WHO-EM/MAL/302/E

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# WHO/UNEP intercountry workshop on public health pesticides management in the Eastern Mediterranean Region in the context of the Stockholm Convention on Persistent Organic Pollutants (POPs)

Amman, Jordan
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World Health Organization
Regional Office for the Eastern Mediterranean

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## 1. INTRODUCTION

In addressing vector-borne disease in the World Health Organization (WHO) Eastern Mediterranean Region, the Regional Office and Member States developed a WHO regional strategic framework on the integrated vector management (IVM) approach. This policy/strategic document provides a long range vision for the implementation of vector control that appreciates that the use of pesticides is inevitable while at the same time ensuring the protection of the environment and human health.

A number of global conventions have come into force, either completely restricting the use of certain insecticides which do not biodegrade easily known as persistent organic pollutants (POPs) or restricting some of them for specific use. DDT is one of the insecticides that the Stockholm Convention has restricted its use to vector control through house spraying.

A number of countries in the Region, are faced with the problem of strengthening national vector control capacities in general, and also lack strategies, facilities and resources to adequately manage pesticides practices at country level. Recognizing this need, the WHO and the United Nations Environment Programme (UNEP) organized two inter-country meetings; the first held in Tunis, Tunisia in October 2003 and the current one in Amman, Jordan in December 2003. The objectives of the meeting were: to review the implications of the Stockholm Convention on Persistent Organic Pollutants (POPs) for vector control and the obligations of countries to the Convention (including DDT monitoring processes); to review the current status of pesticides use and management practices for malaria and vector-borne diseases in the Region; to review the WHO guidelines on the management of public health pesticides and identify their implications at country level; and to finalize a regional proposal to the Global Environmental Facility on strengthening national vector control to reduce reliance on, and prevent the re-introduction of POPs (DDT) for malaria and other vector-borne diseases in the Region. Details of the workshop Programme can be found in Annex 1. The meeting was attended by representatives of ministries of health, agriculture and environment from 15 countries of the Region: Bahrain, Djibouti, Egypt, Islamic Republic of Iran, Jordan, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Pakistan, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia and Yemen. WHO staff from the Regional Office and headquarters also attended along with participants from UNEP and the Food and Agriculture Organization of the United Nations (FAO). The List of Participants can be found in Annex 2.

The meeting was opened by Dr Muhammed Khan, Acting WHO Representative, Jordan, on behalf of Dr Hussein A. Gezairy, (WHO) Regional Director for the Eastern Mediterranean. In his message, Dr Gezairy stressed the need for strengthening national vector control capacities in implementing alternatives to DDT and the development of a regional strategy for the management of public health pesticides. The message of the Regional Director can be found in Annex 3 and the Regional Strategy on Public Health Pesticide Management can be found in Annex 4. This message was followed by a welcome address from Dr Ali Mohamad As’ad, Assistant Secretary General, Primary Health Care, on behalf of HE Eng. Saeed Darwazeh, Minister of Health, Jordan. Dr Ali Mohamad As’ad welcomed the participants to Amman, Jordan and wished them successful deliberations during the meeting.

The meeting was co-chaired by Eng. Shrooq Hamarneh, Director of the Environmental Health Directorate and Head of the Chemical Safety Division, Ministry of Health, Jordan and Dr Sadok Attallah, Adviser, POPs Project, Ministry of Agriculture, Environment and Water Resources, Tunisia. Dr Kamilia Aly Mahmoud Allam, Director of Research Institute of Medical Entomology, Ministry of Health and Population, Egypt and Ms Halima Itani, Head of Plant Pharmacy Section, Ministry of Agriculture, Lebanon were elected as Rapporteurs of the meeting.

Dr Abraham Mnzava, Scientist, Vector Control/Roll Back Malaria, WHO/EMRO, briefed the participants on the objectives of the meeting, the method of work and the expected outcome of the workshop.

## 2. TECHNICAL PRESENTATIONS

### 2.1 Current status of vector-borne diseases in the Eastern Mediterranean Region

*Abraham Mnzava*

Vector-borne diseases contribute significantly to the global burden of disease. Of these 11% are found in the Eastern Mediterranean Region. These include malaria, leishmaniasis, schistosomiasis, lymphatic filariasis, African trypanosomiasis, onchocerciasis and several insect-borne arboviruses: notably Rift Valley fever and Crimean-Congo haemorrhagic fever.

