Analytical

Methods

for

Pesticides
Plant Growth Regulators
and Food Additives

Volume II

Edited by
Gunter Zweig

Analytical Methods for PESTICIDES, PLANT GROWTH REGULATORS, AND FOOD ADDITIVES

Edited by

GUNTER ZWEIG

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Volume II INSECTICIDES

1964

ACADEMIC PRESS

NEW YORK AND LONDON

ACADEMIC PRESS INC.
111 Fifth Avenue, New York, New York 10003

United Kingdom Edition published by
ACADEMIC PRESS INC. (LONDON) LTD.
Berkeley Square House, London W.1

LIBRARY OF CONGRESS CATALOG CARD NUMBER 63-16560

PRINTED IN THE UNITED STATES OF AMERICA

Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives

Volume II

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PRINCIPLES, METHODS, AND GENERAL APPLICATIONS

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INSECTICIDES

Volume III

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PREFACE

Volume II of this treatise contains detailed analytical procedures and other pertinent data, such as history, biological and chemical properties, physical constants, of forty-seven widely used insecticides. The term insecticides includes miticides, acaricides, etc.; no distinction is made for the particular use of each compound, but rather the chapters are arranged alphabetically. One obvious omission of an insecticide is arsenic, but the analytical procedures are well known (Official Methods of Analysis, Association of Official Agricultural Chemists) so that the subject has not been included in this treatise.

Although specific chemical methods of analysis have been presented, gas-liquid chromatography may be applied to the analyses of most chlorinated compounds. This subject is covered in great detail in Chapter 9 of Volume I; however, two methods of analysis of Thiodan by gas-liquid chromatography may be found in Chapter 43 of this volume. For other chlorinated compounds which are amenable to gas-liquid chromatography, the reader is referred to Volume I.

For the organophosphorus insecticides, like Di-Syston (Chapter 16) or Systox (Chapter 40), usually two methods of residue determination are given—total organic phosphorus (colorimetric) and acetylcholinesterase inhibition (enzymatic). Since neither method is specific, it may be suitable for residue studies of crops with known history but not for enforcement. This apparent deficiency is inherent to many systemic insecticides, and it may be necessary to utilize paper chromatography for final identification of residues (cf. Chapter 10, Volume I).

Where several co-authors have collaborated, a footnote indicates the portion of the chapter contributed by each author. The names of authors are listed according to the sequence of their contributions within the chapter rather than according to seniority.

The editorial assistance of Mr. R. Sitlani and the secretarial help of Mrs. C. Pitts and Mrs. T. Barnes are gratefully acknowledged.

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Weizmann Institute of Science
Rehovoth, Israel
January, 1964

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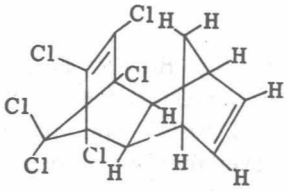

1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4-endo, exo-5,8-dimethanonaphthalene

I. GENERAL

Aldrin is the name coined for the insecticidal product containing not less than 95% of the compound 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4-endo, exo-5,8-dimethanonaphthalene (commonly abbreviated HHDN), and not more than 5% of insecticidally active related chlorinated hydrocarbons. The structure of the principal constituent HHDN is shown above.

A. Empirical Formula

$C_{12}H_8Cl_6$ (Mol. wt. 364.93).

B. Source of Analytical Standard

Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st Street, New York 20, New York.

C. Biological Properties

Aldrin has a very broad spectrum of insecticidal activities, and has been widely recommended for use on soil as well as on foliage. Complete details on the use of aldrin can be obtained by writing to the manufacturer (Shell). For bioassay, nonresistant houseflies and *Drosophila melanogaster* are satisfactory test insects (see Volume I, Chapter 15).