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**Report of the First meeting of the Global
Collaboration for Development of Pesticides
for Public Health (GCDPP)**

WHO/HQ, Geneva
14-15 October 1998

World Health Organization
Control of Communicable Diseases (CDS)
WHO Pesticide Evaluation Scheme (WHOPES)

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INDEX

	Page
1. Introduction	1
2. Summaries of the keynote presentations to the meeting and of salient points in the discussion	2
2.1 Appropriate pesticides and formulations for vector control programmes	2
2.2 Quality control of pesticides and application equipment and improvement of application techniques for vector control	6
2.3 Insecticide resistance prevention and management	8
3. Conclusions and recommendations	11
3.1 Larvicidal methods	11
3.2 Insecticide-treated bednets	12
3.3 Residual house spraying and space treatment	13
3.4 Quality control	14
3.5 Proposals to ban DDT and the debate about organophosphates	15

	Page
3.6 Measures for personal protection from vector-borne diseases	16
3.7 Resistance management	17
4. Annexes	20
Annex 1. Work plan and funding of GCDPP	21
Annex 2. Agenda	22
Annex 3. List of participants	26
Annex 4. Abstracts	31

1. INTRODUCTION

The first meeting of the Global Collaboration for Development of Pesticides for Public Health (GCDPP) was opened by Dr K. Behbehani, Director of the Division of Control of Tropical Diseases, on behalf of the Executive Director of Communicable Diseases (CDS).

Dr Behbehani reiterated the role of the GCDPP as an Advisory Group to the CDS WHO Pesticide Evaluation Scheme (WHOPES) in matters related to the development and safe and proper use of pesticides and application equipment for public health.

Dr Behbehani noted the heavy reliance of disease and pest control programmes on the use of chemicals; the emergence and re-emergence of arthropod-borne infections; further emergence and spread of vector and pest resistance to common pesticides; and safety and environmental concerns over the use of chemicals. He stressed the need for international collaboration and a concerted effort to accelerate the search for alternative pesticides and application methodologies that are safe and more cost-effective, and to advise on the most judicious use of available resources.

Dr M. Zaim, Scientist in charge of the WHO Pesticide Evaluation Scheme (WHOPES), and Secretary of the GCDPP, presented an overview of the WHOPES. He emphasized that safe and environmentally-compatible pesticides continue to be the mainstay of vector-borne disease control in the foreseeable future. He drew attention, however, to the acute need for new control agents/products, if the future success of vector control programmes is not to be jeopardized.

Dr Zaim noted that the GCDPP, by bringing together various partners in the field of public health, would provide a strong forum for the exchange of technical information and ideas, and would assist WHOPES in planning and providing the highest quality of work towards the development and use of pesticides and application equipment for public health.

The meeting was convened in plenary sessions at WHO/HQ in Geneva 14-15 October 1998, and was attended by 15 representatives of the industrial sector, 10 representatives of national and government agencies, four representatives of Regional and International Organizations, seven representatives of University and research institutions, three WHO Regional Offices as well as members of the Secretariat (see list of participants, Annex 3).

2. SUMMARIES OF THE KEYNOTE PRESENTATIONS TO THE MEETING AND OF SALIENT POINTS IN THE DISCUSSION

2.1 Appropriate pesticides and formulations for vector control programmes

2.1.1 M.S. Mulla. Future requirements for pesticides for vector control – IGRs and biopesticides.

Problems of resistance to many of the synthetic pesticides and concern about their environmental effects, especially in aquatic habitats, has given rise to the need for entirely new classes of agents for the control of vectors larvae. Phytochemicals, microbial agents and insect growth regulators (IGRs) provide a rich source of bioactive substances, from which vector control agents for future use can be developed. To bring these substances into effective use, further systematic

laboratory and field evaluation, elucidation of modes of action, development of appropriate formulations and field use patterns, and assessment of safety and environmental risks will be required. Collaboration between WHO, researchers and industry will be needed to fulfill these requirements.

During the discussion it was pointed out that one of the fields in which IGRs has proved effective in developed countries is in the control of housefly larvae. Recent trials in Pakistan and The Gambia have shown the impact of fly control (by space spraying) on the incidence of diarrhoeal diseases and trachoma, thus demonstrating the importance of new and sustainable means of fly control for disease prevention. Insect growth regulators may well have a role in this respect.

Neem products are used against many agricultural pests and there is increasing interest in various ways of using them against vectors.

2.1.2 C.F. Curtis. Technological developments for impregnation of bednets and requirements for new compounds

Insecticide-treated bednets are receiving renewed emphasis in the Roll Back Malaria Initiative. Permethrin, several different alpha-cyano pyrethroids and etofenprox have all been extensively tested and, in some cases, operationally used for net treatment. There is little to choose between their effectiveness when used at dosages appropriate for each compound. Water-based or tablet formulations are preferable for reasons of safety and convenience. Nets made from polyethylene fibre, into which permethrin has been incorporated at the time of manufacturer, have been tested in various countries and remain insecticidal for at least three years. The threat of pyrethroid resistance has led to

the testing of organophosphate and carbamate insecticides (of low toxicity for humans), on bednets in experimental huts in an area where pyrethroid resistance exists in the *An.gambiae* population (see 2.3.2). Higher mortality in both *An. gambiae* and *Culex quinquefasciatus* occurred with these nets than with pyrethroid-treated nets.

The need for methods for on-site chemical assay of deposits on nets has been emphasized on a number of occasions. Professor J. Hemingway pointed out that such analysis should be possible using an esterase, which sequesters the insecticide with 1:1 stoichiometry. Such an enzyme could be produced in bulk using a cloned gene in a baculovirus expression system. The enzyme is stable at room temperature. Enzyme activity can be assayed with a colour reaction based on alpha- or beta-naphthyl acetate, the colour reaction being readily measurable in the field. The amount of insecticide extracted from a given area of netting would give a proportional reduction in colour production due to its inhibition of the enzyme. At present, the system is only available for certain pyrethroids, however, by site-directed mutagenesis it should be possible to adapt the system to any other pyrethroid.

It was reiterated that, for taxation and customs purposes bednets should not be viewed as a luxury item, but as a means of

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