A number of tools are available for the control of vector-borne diseases in the Region. These include indoor residual house spraying, space-spraying, larval control using insecticides, environmental management and use of larvivorous fish. The use of insecticide-treated bednets (ITNs) is also being promoted.

Mainly through malaria control interventions (including case management), some countries have successfully used some of these tools to either eliminate or reduce significantly the incidence of malaria and other vector-borne diseases. Countries, however, are still faced with some technical, operational and institutional challenges in implementing some of these tools.

In addressing these challenges, the Regional Office has, over the last two years, concentrated on developing policy and strategic guidelines for the implementation of vector control interventions through the Integrated Vector Management approach, in addition to providing technical support to Member States.

The Regional Office is therefore determined to translate these policy/strategic guidelines into action at country level, with an emphasis on scaling up some of the key interventions. For example, the scaling up of ITN in key countries where this tool could have a measurable impact is one of the priorities. Eight countries (Afghanistan, Djibouti, Islamic Republic of Iran, Pakistan, Saudi Arabia, Somalia, Sudan and Yemen) have either finalized their ITN national strategic plans or are in the process of doing so. Another key area is the improvement of the quality of indoor residual house spraying and its timely application.

Parallel to these activities are efforts to strengthen national vector control capacities, intersectoral arrangements, networking and resource mobilization at the country and United Nations (UN) level.

## 2.2 Public health pesticide management—an urgent need

*M. Zaim*

The dwindling arsenal of safe and cost-effective public health pesticides, and the increasing challenges for their management under decentralized health systems calls for urgent review of national policies and guidelines to ensure their judicious use and effective management. The national capacity for vector control has to be strengthened as this is vital to effective pesticide management, as well as selective and judicious use of pesticides. This includes the establishment/strengthening of the central vector/public health pest control units to properly guide, support, oversee and monitor vector control activities and use of public health pesticide throughout the country.

Effective management of pesticides requires an efficient registration and control scheme, best to reside within a single unit, which would be responsible for ensuring that all governmental, commercial and private pesticide usage conforms to written national standards. Harmonization, through legislative action, of the national pesticide registration system for public health pesticides and products with the WHO Pesticide Evaluation Scheme (WHOPES) is strongly recommended.

Vector control interventions, including the use of insecticides, should be evidence-based and tailored to the needs and conditions at local level. Post-registration and monitoring of pesticide applications should be further strengthened in countries of the Region, as they provide a means of measuring the validity of predictions, based on registration data, regarding efficacy, safety and environmental effects of a particular insecticide product, and would ensure their use/application according to label recommendations and national guidelines.

Quality control of pesticides to minimize risks associated with their handling and use, as well as their efficacy and stability in storage, is crucial, in view of increasing number of manufacturers and the growing trade in pesticides, and requires clear national policies and guidelines. Adherence to WHO guidelines and specifications for quality control of public health pesticides would provide unified and standard requirements and procedures, and therefore, ease of trade.

The draft WHO guidelines for management of public health pesticides,[1] is to address challenges faced by national programmes and assist the Member States to develop national policies and guidelines, and the legislative basis for the effective management of pesticides in

[1] *Draft guidelines on the management of public health pesticides*. Report of the WHO Interregional Consultation, Chiang Mai, Thailand, 25–28 February 2003. Geneva, World Health Organization, 2003 (document WHO/CDS/WHOPES/2003.7).

public health and implementing the International Code of Conduct on Distribution and Use of Pesticides.

### 2.3 The Stockholm Convention on Persistent Organic Pollutants: an overview

*Rogerio Fenner*

The Stockholm Convention has the following four main areas: general obligations, control provisions, procedures for adding new POPs, and financial and technical assistance. The general obligations request parties to develop plans for implementing the obligations of the treaty within two years after entry into force, to designate a national focal point for exchange of information, to promote public awareness and to report to the conference of the parties on measures taken to implement the Convention, their effectiveness and quantities of POPs involved.

