

Other titles available in the ENVIRONMENTAL HEALTH CRITERIA series include:

1. Mercury
2. Polychlorinated Biphenyls and Terphenyls
3. Lead
4. Oxides of Nitrogen
5. Nitrates, Nitrites, and *N*-Nitroso Compounds
6. Principles and Methods for Evaluating the Toxicity of Chemicals, Part 1
7. Photochemical Oxidants
8. Sulfur Oxides and Suspended Particulate Matter
9. DDT and its Derivatives
10. Carbon Disulfide
11. Mycotoxins
12. Noise
13. Carbon Monoxide
14. Ultraviolet Radiation
15. Tin and Organotin Compounds
16. Radiofrequency and Microwaves
17. Manganese
18. Arsenic
19. Hydrogen Sulfide
20. Selected Petroleum Products
21. Chlorine and Hydrogen Chloride
22. Ultrasound
23. Lasers and Optical Radiation
24. Titanium
25. Selected Radionuclides
26. Styrene
27. Guidelines on Studies in Environmental Epidemiology
28. Acrylonitrile
29. 2,4-Dichlorophenoxyacetic Acid (2,4-D)
30. Principles for Evaluating Health Risks to Progeny Associated with Exposure to Chemicals during Pregnancy
31. Tetrachloroethylene
32. Methylene Chloride
33. Epichlorohydrin
34. Chlordane
35. Extremely Low Frequency (ELF) Fields
36. Fluorine and Fluorides
37. Aquatic (Marine and Freshwater) Biotoxins
38. Heptachlor
39. Paraquat and Diquat
40. Endosulfan
41. Quintozene
42. Technazene
43. Chlordecone
44. Mirex

*continued on p. 156*

This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the United Nations Environment Programme, the International Labour Organisation, or the World Health Organization

## Environmental Health Criteria 82

# CYPERMETHRIN

Published under the joint sponsorship of the United Nations Environment Programme, the International Labour Organisation, and the World Health Organization



World Health Organization  
Geneva, 1989

CONTENTS

	<u>Page</u>
ENVIRONMENTAL HEALTH CRITERIA FOR CYPERMETHRIN	
INTRODUCTION . . . . .	12
1. SUMMARY . . . . .	15
1.1 General . . . . .	15
1.2 Environmental transport, distribution, and transformation . . . . .	15
1.3 Environmental levels and human exposure . . . . .	16
1.4 Kinetics and metabolism . . . . .	17
1.5 Effects on organisms in the environment . . . . .	18
1.6 Effects on experimental animals and in vitro test systems . . . . .	19
1.7 Mechanism of toxicity . . . . .	21
1.8 Effects on man . . . . .	22
2. IDENTITY, PHYSICAL AND CHEMICAL PROPERTIES, ANALYTICAL METHODS . . . . .	23
2.1 Identity . . . . .	23
2.2 Physical and chemical properties . . . . .	23
2.3 Analytical methods . . . . .	25
3. SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE . . . . .	30
3.1 Industrial production . . . . .	30
3.2 Use patterns . . . . .	30
4. ENVIRONMENTAL TRANSPORT, DISTRIBUTION, AND TRANSFORMATION . . . . .	31
4.1 Transport and distribution between media . . . . .	31
4.1.1 Transport from soil to water . . . . .	31
4.1.2 Transport within water bodies . . . . .	32
4.2 Abiotic degradation . . . . .	33
4.2.1 Photodegradation . . . . .	33
4.2.1.1 Basic studies . . . . .	33
4.2.1.2 Photodegradation . . . . .	33
4.3 Biological degradation in soil . . . . .	35
4.3.1 Mechanism . . . . .	35
4.3.2 Degradation pathways (separate isomers) . . . . .	36
4.3.3 Rates of degradation . . . . .	37

The **International Programme on Chemical Safety (IPCS)** is a joint venture of the United Nations Environment Programme, the International Labour Organization, and the World Health Organization. The main objective of the IPCS is to carry out and disseminate evaluations of the effects of chemicals on human health and the quality of the environment. Supporting activities include the development of epidemiological, experimental laboratory, and risk-assessment methods that could produce internationally comparable results, and the development of manpower in the field of toxicology. Other activities carried out by the IPCS include the development of know-how for coping with chemical accidents, coordination of laboratory testing and epidemiological studies, and promotion of research on the mechanisms of the biological action of chemicals.

ISBN 92 4 154282 9

©World Health Organization 1989

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. For rights of reproduction or translation of WHO publications, in part or *in toto*, application should be made to the Office of Publications, World Health Organization, Geneva, Switzerland. The World Health Organization welcomes such applications.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

ISSN 0250-863X

PRINTED IN FINLAND

DHSS — VAMMALA — 5000