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SAFE USE OF PESTICIDES

Fourteenth Report of the
WHO Expert Committee on
Vector Biology and Control

World Health Organization

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1. Introduction

The WHO Expert Committee on Vector Biology and Control met in Geneva from 5 to 13 September 1990 to examine recent developments in the toxicology of pesticides used in vector control, to advise on their safe use, and to consider the various ways in which Member States can ensure that pesticides are used safely.

The meeting was opened by Dr N.P.Napalkov, Assistant Director-General, on behalf of the Director-General. He noted that the WHO Expert Committee on Insecticides had held its first meeting in 1949 to consider the toxic hazards of pesticides for man and other related problems. The Committee had met at frequent intervals until 1976, when it was replaced by the Expert Committee on Vector Biology and Control. In addition to considering the safety aspects of the use of pesticides in public health, meetings of the Committee had considered other aspects, such as evaluation of the risks arising from the use of pesticides in agriculture and other fields, and that trend was continuing. In all these matters, however, a scientific approach to the problem of pesticide safety was essential in order to assess the potential risks involved in the permanent exposure of the public to pesticides in the environment or as contaminants in food.

It must also be borne in mind that Member States frequently had to contend with public pressure to limit the use of pesticides on the one hand, while on the other controlling vector-borne diseases more effectively and increasing production of food and fibre.

2. Trends in pesticide use

The Expert Committee on Vector Biology and Control has always realized that the achievement of its principal objective – the control of vector-borne diseases – depends to a large extent on the use of pesticides. However, these chemicals must be distributed, stored and used with care to avoid any adverse effects on users, the general public and the environment.

In the six years since the Committee last discussed the safe use of pesticides, few new compounds have been introduced operationally for vector control, possibly because only a small proportion of all pesticides are used in public health and vector-control operations. Industry finds it uneconomic to develop new pesticides for use in public health unless there is also a potential market for their use against agricultural pests.

On the other hand, while residual spraying, space spraying and application of larvicides remain the main methods of pesticide application in public health, a number of alternative methods have been introduced, including the use of impregnated bednets and other materials, and the use of repellents. More important, advances have been made in the biological

control of vectors by means of bacterial larvicides, and in environmental control methods such as the use of expanded polystyrene beads on the surface of water to prevent mosquito breeding. Considerable research is continuing on these alternatives. Different chemical and nonchemical control methods can be used for different aspects of vector control, the combination of methods being referred to as integrated vector control.

The acceptance of integrated control has proved slow and reliance is still mainly placed on chemical methods. Biological control of blackfly larvae by *Bacillus thuringiensis* H-14 in the onchocerciasis control programme has been the outstanding exception. One of the reasons for reluctance to use the alternative methods may be that they are more costly than the use of chemicals.

World prevalence of vector-borne disease is high. After the initial dramatic reductions in incidence during the 1950s and 1960s, and a period of relative stability in the 1970s, the number of cases has tended to rise in recent years. This is probably due partly to the rise in world population, which has led to an increase in the susceptible population, especially in endemic areas, and partly to an increase in disease vector populations. The situation is complicated by a marked trend towards urbanization in many developing countries, for which vector-control programmes have been unprepared.

The world's most widespread health problem is probably malnutrition. It has been estimated by the Food and Agriculture Organization of the United Nations (FAO) that despite the use of pesticides about a quarter of harvested crops are lost to insects, rodents, birds and spoilage. Pesticides are needed to stem these losses, as well as for plant protection.

In recent years, there has been increasing public concern about the safety of chemicals of all types. Pesticides are an important class of chemicals to which everybody is exposed to some extent. Their potential hazards can be scientifically assessed on the basis of the considerable toxicological and human exposure data available. Both locally and nationally an effort should be made to allay public fears by providing reliable scientific information on the need for pesticides and their safe and rational use. The task of the Committee thus remains as pertinent to the world situation today as it was when the topic of safe use of pesticides was first discussed by a WHO Expert Committee over 40 years ago.