The control provisions for the 10 deliberately produced POPs have as an ultimate goal their elimination, but countries can request specific exemptions or acceptable purpose. Control measures regarding POPs pesticides are laid down in Article 3 of the Stockholm Convention and aim at eliminating or restricting production and use. The eight pesticides listed in Annex A, are slated for ultimate elimination, but can be used for some time by specified countries that request specific exemptions.

The exemptions are valid for five years with possible reapplication depending on evaluation and agreement. Specific exemptions were identified for seven of the nine pesticides, while endrin and toxaphene (camphechlor) should immediately be eliminated. The use of chlordane, heptachlor and mirex for termite control is the most important exemption requested by several countries, while other exemptions seem to be of lesser importance as only one or very few countries have indicated their need. Exemptions will expire five years after the Convention enters into force with the 50th ratification. The conference of parties can grant extensions of up to another five-year period.

The Stockholm Convention also laid down special provisions for DDT due to the global concern about this chemical used for malaria control. Part I of Annex B provides restrictions for DDT, one specific exemption (intermediate in production of dicofol) and one acceptable purpose (disease vector control). Parties using specific exemptions or acceptable purposes provisions must take measures to prevent or minimize human exposure and release to the environment. The special provisions for DDT on acceptable purpose stated in Annex B allows the production and use of DDT only for disease vector control in accordance with the WHO recommendations and guidelines on the use of DDT when safe, effective and affordable alternatives are not available to the parties. The conference of the parties in consultation with WHO shall, every three years, evaluate the continued need for DDT for disease vector control on the basis of available scientific, technical, environmental and economic information.

In searching for alternatives to POPs pesticides a number of factors must be taken into consideration and the best long-term option should be found. Some important pesticides issues such as pesticide resistance, pesticide failure, stocks of pesticides and costs of the alternatives should also be analysed before the replacement. The simple replacement of POPs

pesticides with another pesticide is not a long-term option, as more sustainable solutions can be achieved by integrating several control options. To promote and adopt integrated pest management (IPM) and IVM programmes the following factors should be considered: ecological failure, pesticide resistance, costs, environment concerns, health and public opinion.

There are a multitude of tools available for reducing damage from pests and vector diseases transmission. There are several no-chemical tools such as environment management, biological control, natural repellents/insecticides, etc. The ideal combination of tools depends on the local ecological system and social/cultural considerations may also need to be taken into account in making the selection. The activities in one sector can influence pest or vector problems in other sectors in several ways, thus collaboration between sectors concerning pest and vector management, as well as pesticide use, is necessary for sustainable pest and vector control.

Article 7 requires that parties shall develop national implementation plans (NIPs) to implement the Stockholm Convention obligations. For the development of NIPs, countries can benefit from the funds of the Global Environment Facility by signing the Stockholm Convention. Signing the Stockholm Convention does not oblige countries to follow its provisions, but facilitates national implementation through NIPs. Countries should ensure that their IVM programmes are reflected in phase IV of their NIPs. In this phase, countries should oversee national IVM programmes, especially those carried out by nongovernmental organizations and develop action plans and national strategies using NIP financial resources to complement their activities regarding the implementation of IVM and/or IPM programmes to reduce reliance on DDT for disease vector control.

Currently, the Stockholm Convention has three parties and 151 signatory countries which are in the process of ratification. The signatory countries are committed to conclude their process of ratification before the beginning of this project to satisfy Global Environment Faculty eligibility criteria. The majority of countries of the Region have NIPs that are in phases I or II, facilitating linkage with national IVM programmes.

### 2.4 The Stockholm Convention on Persistent Organic Pollutants: the implications for vector control programmes

*Jacob Williams*

The purpose of the Stockholm Convention is to ensure the protection of the environment and human health through appropriate elimination and restrictions on production and use of POPs. The Convention restricts the use and production of DDT for disease vector control, according to WHO recommendations and guidelines (indoor residual spraying). There are comprehensive reporting requirements under the Convention for countries opting to use DDT.

The Convention envisions the urgent and immediate need for malaria/vector-borne disease endemic countries to maintain their reliance on DDT until viable, effective and affordable alternatives are found. This would ensure that the coming into force of the Convention will not necessarily result in sharp increases in disease epidemics and deaths.

Parallel to this is the need to accelerate research and development of affordable and locally appropriate alternatives, which will result in the improvement of national vector control capacities and the achievement of the longer-term goal of reducing reliance on pesticides in general and DDT in particular.

