

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 (1985) 'Book Reviews', International Journal of Environmental Analytical Chemistry, 23: 1, 153 – 160

To link to this Article: DOI: 10.1080/03067318508076441

URL: <http://dx.doi.org/10.1080/03067318508076441>

### 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

WATER AND WATER ANALYSIS (in German: Wasser und Wasseruntersuchung), 2nd revised edition in the Series “Laboratory Books in Chemistry”, by Leonhard A. Hütter, A-6060 Hall in Tirol, Austria, 344 pages (including 38 figures, 34 tables, 43 pages with newest literature references and other informations (regulations, addresses) mainly from Germany, Austria and Switzerland, and a good index of nine pages), carton cover, format 227 × 165 mm, ISBN 3-425-05075-3, Verlag Diesterweg/Salle, D-6000 Frankfurt/Main and Sauerländer, CH-5000 Aarau (1984), DM 48.00

This valuable volume is addressed to laboratories in charge of all kind of water analysis, but also to students. It contains a lot of practical information, also on sampling and instrumentation. It differentiates between various waters—such as distilled water, drinking water, mineral water, precipitation, surface water, swimming pool water, waste water, water acceptable for salmonides or for cyprinides, sea water, etc. Sampling and measuring of odour, taste, and optical quality is described, as well as the determination of total residue, of total water hardness, of organic carbon, of oxidizing capacity, of nitrogen concentrations in various bound forms, and of dissolved gases. Analytical methods are discussed in detail for cations (alkali metals, earth alkali metals, heavy metals), and for anions (carbonates, halogenides, cyanide, hydrogen sulfide, sulfate, phosphates and silicates). Cations are mainly determined using chelatometry, colorimetry, and atom absorption spectrometry. Not too much is said about newest developments in voltammetry, and one misses also up-to-date information on sea water and estuary water analysis, and on speciation. One finds however valuable indications for bacteriological examination, and a useful glossary for abbreviations in the field. The book is thus quite useful in continental water monitoring, and gives also necessary informations how to avoid mistakes.

AQUATIC TOXICOLOGY, Volume 2 of a Series, edited by Laverne J. Weber, Marine Science Center, Oregon State University, Newport, Oregon, U.S.A., 236 pages (including 7 tables, 33 figures, references (mainly of the 1970's) added to each chapter, and a valuable subject index of 6 pages), linen, format 243 × 163 mm, ISBN 0-89004-439-2, Raven Press, New York 10036 (1984), US\$ 55.00

The Volume—useful to students and professionals in ecotoxicology and in environmental chemistry, as well as to governmental experts dealing with protection of waters, and its organisms—continues the review of fish organ system toxicology in the manner presented in Volume 1 (1982, see *Chemosphere* (Pergamon Press) **11**, Nr. 11, N 25 (November 1982), and *Toxicological and Environmental Chemistry* (Gordon and Breach) **6**, Nr. 2, 175–176 (1983)). Four contributions are included this time:

- G. H. Satchwell, Otago Medical School, Dunedin, New Zealand: Respiratory Toxicology of Fishes,
- John B. Pritchard, National Institute of Environmental Health Sciences, St. Augustine, Florida 32084, and J. Larry Renfro, Biological Sciences Group, University of Connecticut, Storrs, Conn. 06268: Interactions of Xenobiotics with Teleost Renal Function,
- John R. Smith, Oregon Health Sciences University, Portland, Oregon 97201: Fish Neurotoxicology, and
- Gérard Leduc, Department of Biological Sciences, Concordia University, Montreal, Canada H3G 1H8: Cyanides in Water: Toxicological Significance.

The first contribution thus informs about our present knowledge on gill physiology and blood flow, and how they may be affected by environmental perturbations. Especially uptake and damages by insecticides, zinc and cadmium to gill structures (including changes occurring in microcirculation) and later eventual recovery of gills are described.