3. International activities for promoting pesticide safety

In response to the public concern in Member States, a number of international and nongovernmental organizations have adapted their programmes to address the issue of safe use of pesticides.

3.1 International organizations

3.1.1 *World Health Organization*

Within WHO, the evaluation of hazards to humans and the environment from pesticides, the promotion of the safe use of pesticides in vector control and agriculture, training and education, have been included among the tasks of the International Programme on Chemical Safety (IPCS), which is a collaborative programme of ILO, UNEP and WHO. Technical collaboration with programmes on various vector-control activities will be maintained.

In view of documented evidence of pesticide poisoning in the Eastern Mediterranean Region, the Regional Office and Member States are concentrating on training national technical staff and providing the public with information on the safe use of pesticides. The WHO Multilevel Course on the Safe Use of Pesticides, which is being used as the model for training, needs to be updated and it is recommended that this should be given priority. The Region is also providing technical support for field trials of new formulations of pesticides, with a view to preventing or delaying the evolution of resistance in disease vectors to the safer cost-effective pesticides now being used.

The WHO Regional Office for Europe has recently cosponsored an International Centre for Pesticide Safety in Milan, Italy. The Centre will provide information, research, training and laboratory assistance to countries in the European Region.

3.1.2 *Food and Agriculture Organization of the United Nations*

Since the adoption in 1985 of the International Code of Conduct on the Distribution and Use of Pesticides (*1*), FAO has continued its efforts to strengthen government capabilities in regard to the registration, control and safe use of pesticides and is receiving support from governments, industry and nongovernmental organizations.

A comprehensive set of internationally agreed technical guidelines provides the basis for implementing the provisions of the Code; recent examples include guidelines on personal protection when applying pesticides in hot climates, the prevention of groundwater contamination, model national legislation for the control of pesticides, and other guidelines related to the safe use of pesticides in agriculture.

A prior informed consent (PIC) procedure has been introduced into the Code. One of its main provisions is the notification of all Member States of a decision by any State to ban or severely restrict the use of a pesticide. Notifications will be processed by a joint FAO/UNEP programme, and will be accompanied by information on the reasons for the ban or restriction, complementary information and other relevant material, including mention of alternative substances.

The Committee recognized that the International Code of Conduct offers a practical and effective means of regularizing the introduction and safe use of pesticides by Member States. Certain provisions of the Code call for the toxicological evaluation of pesticides in relation to human exposure or for registration and control purposes. For example, evaluation will be required to test the validity of the reasons put forward for a ban or restriction of use. In such cases, general acceptance of a decision will be greatly facilitated by more active and extensive WHO involvement in the assessment.

3.1.3 *United Nations Environment Programme*

The International Register of Potentially Toxic Chemicals, which is part of UNEP, is closely associated with FAO in the PIC procedure, as part of its work on the implementation of the London Guidelines (*2*) concerning the exchange of information on banned and severely restricted chemicals in international trade. IPCS is expected to play a more significant role in future PIC work by providing information and advice on the effects on man of exposure to these chemicals.

3.1.4 *International Labour Organisation*

ILO has recently adopted a Convention and Recommendation concerning safety in the use of chemicals at work, and is preparing a Code of Practice to guide Member States in drafting national legislation and establishing the infrastructure needed to deal with chemical safety. Other guidelines are being drawn up on the use of agrochemicals. It is intended to provide training on management of chemical risks in the workplace and information on practical methods of preventing harmful effects. In consultation with other organizations and within the framework of the IPCS, criteria for the classification of hazardous chemicals, including pesticides, will be prepared.

3.2 Nongovernmental organizations

The International Group of National Associations of Manufacturers of Agricultural Chemicals (GIFAP), a nongovernmental organization in official relations with WHO, is promoting safety in the use of pesticides by producing brochures and carrying out field studies on the efficacy of protective clothing in tropical conditions. All its members have agreed to comply with the relevant provisions of the FAO International Code of Conduct.

3.3 Coordination of activities

These international activities are to be commended, but care is needed to avoid overlap or conflict in the advice given by the different organizations.