The Convention framework provides opportunities for improving vector control in countries to assist the transition from DDT through the implementation of feasible measures using the best available techniques and environmental practices. Incentives are provided through the leverage of funds (e.g. The Global Environmental Facility—the interim financial mechanism under the Convention) for capacity strengthening to promote, utilize and evaluate vector control alternatives. Countries, in return, are expected to develop plans of action for assuring compliance through regulatory and other mechanisms, engage in research and development, implement suitable alternatives, and strengthen health care delivery systems, all aimed ultimately at reducing disease incidence.

WHO and its Member States are actively promoting IVM as a key strategy to reducing reliance on DDT. Through IVM, it is hoped that intervention options will be appropriately selected based on local ecology, disease epidemiology, human behaviour, available resources and efficacy of the interventions, in order to maximize the impact of vector control programmes on disease transmission.

To achieve this, WHO has developed an action plan for the reduction of reliance on DDT in disease vector control. This plan aims to strengthen national capabilities in the management of pesticides, promote transfer of technology, provide financial and technical assistance, and foster cooperation among parties of the Convention. Together with partners, countries will formulate joint research projects on IVM/IPM strategies and insecticide resistance management. The dissemination of scientific results and lessons learned on alternative vector control strategies, will be enhanced between countries through the strengthening of regional networks and inter-institutional cooperation.

Specific ongoing activities of WHO related to the above objective include: support for the development and transfer of new/alternative tools and technologies (e.g. the transfer of technology for the production of long lasting insecticidal nets in Tanzania); the development and testing of various long lasting insecticidal products such as plastic sheeting, hammocks, blankets, plastic films and clothing; and the coordination of global efforts in the development of new pesticides and pesticide application technology.

### 2.5 Integrated vector management: prospects for intersectoral collaboration

*Robert Bos*

The current working definition of IVM used by the WHO is that it is a process of evidence-based decision-making procedures aimed to plan, deliver, monitor and evaluate targeted, cost-effective and sustainable combinations of regulatory and operational vector control measures, with a measurable impact on transmission risks, adhering to the principles of subsidiarity, intersectoral collaboration and partnership. This definition explicitly refers to intersectoral collaboration as one of the underlying principles of IVM.

Intersectoral collaboration has been a key public health concept since the 1978 Alma Ata Declaration Health for All by the Year 2000; it is one of the eight pillars of primary health care. As a concept, it recognizes that government structures are divided into “sectors” which reflect different professional and societal interests that compete for limited public resources. There is little communication across the borders of these sectors, and this intersectoral divide hampers any substantial collaboration that could lead to important synergies and efficiencies. The concept of intersectoral collaboration aims to bridge the intersectoral divide through policy and regulatory approaches, and through institutional arrangements.

The health sector structure shows a well-defined core (with a strong emphasis on medical approaches) but its boundaries, reflecting broader public health functions, are less defined. The core focuses on the delivery of health services, while more peripheral components, such as environmental health and vector control, focus on community health status. Community health status is affected by environmental and social determinants of health, which in turn, may change as a result of decision-making in other sectors.

The initial basis for intersectoral action in support of IVM is the identification of essential functions for its planning, implementation and evaluation. This is an exercise that will need to be carried out in individual Member States, but the listing below provides a generic overview of essential functions, divided between those pertaining to the health sector and those coming under the mandate of other sectors.

Essential health sector functions in IVM:

- Periodic ecosystem assessment of environmental and social determinants of vector-borne disease transmission risks
- Monitoring of genetic, biological and ecological characteristics of vector species
- Epidemiological surveillance and data synthesis into solid evidence and information, with targeted dissemination to other sectors
- Regular evaluation of the state of the knowledge base to update the agenda of priority research and development needs
- Establishing, maintaining and periodically reviewing an operational framework based on agreed decision-making criteria and procedures
- Establishing and periodically updating effective institutional arrangements
- Harmonized sectoral policies and legislation with explicit reference to health issues and high-level policy incentives for intersectoral action
- Regular evaluation of the policy, institutional and operational framework against evolving vector control needs and limitations
- Carrying out health sector-specific vector control measures
- Monitoring compliance of other sectors with voluntarily agreed or enforced vector control activities
- Quality control of all vector control activities
- Regular capacity-building needs assessment given the evolution of vector control, especially the development of new vector control options