Kidney types show a wide diversity from fish having a kidney structure comparable to man, to fish that have an aglomerular kidney with primarily secretory capacity. Toxicants (for instance metal ions, polycyclic aromatic compounds and insecticides) may thus affect renal membranes, tubules or energy systems—and their functions—in very different ways.

The third chapter is devoted to neurotoxicology (particularly to the central nervous system), to influences on enzymatic systems, and somewhat speculatively to related toxicant-induced behaviour responses. Information includes also aspects of neurochemistry, pharmacology and biochemistry of specific regions of the central nervous system as known in fish. The author describes effects of major petroleum constituents (especially benzene), of pesticides of the chlorinated hydrocarbon type, of the organophosphorus type and of other types, of PCB's, of metal ions (especially of copper, zinc and cadmium ions), and compared these effects in some cases with those of some drugs.

The last chapter does not examine specific organ systems, but covers all mechanisms of cyanide's action, and specific toxic effects of cyanide on aquatic animals. Some information deals with nature, sources and transformations of cyanides in waters. In the index one finds subjects, such as acrylonitrile, cadmium, chlorinated hydrocarbons, chloroform, copper, 2,4-D, diquat, fenitrothion, heavy metals, lead magnesium, mercury, nickel, oil, organochlorine pesticides, organophosphate pesticides, parathion, pentachlorophenate, petroleum, phenol, simazine, 2,4,5-T, toluene, xylene, and zinc.

**TOXICITY TESTING, NEW APPROACHES AND APPLICATIONS IN HUMAN RISK ASSESSMENT**, edited by Dr. A. P. Li *et al.*, Environmental Health Laboratory Monsanto Company, St. Louis, Missouri, U.S.A., 295 pages (including 37 tables, 49 figures, newest references added to each contribution, discussion statements, a good subject index of six pages, and an address list of contributors), linen, format 241 × 162 mm, ISBN 0-88167-083-9, Raven Press, New York (1983/1985), US\$ 50.50

From the time of the first non-clinical experiment, toxicologists have been plagued with the problem of interpreting the data in a manner that has relevance to man. New techniques have been developed—especially to explore the “how” of toxicology—and this well presented documentation informs on promising approaches to evaluate the toxic potential of chemicals, as well as on the validation and standardization of the established approaches. The volume is thus addressed to workers from academia, government, and industry who are interested in improving the sophistication of our toxicology

testing procedures to reduce the uncertainty in the extrapolation of data to human (risk assessment). The book contains the newest state of the art, according to the results of a conference held in September 1983 in the World Headquarters of Monsanto Company, St. Louis, Missouri, U.S.A.

Starting with an overview on evaluation complexity the volume is structured into four sections:

- Genetic Toxicology,
- Metabolic and Pharmacokinetic Approaches,
- Toxicity to the Immune System and the Fetus, and
- Dose Models, Environment, and Epidemiology,

with in total 19 contributions, all from the United States. Of special interest are new possibilities in using human (and other mammalian) cells to determine mutagenicity and carcinogenicity, metabolic studies (for instance on similarities and different behaviour of PCB-isomers in human, monkey and dog), pharmacokinetic studies (for instance of PCB's in different organs, and of inhaled chlorobenzene), and assessment of lymphocyte response and transplacental carcinogenesis (especially urethanes and nitrosamines are compared). As far as models and risk assessment, validation of *in vitro* methods (for instance in teratogenicity testing and of immune response assays), dose response models, environmental distribution and fate (for instance comparisons of partitioning of 2,4-D, chlorpyrifos and benzene between compartments), and epidemiological tools (still rather limited to high-dose, short-latency acute illness problems; for instance poor statistically significant differences between Love Canal neighborhood populations and controls) are discussed. Of special interest are statements presented in the panel discussion regarding the threshold question (since we have to do with populations of individuals), limitations in total life exposure studies (and of long term tests in general), determination of dose-dependent changes in pharmacokinetics (especially of complex mixtures such as the PCB's), the limitations in extrapolation of SCE-test results to healthy effects (one must be sure that the dose of a particular substance—of which one wants to relate SCE-indexes to genotoxicity—is the only variable), and observations in animal testing related to food consumption. In the subject index quite a few organic pollutants are included, but no reference to inorganic compounds are found.

