

helpful. It touches on most issues of concern to the waste manager. Where it does not exhaust a topic, such as community relations, it at least gives directional advice to assist in further study.

CURTIS TRAVIS and VICKI GAMBLE

*PCBs and the Environment*, by John S. Waid (Ed.), CRC Press, Inc., Boca Raton, FL, 1987, ISBN 0-8493-5929 (set), Vol. 1, 228 pp., Vol. 2, 191 pp., Vol. 3, 272 pp., prices: \$ 145, \$ 129, \$ 175, respectively.

Although polychlorinated biphenyls (PCBs) have generally been associated with the electrical transformer application because of non-flammable properties, and heat resistance, they have found many other applications, which have lead to worldwide contamination questions. 209 congeners (isomers) are possible from chloride substitution of the phenyls, often cited in the United States as Aroclors, such as Aroclor 1221, 1232, 1242, 1248, 1254, 1260, 1262 and 1268. Molecular structural type was defined by the first two digits; 12 for PCBs, 25 and 44 for blends of PCBs and polychlorinated terphenyls (PCTs), and 54 for PCTs. The last two digits were an approximate estimate of the weight percentage of chlorine. Concerns about the environmental fate of the millions of pounds in the United States and other countries were alerted by the first reported findings of PCBs in fish and wildlife by Jensen in 1966.

The editor of this historic study is Chair and Head of the Department of Microbiology, LaTrobe University, Bundoora, Victoria, Australia, and has called upon 18 contributors for Volume 1; 11 for Volume 2, and 15 for Volume 3. The contributors are from a wide geographical area and have specialized knowledge in the subject at hand.

Volume 1 covers the analytical chemistry of PCBs; the reliability of PCB analysis; the chemistry and properties of PCB in relation to environmental effects, including the atmospheric transport of PCB to the oceans, the solubility and soil mobility of PCBs; the factors controlling the bioaccumulation of PCBs in food chains, distribution, behavior and loads of PCBs in the oceans; what is happening to PCBs (environmental monitoring); and non-metabolic alternation of PCBs.

Volume 2 continues with PCBs accumulation and effects upon plants; accumulation and effects of PCBs in marine invertebrates and vertebrates; accumulation and effects on birds; PCBs and the environment: perturbations of biochemical systems, uptake, retention, biodegradation and depuration of PCBs by organisms; modification of PCBs by bacteria and other microorganisms; effect of PCBs on reproduction in mammals; and the use of organisms to quantify PCBs in marine and estuarine environments.

Volume 3 concludes the three volumes with differences between Yusho and

other kinds of poisoning involving only PCBs; PCB poisoning from toxic rice-bran oil in Taiwan; PCBs in human populations; PCBs in the workplace; disposal and destruction of waste PCBs; the Great Lakes ecosystem—modeling of the fate of PCBs; PCBs in the Baltic environment; PCBs and the environment; the Mediterranean marine ecosystem; and concludes with a case study of the Australian ecosystem.

Each chapter contains extensive references, figures and data tabulations, and is well indexed. As pointed out, the phasing-out of PCBs in many applications in various countries will require years, and the land-fill disposal methods used for years will continue to contaminate for decades.

The volumes are each well indexed, and should be a most useful resource even though they are not an updated references in all cases. Certainly the international flavor of this treatment gives serious concern to anyone who is interested in the environmental as well as ecological systems and well-being of humans and other animals.

HOWARD H. FAWCETT

*Occupational Exposure Limits for Airborne Toxic Substances*, No. 37, by Occupational Safety and Health Series, International Labour Office, Geneva, Switzerland, 1991, 3rd edn., ISBN 92-2-107293-2, pp. 455, \$ 38.00 or SFr 47.50. (Available in the United States and Canada from ILO Publication Center, 49 Sheridan Ave., Albany, NY 12210).

This volume records the present established exposure limits for 15 countries, ranging from Australia to the United States and the USSR for 2128 substances or materials for hazardous chemicals in the workplace. This is an ILO contribution to the International Programme on Chemical Safety (IPCS), prepared in collaboration with the International Register of Potentially Toxic Chemicals (IRPTC) of the United Nations Environmental Programme (UNEP). Of the 10 million materials registered by the Chemical Abstract Service 70,000 to 80,000 are on the market worldwide, representing an average annual world production of an estimated 400 million tonnes. About 5 to 10% of these are considered 'hazardous', while perhaps 200 are suspected or known to have carcinogenic, mutagenic or teratogenic effects.

This volume should be a very useful reference to anyone who is concerned with exposures, and would like to know what others think. The CAS number is given for each substance.

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