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### Book Reviews

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## Book Reviews

PESTICIDES RESIDUES by H. Frehse and H. Geissbühler. 100 pages. format  $273 \times 188$  mm. ISBN 0-08-023931-5. Printed by A. Wheaton & Co. Ltd., Exeter, Great Britain, Pergamon Press 1979, £12.50.

In July 1978 the "Fourth International Congress of Pesticide Chemistry" organized by IUPAC and the Swiss Society of Chemical Industries took place in Zürich. There were many parallel sessions and it is therefore an advantage that by now the results of two of the Symposia (which cover one scope of the congress) are published together under the title "Pesticide Residues, a Contribution to their Interpretation, Relevance and Legislation". After introductory remarks of H. Frehse, BAYER A.G., Leverkusen, J. A. R. Bates, Harpenden, U.K. and L. G. Ladamery, FAO, Rome 16 papers with interesting data are presented in two chapters "The Reliability of Residue Data" and "The Interpretation of Residues and Residue Data as related to Toxicology and Legislation of Pesticides". A summary by W. P. McKinley, Ottawa, Canada and a subject index conclude the volume.

The title is somewhat ambiguous, since the book does not give all the information one might expect. The 16 papers cover somewhat at random individual knowledge in the field. However, one can get very interesting details in the following areas:

- influence of sample methods on results,
- reproducibility in pesticide analysis and inevitability of variability (results of interlaboratory studies),
- the "Acceptable Daily Intake" as a quantified expression,
- principles for the permission of pesticides and setting of "Maximum Residue Limits" in food,
- problems associated with residue data obtained from food control activities,
- some facts about regulatory toxicology and tolerances in the U.S.A., in Canada, in the German Democratic Republic and in Latin America (including recommendations of the FAO and the WHO).

To those who are interested in the philosophy and in the practical experience in these specific fields, the book can be highly recommended.

W. P. McKinley pointed out especially that the whole system is still of a dynamic nature, because "known" facts are subject to change by newer facts. There is a certain need to reassess some legal tolerances keeping in mind influences of analytic possibilities, of the need for food and of the dangers for man and environment. The book gives the backgrounds to all those responsible.

E. MERIAN

**ANALYSIS OF PETROLEUM FOR TRACE METALS** by Robert A. Hofslader, Oscar I. Milner and John H. Runnels.

189 pages, format 235 × 159 mm, ISBN 0-8412-0349-0, "Advances in Chemistry Series 156", American Chemical Society, Washington, D.C., \$21.50.

This review book—which can be highly recommended—includes the results of a symposium organised by the Divisions of Analytical and Petroleum Chemistry of the American Chemical Society, and held in Philadelphia, April 1975. The text has been completed after the symposium by including detailed procedural instructions.

Five of the world's major oil companies have set down the procedures for analyzing petroleum for thirteen different metals. In the introduction chapters they deal with sampling procedures, standards, storage and stability, contamination, and sample preparation. They concern themselves with the different methods available—including electroanalytical methods—and emphasize variations of atomic absorption spectroscopy, the principle technique described in the book. For each metal the results of up to six methods were compared with data obtained by neutron activation techniques. Sources of error were carefully identified, especially since the chemical form of the matrix in petroleum is largely unknown. For each element the optimal method was developed including the determination of the precision. Each method was cross checked by more than one laboratory. The detection limits for the most sensitive methods are between 1 and 10 ng/g for all the elements. Data obtained in these low concentrations in interlaboratory tests of the preferred methods agreed all within 20% limits.

The detailed experiences in analyzing antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, molybdenum, nickel, vanadium and selenium in very low concentrations is certainly of importance for any analytical chemist. Each chapter contains a lot of data and literature citations, and the book concludes with an elaborated index. The results are also interesting because one of the many ways in which

trace levels of potentially toxic metals enter biosystems is through fuel combustions. Since annually more than 3000 millions of tons of petroleum are processed the absolute amounts of metals contained in emissions cannot be neglected. But the experiences are additionally valuable when analyzing other matrices such as atmospheric pollutants, water samples and foodstuff.

E. MERIAN