HEALTH RISKS TO FEMALE WORKERS IN OCCUPATIONAL EXPOSURE TO CHEMICAL AGENTS, by Prof. Dr. Reinier L. Zielhuis *et al.*, Coronel Laboratorium, Universiteit van NL-1054 BW Amsterdam, The Netherlands, 132 pages (including 30 tables, references added to each chapter, an appendix on recent data, but no subject index), soft cover, format 242 × 165 mm, ISBN 3-540-13579-0, Springer-Verlag, Berlin-Heidelberg-New York-Tokyo (1984), DM 70.00, or approximately US \$24.60

The booklet is a valuable source of information for all those who are responsible for safeguarding the health of female workers and also for scientists in the research area, who are interested to get a better feeling about effects—may be also for assess other (new) chemicals—on risk populations and individuals. It reviews—in concentrated form—critically the extra health risks (compared to males) incurring from exposure to chemicals. The risks to females and their offspring during pregnancy and lactation are especially considered.

Sixteen chapters of the well structured review are orientated to specific chemical classes: Organic solvents, carbon disulfide, pesticides (including organic mercury compounds), polychlorobiphenyls and polybromoniphenyls, plastic monomers (including vinyl chloride and formaldehyde), carbon monoxide, inorganic lead, cadmium, mercury, other metals, and emissions in operating rooms during health care, during activities of beauticians and hairdressers, and in the pharmaceutical, the chemical and the rubber industry. In each case the authors differentiate between effects not related to reproduction and those related to reproduction—the latter being more important. Embryotoxicity, fetotoxicity, and teratogenicity as such are not specifically discussed, because they may be influenced by exposures to the father (offsprings may have been due to genotoxicity).

The review is mainly based upon epidemiological studies, which often present only qualitative or semiquantitative data, and it is normally difficult to differentiate between combined exposures (including smoking). Data from animal experiments are discussed as supporting evidence, when data on human subjects were inconclusive. Species differences—for instance in placental structures—are considered. It is shown that extra female health risks probably or certainly exist at around the 1982 TLV levels of

exposure for inorganic lead and cadmium. Other agents (including arsenic, forms of mercury, cyclic chlorinated pesticides, PCB's and formaldehyde) were classified into a category of suggestive—but not conclusive—evidence of extra health risk at 1982 TLV levels of exposure.

IS THE SOIL DYING (in German: Stirbt der Boden)? GDI-Series Man-Nature-Environment, by Dr. Volker Hauff *et al.*, D-5300 Bonn, 250 pages (including 49 figures, 34 tables, an author index of two pages, but no subject index), soft cover, format 241 × 171 mm, no ISBN-number, GDI-Buchhandlung, CH-8803 Rüslikon, Switzerland (1985), SFr. 50.00

The valuable booklet contains 14 contributions by German and Swiss scientists. One finds quantitative information about

- deposition of pollutants,
- local cycles, equilibria and erosion,
- behaviour of heavy metal compounds, fertilizers (especially nitrate) and pesticides.
- soil fertility and integrated plant production,
- soil organisms populations, and
- soil protection and legalisation (admissible levels).

Special chapters deal with healthy food (vegetables, fruits, mushrooms, milk, caoutchouc, etc.) and with the possibilities and limitations of gene technology, for instance to increase agricultural yields, or to produce carbohydrates, fats and proteins. Literature references are given at the end of each chapter.

THE HANDBOOK OF ENVIRONMENTAL CHEMISTRY, PARTS C and D, edited by Prof. Dr. Otto Hutzinger, Chair of Ecological Chemistry and Geochemistry, D-8580 Bayreuth, linen, format 248 × 170 mm, Springer-Verlag Berlin–Heidelberg–New York–Tokyo (1985).

