

The Chemistry of PCB's

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PREFACE

In the last few years polychlorinated biphenyls (PCB's) have attained the dubious honor of surpassing the chlorinated insecticides as the most talked-about organochlorine pollutants.

Research on various aspects of the PCB problem has grown and continues to grow with remarkable intensity. Opinions on the importance of these ubiquitously distributed industrial compounds, however, still vary greatly. The authors do not wish to enter this discussion. The main aim of this book is to present a comprehensive summary of the chemistry of chlorobiphenyls. Included are the nomenclature, composition of technical mixtures, syntheses of individual chlorobiphenyls, chemical reactions, photochemical and metabolic alterations, and spectroscopic properties. Different methods of PCB analysis are presented and evaluated in a separate chapter. Toxicological and general biological effects are frequently referred to but are not a proper topic for this book.

Certain areas of PCB research are developed further than others. For example, almost half of the 209 possible chlorobiphenyls have been synthesized and properly described using a variety of methods. Much is to be learned, on the other hand, on the metabolism of chlorobiphenyls and other routes of degradation, including photochemical, and the complex PCB mixtures will continue to challenge analytical chemists. In yet other areas, for example toxicological significance and exact environmental impact, our knowledge is only fragmentary at the moment.

A considerable amount of information included in this book had not been published when the manuscript was written. Although some of this information comes from our own laboratories, we have to acknowledge the help of many scientists who have generously supplied us with their unpublished data. It is a great pleasure to thank the following colleagues for this courtesy: Drs. M. Bolgar, E. J. Bonelli, G. W. Bowes, R. H. DeVos, R. Edwards, W. Ernst, V. H. Freed, A. M. Gardner, A. V. Holden, W. D. Jamieson, S. Jensen, W. Klein, J. B. Knight, F. Korte, R. A. Lidgett, L. L. Miller, D. R. Osborne, I. Pomerantz, L. O. Ruzo, D. L. Stalling, J. D. Stewart, G. Sundström, A. C. Tas, G. M. Telling, P. R. Wallnofer, and R. G. Webb.

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Part of the contribution by one of us (O. Hutzinger) was written while on sabbatical leave at the Institute of Ecological Chemistry. This author would like to express his thanks for the hospitality extended to him and also gratefully acknowledge financial support from the Alexander von Humboldt-Stiftung.

The literature for this book was covered, as it was available to the authors, until the end of 1973.

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