Essential functions in support of IVM pertaining to non-health sectors:

- Including health criteria in sectoral operational frameworks and procedures
- Carrying out adequate health impact assessment procedures for new development projects
- Carrying out vector control measures in line with sectoral mandates
- Participating in joint activities of an integrated nature
- Informing the health sector about new technical developments with a bearing on vector control

There are a number of parameters that need to be taken into account when deciding on the allocation of essential IVM functions to different sectors. First, IVM activities take place at different administrative levels: national, provincial, regional and district. The intersectoral barriers are sharply reduced the lower one gets in the administrative hierarchy. Therefore, requirements for the promotion of intersectoral action will be different at different levels.

Secondly, the health sector itself is compartmentalized; intrasectoral collaboration is as important as intersectoral collaboration. As already indicated above, the position of the IVM programme in the health sector is critical for its performance at the interface between the core of the health sector and other sectors.

Thirdly, intersectoral action must have clearly demonstrable added value for all parties through economies of scale and other synergies.

Before the establishment of institutional arrangements for intersectoral action, it is recommended to first look at existing intersectoral structures that may provide a forum for the necessary negotiation and decision-making processes. These may include the National Economic Planning Council, the Environmental Protection Agency, and the Science and Technology Council

Next, what new intersectoral arrangements are desirable should be considered. First and foremost, a strategic alliance between the health and environment sectors is most desirable. Such an alliance has a number of characteristics:

- It needs to overcome the obstacles of vested interests
- It needs to have tools to resolve potential and real conflicts
- Its combined output must be greater than the sum of the outputs of its individual partners
- There must be agreement on a number of principles
- Integration must be a rational process based on agreed criteria and common goals
- Effective mechanisms should be custom-designed to meet needs at different levels
- It needs to be solidly anchored in the overall governance structure

Secondly, there should be either permanent or ad-hoc memoranda of understanding between the health sector and other sectors (agriculture, energy, transport), and there should be official links with institutions involved in science and technology. Most importantly, the Ministry of Health should strengthen its links to the Ministry of Finance, but not before it has developed the skills to address the Ministry of Finance in the language of economics.

Some final recommendations, in summary:

- Set up an operational framework for IVM around the defined essential IVM functions, identify the needs and opportunities for intersectoral action, consider the position of the IVM programme in the health sector and establish a strategic alliance with the environment sector
- Work with other sectors on harmonization of policies and the incorporation of health into the policies of non-health sectors
- Design effective institutional arrangements between relevant institutions in different sectors
- Assess the balance between regulatory and operational activities

### 2.6 Linking health and agriculture: prospects for farmer field schools on integrated pest and vector management (IPVM)

*Henk van den Berg*

Farmer field schools have proven their effectiveness in providing a sustainable solution to pesticide misuse and overuse in the agricultural sector, in particular in integrated pest management. The farmer field school aims to increase farmer expertise: their expertise for site-specific ecosystems management as well as their organizing and social skills. The schools take an educational approach, whereby the training is hands-on and in the field, and takes place weekly during a full crop cycle.

In weekly sessions, farmers make systematic observations of their crop's ecosystem, conduct agro-ecosystem analysis, and prepare drawing and a presentation which is discussed with the farmer group. Weekly decisions on management practices are made using a needs-based analysis. Additional experiments and trials are conducted to learn about aspects such as insect function and plant damage.

Expanding on the experience in agriculture, a pilot project has been initiated in Sri Lanka, involving three ministries and facilitated by FAO and UNEP. The project is based on the assumption that mosquito vectors of human diseases breed in rice environments, and consequently, that farmers have a role to play in vector management. Moreover, there are proven synergies between agricultural crop management practices and environmental vector control (e.g. land levelling, alternate wet—dry irrigation).

The objective of the pilot project is to test technical feasibility of IPVM farmer field schools and to evaluate the area-wide impact of training on mosquito densities. After training of trainers on mosquito biology and management, new exercises and curricula were developed and incorporated in farmer field schools. Practical exercises covered mosquito biology, life cycles, predation and disease cycles. Sampling of mosquitoes and aquatic predators was incorporated in weekly ecosystem analysis, to aid farmers in their decision-making related to agriculture and health. In addition, farmers prepared spatial maps of the village environment.