We have already earlier informed (see for instance *Chemosphere* (Pergamon Press) **14**, No. 3/4, N 19–20 (March 1985) and *International Journal of Environmental Analytical Chemistry* (Gordon and Breach Science Publishers) **19**, Nr. 3, 244/6 (1985)) about Parts A

(published 1980), Parts B (published 1982) and Parts C, Volumes one and three (published 1984) of this excellent handbook. From Part C Volume two and Part D Volume one are now also available:

*Part C Volume two* "Reactions and Processes" contains 145 pages (including 49 figures, 21 tables, references added to each contribution, and a subject index of five pages), ISBN 3-540-13819-6, DM 98.00.

*Part D Volume one* "The Natural and Environment and the Biogeochemical Cycles" contains 246 pages (including 59 figures, 52 tables, references added to each contribution and a subject index of eight pages), ISBN 3-540-15000-5, DM 168.00.

Also these two volumes are again interesting to graduate students and to practising scientists in many fields (especially those who are involved in risk assessment and need thus a better understanding of integrated pathways of pollutants), which should be discussed in an interdisciplinary way. The editor further announces that the other two volumes of Part D are in press, and that the Handbook will be expanded by three new series: Air Pollution, Water Pollution and Environmental Trace Analysis.

Volume two, Part C is divided into four chapters:

- OECD Fate and Mobility Test Methods, by Dr. Albrecht W. Klein, D-1000 Berlin 33, dealing especially with guidelines for determining physical-chemical properties, degradation and accumulation of chemical substances, mathematical environmental fate prediction, and assessing hazard as function of exposure and potential to harm biological or other systems
- Biodegradation and Transformation of Recalcitrant Compounds, by Dr. Alasdair H. Neilson, S-100 31 Stockholm, dealing with specific metabolic patterns, determining factors, and the environmental significance of effect measurements to organisms and ecosystems of some relevant chemical substances, such as Parathion, aromatic hydrocarbons, chlorinated aromatic hydrocarbons, halogenated benzoates, substituted phenols, etc.
- Biodegradation of Water-Soluble Compounds, by Dr. H. A. Painter *et al.*, Stevenage SG1 1TH, U.K., dealing with the nature of biodegradation, influence of molecular structure, kinetics, test methods, and the interpretation of results
- The Fugacity Concept in Environmental Modelling, by Dr. Sally Paterson *et al.*, Toronto, Canada M5s 1A4, dealing with model



calculations, for instance for human chronic exposure to Mirex, including quantification of food other than fish.

Volume one, Part D is also divided into four chapters:

- The Cycles of Copper, Silver and Gold, by Dr. H. J. M. Bowen, Reading RG6 2AD, U.K. (the well known writer of “Environmental Chemistry of the Elements”), presenting many figures (concentrations in sea water should again be reviewed) on natural occurrence and dissolution, as well as cycling in the environment, and masses in environmental reservoirs
- Modelling the Global Carbon Cycle, Dr. G. Kratz, D-6370 Oberursel, dealing especially with the transfer processes for carbon dioxide (CO<sub>2</sub>) between the atmosphere, the oceans, and the terrestrial biota and fossil fuel consumption
- Chemical Limnology, by Dr. T. Frevert, D-8580 Bayreuth, dealing with physico-chemical factors (controlling the chemical composition of lake waters) and eutrophication processes, comparing also two lakes in a case study. The Author thus describes indicative values for polluting as anthropogenic impact, and discusses typologies of lakes with concentration diagrams
- Environmental Microbiology, by Dr. W. D. Grant *et al.*, University of Leicester LE1 7RH, U.K., dealing with an important subject in the series. The authors structured the information into three subchapters:
  - The Microorganisms—a Part of the Natural Environment
  - Microbial Community Structure
  - Microorganisms as Geochemical Determinants

which allows to get an understanding about which populations live under which conditions, about interactions with other organisms, and about interactions with the carbon (decomposition of organic compounds), nitrogen, and sulphur cycles, as well as about transformation of other elements (not too specific).

ERNEST MERIAN,  
Im Kirsgarten 22,  
CH-4106 Therwil  
(Switzerland)