISBN 0-8412-0884-0, American Chemical Society, 1155 16th Street NW, Washington DC 20036 (1984), US\$34.95 (for export US\$41.95).

This excellent overview is based on a workshop sponsored by the Committee on Environmental Improvement of the American Chemical Society, Las Vegas, Nevada, February 1984. Scientist from agencies, bureaus, universities and private research institutes in the United States have presented 13 papers. The rising cost of laboratory analyses of tens of thousands of samples obtained each year at Superfund disposal sites has underscored the importance of collecting only samples that are truly representative of environmental conditions, and of which chemical integrity can be ensured. The authors thus document the importance of improved approaches to environmental sampling and review several successful field programs including sampling for chlorinated dioxins in Missouri, lead contamination in Dallas, and cyanide pollution in Washington. In the design and interpretation of monitoring activities classical and innovative approaches (using statistics) are presented. Guidelines for applying quality assurance procedures in the field, and suggestions for future research direction are also included. The booklet thus demonstrates practical facts on spatial distribution and migration of chemical substances in soils and wastes (with many figures, and advice for multifactor experiments, stressing the importance of background measurements for comparison).

OZONE AND ITS REACTIONS WITH ORGANIC COMPOUNDS, Volume 15 of the Studies in Organic Chemistry, by S. D. Razumovskii and G. E. Zaikov (Institute of Chemical Physics, Academy of Sciences of the U.S.S.R. Moscow), 403 pages (including 113 figures, 96 tables, many formulae, references added to each chapter, and a subject index of 4 pages), linen, format 248×171 mm, ISBN 0-444-42369-9, Elsevier Science Publishers B.V., NL-1000 AE Amsterdam (1984, available in the U.S.A./Canada from Elsevier Science Publishing Co. Inc., P.O. Box 1663, Grand Central Station, New York, N.Y. 10163).

The authors describe in the first two chapters the physicochemical properties of ozone (including methods of synthesis and analysis) and experimental methods for investigating the kinetics of ozone reactions. Whereas researchers dealing with gaseous ozone reactions frequently use reaction kinetics as a research tool, organic chemists rather ignore reaction kinetics in liquid-phase research. The authors try to apply a unified kinetic approach to establish general points of similarity and difference of reaction of ozone with different classes of organic compounds. They discuss also empirical rules relating to structure and reactivity. This knowledge helps to improve manufacturing processes employing ozone, to improve the stability of polymers, to improve analytical methods to establish chemical structures, and to improve environmental sanitation (purification of drinking water and industrial aqueous effluents). In seven chapters the authors thus investigate the mechanisms and kinetics of reactions of ozone with unsaturated hydrocarbons, with aromatic compounds, with saturated hydrocarbons, with phenols, with polymer materials, and with compounds containing heteroatoms. Emphasis is laid throughout the book to use better understanding to improve chemical technology, but there is also interesting background information to be found for other scientists: For instance the utilization of the specific features of the reaction of ozone with $C=C$ bonds of organic compounds in analytical chemistry is discussed in a special subchapter, and the information presented on the reaction of ozone with olefins and paraffins may also be useful to better understand the new atmospheric mechanisms leading to forest damages (of which the authors do not yet speak).

OZONE, Monograph 20 of the Topics in Inorganic and General Chemistry, by Marton Horvath, Laszlo Bilitzky and Jenő Hüttner (Enterprise for Oxygen and Acetylene Production, Budapest, Hungary), 350 pages (including 128 figures, 47 tables, 12 pages of (not very new) references, and a good subject index of 18 pages), linen, format 247 × 169 mm, ISBN 0-444-99625-7, Elsevier Science Publisher B.V., NL-1000 AE Amsterdam (1984), Dfl. 195 (U.S.\$75 in U.S.A. and Canada).

The volume is structured into five chapters:

- Properties and analytical chemistry of ozone
- Atmospheric ozone
- Processes for ozone generation
- Stabilization and storage of ozone
- Fields of utilization of ozone.

As far as analytical techniques chemical methods using redox reactions, electrochemical methods, thermal methods, optical methods, non-specific direct physical methods (e.g. density and dielectric measurements), and other special methods (e.g. based on quantification of decomposition of exposed organic compounds) are compared. The chapter "Atmospheric Ozone" contains four sub-chapters: Significance of atmospheric ozone/Occurrence and formation of ozone in nature/Vertical and horizontal distribution of ozone/Effect of human activity on atmospheric ozone. Also this chapter is based on literature ending around 1975, but hazards by nitrogen oxides and by various halogenated compounds (for stratospheric ozone) are already discussed, as well as photochemical formation of ozone from exhaust gases of motor cars. Reactions of ozone with natural and artificial pollutants of water, specific consumption of ozone and energy in water treatment, and disinfection and removal of odours are also discussed in the book, which can thus be recommended to those—especially students—interested in an overview, and less in newest facts and knowledge.

CAUSES AND EFFECTS OF CHANGES IN STRATOSPHERIC OZONE: UPDATE 1983, by a NAS-Committee under the Chairmanship of Dr. Leonard C. Harber, Department of Dermatology, Columbia University, New York, 254 pages (including 34 figures, 6 tables, references (in two parts) of 43 pages, research recommen-

dations, but no index), paper board, format 229 × 153 mm, ISBN 0-309-03443-4, National Academy Press, Washington DC 20418, U.S.A. (1984), £19.65 (marketed and distributed by John Wiley & Sons, Ltd., Bognor Regis, West Sussex, PO22 9SA, England, U.K.).

This is the up-to-date booklet really needed by those interested in the present knowledge about effects of changes in stratospheric ozone. As with other National Academy publications the information is well structured, and it is easy to find the relevant data, despite the missing index. Part I with the title "Perturbations to Stratospheric Ozone" discusses laboratory measurements, field measurements, meteorological processes, comparison of models and measurements, and chemical perturbations. Part II with the title "Effects on the Biota" deals with immunological changes caused by ultraviolet radiation, nonmelanoma skin cancer in humans, malignant melanoma in humans, animal studies of photocarcinogenesis, molecular and cellular studies, effects of UV-B radiation on plants and vegetation as ecosystem components, and effects of UV-B radiation on marine organisms. Both Parts begin with an introduction and a summary.

By combining sensitivity analysis on parameters of chemical models and subjective estimates it is tried to overcome uncertainties. Since evolution of the atmosphere is more complex than thought some years ago, new models taking into account perturbations of a number of species have been developed. Direct and sensitive measuring of stable and unstable species has improved. Ozone is thus reduced in the upper stratosphere, and increased in the lower stratosphere and in the upper troposphere. Two-dimensional calculations contribute to enhanced confidence into the present knowledge on changes in stratospheric ozone induced by human activities. In part II immunological perturbations caused by exposure of mammals to UV-B radiation are discussed, including possible immunosuppression. Regarding nonmelanoma skin cancers, malignant melanoma, and photocarcinogenesis sunlight (and UV-B radiation) may not be the only risk (perhaps also genetic factors?), but better methods reduce uncertainties, and allow to study the significance of interactive effects.

ERNEST MERIAN