A small evaluation after training indicated that the training improved farmers' understanding of mosquito biology, their role as disease vectors, identification of genera and

management options. Farmers reported that after training they practiced land levelling, intermittent irrigation, reduction in use of agrochemicals, peri-domestic sanitation and clearing of canals. Moreover, they reported group action to clear breeding sites, organization of weekly plans and involvement of school children.

The experience of the pilot project in Sri Lanka may be relevant to other countries. Several steps are suggested in the development of new project concepts for IPVM.

The first step is to determine whether there are prospects for IPVM in the country. There are prospects where vectors are associated with agriculture (e.g. in irrigated systems) and when this contributes to the disease burden.

An important second step is to determine the specific objective a country has in mind for its IPVM project: is it to explore the feasibility of farmer field schools in IPVM: Is it to test if IPVM improves the rural livelihood situation? Is it to measure the impact on disease burden?

If it is the first objective, a number of aspects need to be considered:

- Human resources: who has experience with farmer field schools and participatory methods; who is going to do it?
- Project locations: agriculture with vector breeding; where are pesticides used; can farmers decide on their farming practices?
- Is there scope for up scaling e.g. through agricultural extension services: malaria programmes; community health workers
- Knowledge base: is sufficient knowledge available to develop training curricula (on pests, vectors)?
- Incorporate an element of knowledge generation/experimentation
- Capacity-building: training of facilitators; technical and facilitation skills
- Project ownership: facilitate local ownership (local health service, authorities, civilians)

If the objective is to test if IPVM improves the rural livelihood situation:

- Participatory evaluation: involve the direct stakeholders; provide training; document multiple outcomes of training
- Coverage: area-wide implementation to show impact and reduce bias
- Who/how to monitor and evaluate?

If the objective is to measure impact on disease burden:

- There are major research requirements: baseline study; size of sample population; planning project sites and control sites; data sources
- A large budget is needed

Hence, the farmer field school on IPVM can be viewed as in two ways: as an alternative intervention to reduce disease transmission; and as a comprehensive approach to improve the rural livelihood situation.

According to the former view, IPVM should reduce vector management, leading to reduced transmission and thus less disease. According to the latter view, IPVM has multiple ways of reducing disease, such as by increasing understanding about disease transmission, causing better personal protection measures to be taken, or by increasing profits from agriculture resulting in better housing and living conditions, contributing to less disease. Hence, IPVM has multiple outcomes, including health, economic, social, environmental and political outcomes.

The perspective is that farmer field schools in IPVM provide countries with an entry point whereby the experience gained can be used to address broader health issues. This could be decoupled from agriculture, provided that clear incentives are present for people to participate (e.g. economic incentives, as in agricultural projects). The adapted form of training should use a similar approach that draws on developing discovery skills (by observation, analysis, experimentation) and enhancing social skills (communication, group dynamics, planning, organization).

## 3. REGIONAL ISSUES IN PESTICIDE MANAGEMENT: SUMMARY OF COUNTRY PROFILES

Prior to the meeting, country representatives were requested to prepare presentations on the status of the elements of the guidelines on the management of public health pesticides in terms of product registration, procurement, formulation and re-packaging, storage and transportation, distribution, application, disposal, monitoring and surveillance, surveillance of pesticide poisoning, monitoring pesticide resistance, quality control, capacity strengthening and advocacy. During the meeting, countries were divided into working groups to identify a number of gaps in relation to the various elements of the guidelines on the management of public health pesticides.

Based on the country presentations and the outcomes of the different working groups, the meeting was able to develop a regional strategic plan to address gaps in the elements of the guidelines on the management of public health pesticides. From the regional strategic plan, countries are expected develop national plans of action on the management of public health pesticides. For details see Annex 4.

## 4. STRENGTHENING NATIONAL CAPACITY IN VECTOR CONTROL: MOBILIZATION OF RESOURCES

In the Eastern Mediterranean Region, vector-borne diseases contribute significantly to disease burden. For the prevention and control of these diseases, the Region has substantially relied on the use of insecticides. Although very few countries still use DDT, mainly for

disease outbreak response, in recent months, WHO has received requests to use it, suggesting the high potential to revert to DDT.

