

MANUAL FOR INDOOR RESIDUAL SPRAYING

APPLICATION OF RESIDUAL SPRAYS
FOR VECTOR CONTROL



World Health
Organization

Third Edition

WHO/CDS/NTD/WHOPES/GCDPP/2007.3

**MANUAL FOR INDOOR
RESIDUAL SPRAYING**

**APPLICATION OF
RESIDUAL SPRAYS FOR
VECTOR CONTROL**

THIRD EDITION



**World Health
Organization**

**Vector Ecology and Management
WHO Pesticide Evaluation Scheme**

First edition, 2000
Second edition, 2005
Third edition, 2007

© World Health Organization 2007

All rights reserved.

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 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. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

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.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

Contents

	Page
Preface	i
Acknowledgements	iii
1. Objective	1
2. Safety	2
3. Protective clothing and equipment	7
4. Preparation – The household	8
5. Preparation – Equipment	10
6. Mixing, handling and spraying techniques	20
7. Procedures after spraying	26
8. Disposal of remains of insecticide spray and empty packaging	28
9. Maintenance of equipment	30
10. Troubleshooting	37
11. Preparation of insecticide spray	42

Preface

The World Health Organization (WHO) specifications for public health pesticides are part of the International Code of Conduct on the Distribution and Use of Pesticides, and are used for quality control and international trade.

The WHO Pesticide Evaluation Scheme (WHOPES) develops specifications for public health pesticides once they have been fully tested for their safety and efficacy in the laboratory and in the field.

WHOPES promotes the safe, judicious and proper use of pesticides, including their safe and proper application. Such application relies mainly on the quality and working conditions of the equipment, as well as the skills and knowledge of the operators using the equipment. WHOPES has developed and published specifications for pesticide application equipment for vector control to provide the minimum standards and requirements for safe and proper performance.

Indoor residual spraying is used especially for control of malaria and Chagas disease vectors. However, where indoor residual spraying is used, it is essential that staff are fully trained in application techniques and maintenance of the application equipment. With good skills and high-quality application equipment, hazards to human health and the environment as well as financial losses can be avoided.

This manual is intended to serve as a model for developing relevant training manuals and procedures at country level to ensure safe and effective use of insecticides in vector control programmes.

As specified in the latest *Equipment for vector control – Specification guidelines*,¹ users should fit a control flow valve to the nozzle to ensure constant output of spray for more uniform application of the insecticide.

This third edition also contains easy-to-follow steps in the preparation of insecticide sprays.

¹ *Equipment for vector control – Specification guidelines*. Geneva, World Health Organization, 2005 (WHO/CDS/NTD/WHOPES/GCDPP/2006.5).

Acknowledgements

The Department of Control of Neglected Tropical Diseases (NTD) of the World Health Organization (WHO) wishes to thank the following individuals for their technical contributions to the development of the manual.

- Dr J. I. Arredondo Jimenez, Centro Universitario de Ciencias de la Salud, Universidad de Guadalajara, Guadalajara, Mexico
- Dr P. Carnevale, Clermont L'Héraults, France
- Dr E. Chadd, Syngenta, Fernhurst, England (Syngenta now based in Basel, Switzerland)
- Dr C. Frederickson, Caribbean Epidemiology Centre, WHO Regional Office for the Americas, Port-of-Spain, Trinidad and Tobago
- Dr P. Guillet, Global Malaria Programme, WHO, Geneva, Switzerland
- Mr R. C. Hudson, Jr., H.D. Hudson Manufacturing Company, Chicago, IL, USA
- Dr M. Lluberás, H.D. Hudson Manufacturing Company, Jacksonville, FL, USA
- Emeritus Professor G. Matthews, International Pesticide Application Research Centre, Imperial College, Ascot, England
- Dr S. Nalim, National Institute for Vector Control Research, Salatiga, Indonesia
- Dr M. Nathan, Vector Ecology and Management, NTD, WHO, Geneva, Switzerland
- Dr A. M. Oliveira-Filho, Universidade Federal do Rio de Janeiro, Brazil
- Dr C. Schofield, Latin American Network for Research on the Biology and Control of Triatominae, Saint-Genis-Pouilly, France
- Mr E. Thornhill, Silwood Pest Management, Imperial College, Ascot, England
- Dr V.P. Sharma, Malaria Research Centre, Delhi, India
- Dr M. Zaim, Vector Ecology and Management, NTD, WHO, Geneva, Switzerland