Indeed, countries have shifted to alternative insecticides, mainly pyrethroids, and also to alternative strategies such as the use of ITNs and larvivorous fish. However, their implementation requires coordinated support and strengthening. To achieve this, the implementation of the IVM approach seems to be the most viable option. To implement this strategy for the maximum benefit of limited resources and for the protection of human health and the environment, additional resources are needed.

Jointly with WHO headquarters and UNEP, the Regional Office has identified the Global Environmental Facility as a potential source of funding. Through the Stockholm Convention, parties/signatories are eligible for substantial funding to assist them to implement vector control aimed at sustainable reduction and elimination of reliance on pesticides including DDT. In the Region, a total of 16 countries have signed the Convention, three of which have ratified it. In essence, the 16 countries are eligible for Global Environmental Facility funding; resources which could be used to strengthen national vector control capacity through the implementation of IVM leading to the reduction/elimination of reliance on DDT and other pesticides.

The process of accessing these funds involves the development of a concept paper, which was initially shared with UNEP/Global Environmental Facility in Tunis in October 2003 with the recommendation to develop a project development facility (PDF-B) proposal (up to one year) for submission in January 2004. A PDF-B proposal of up to US$ 1 million allows the recipient to prepare a full project proposal of several million US$, depending on the size of the project.

During the meeting a draft proposal was shared with all participants from the 16 countries from the Region, and experts from WHO, UNEP and FAO.

The objectives of the regional project proposal are as follows:

- To reduce the reliance on DDT in countries that still depend on the insecticide for disease vector control through the development and strengthening of alternative control strategies, including pesticide management in agriculture.
- To assist countries in meeting the provisions of the Stockholm Convention with regard to minimization of exposures and stockpile accumulation; reporting and developing action plans relevant to the use of POPs for disease vector control.
- To prevent the reintroduction of POP pesticides for in countries that are at risk of reverting back to the use of DDT.
- To establish institutional arrangements to support IVM on a sustainable and cost-effective basis.
- To contribute to the reduction of mortality and morbidity due to malaria and other vector-borne diseases by supporting the implementation of IVM.

- To support enabling activities for the development of national action plans on DDT as part of implementation plans on POPs (as specified in Article 7 of the Stockholm Convention).

The scope of the proposed project will include, but is not limited to:

- Development of capacity for planning and implementation of IVM
  - IVM option selection based on eco-epidemiological evaluation
  - Implementation of vector control interventions
  - Monitoring and impact assessment
- Policy and institutional framework
- Strengthening of health infrastructures
- Pesticides management (including stockpiles and judicious use)
- Regional coordination for effective dissemination and sharing of country experiences
- Enabling activities for national implementation plans on DDT/vector control and implementation plans on POPs
- Exploring and testing the potential for farmer field schools on IPVM which combines pesticide management for agriculture and health

The criteria for participation of countries in the proposed project will include:

- Party to the Stockholm Convention on POPs (currently 16 countries)
- Level of vector-borne disease burden
- Current use of POPs pesticides in disease vector control and potential for re-introduction
- Level of need for strengthening vector-borne disease control infrastructure e.g. countries under conflict
- Countries experiencing illegal importation/use of POPs, lacking facilities for proper transportation and storage of insecticides, including stockpiles
- Main components/activities of the regional project proposal
- Epidemiological stratification
- Capacity to implement vector control strategies
- Health infrastructures
- Co-ordinated regional action and dissemination
- Management of DDT stockpiles

The following are the objectives of the PDF-B activities, which will enable the design of the full project proposal:

- To establish a cohesive framework for potential DDT-using countries in the Eastern Mediterranean Region to cooperatively undertake efforts to reduce DDT while strengthening vector-borne disease control programmes in the Region.
- To conduct country needs assessments in order to identify actions required to prevent, reduce or eliminate DDT while maintaining and strengthening effective vector-borne disease control programmes.

- To establish priorities for the development and testing of alternative vector control strategies, including the selection of a number of districts in each of the six priority countries where alternatives to DDT in the context of IVM will be tested under field conditions.
- To reach consensus on the objectives and activities of the full project for submission to the Global Environmental Facility.

The following are the proposed PDF-B activities that will be required to finalize the design of the full project:

- Establish a steering group and hold steering group meetings (probably two: one at the start of the project and one towards the end of the project)
- Bring in relevant national stakeholders in each country to finalize and endorse the national action plans for developing IVM programmes through national workshops and expert visits
- Conduct country needs assessments to identify actions required to develop and implement the IVM programmes that can ensure sustainability of the alternatives to POPs in disease vector control
- Hold two regional meetings of participants for exchange of information and development of plans of actions, including IVM national plans of action
- Strengthen national and regional centres for monitoring insecticide resistance within the Eastern Mediterranean Network on Vector Resistance (EMNVR)
- Hold regional training workshop on insecticide resistance, including training of key individuals on new tools for detecting insecticide resistance
- Prepare national reports
- Synthesize needs assessment outcomes
- Prepare the project brief supplement for the full Global Environmental Facility project

## 5. CONCLUSIONS

- The workshop reviewed the status of ratification of the Stockholm Convention in the countries of the WHO Eastern Mediterranean Region.

- The workshop considered the structure and text of the draft proposal on strengthening national vector control capacities in the Eastern Mediterranean Region for the sustainable reduction and elimination of the reliance on DDT and other pesticides through IVM. It made amendments to the objectives, scope, criteria, actions and budget, and approved the amended draft.

- The workshop considered the elements of the proposed regional strategy on the management practices of public health pesticides in the context of IVM and explored implications of its adoption at the national level. It also recognized the need for the expeditious application of the WHO guidelines, as a significant step towards the reduction of reliance on pesticides in vector control and towards ensuring the extended life expectancy of the limited number of pesticides currently at our disposal.

- The workshop re-iterated the support expressed by earlier regional workshops and meetings for the concept and WHO working definition of IVM and noted the particular implications for action in Member States to achieve the level of intersectoral collaboration required for its successful implementation.

- The workshop noted the opportunities that arise from the merger of integrated management of agricultural pests and of vectors of human and livestock diseases, a concept referred to as IPVM.

- The workshop noted that all issues under discussion, including prioritization and resource allocation to countries of the Global Environmental Facility project, the promotion of IVM and its possible merger with integrated pest management (IPM), and the implementation of the strategy for the management of public health pesticides, need effective intersectoral collaboration at the national level as well as between the country representations of relevant UN agencies.

## 6. RECOMMENDATIONS

1. The workshop recommends that efforts for ratification of the Stockholm Convention be stepped up in Member States that have not yet completed the process, in order to strengthen the basis for a broad and comprehensive participation of all in the Global Environmental Facility proposal.

2. The workshop requests the Secretariat to further develop the proposal on strengthening national vector control capacities in the Eastern Mediterranean Region for the sustainable reduction and elimination of the reliance on DDT and other pesticides through IVM in the spirit of the Stockholm Convention and WHA 50.13, to prepare a realistic budget for the PDF-B component and to seek formal endorsements from the health, environment and, where feasible, agriculture authorities of all WHO Eastern Mediterranean Region Member States. The workshop recommends that the proposal be completed by the Secretariat for submission to the Global Environment Facility by 24 January 2004.

3. The workshop recommends that the draft WHO guidelines for the management of public health pesticides be reviewed by the relevant national authorities and that feedback be promptly provided to the WHO Secretariat, to allow for their publication to be completed and made available to Member States with priority. The workshop also recommends that WHO provide adequate technical cooperation to its Member States to support the application of the guidelines. Finally, the workshop recommends the early initiation of the strategy by Member States and that a regional meeting be organized by late 2005 to review progress in its implementation.

4. The workshop recommends that WHO elaborates the details of essential IVM functions inside and outside the health sector, the criteria and procedures for the selection of chemical and non-chemical interventions, the options for effective intra- and intersectoral collaboration for IVM, the steps for re-structuring of vector control

programmes in the context of health sector decentralization and the process/output indicators for the efficient monitoring and evaluation of progress towards the implementation of IVM.

5. The workshop recommends that criteria be developed and agreed by FAO, UNEP and WHO for the selection of IPVM demonstration project locations in different agro-ecosystems, which should lead to the formulation of a number of detailed proposals, in close consultation with relevant national authorities. The workshop also recommends that the three UN agencies actively pursue resource mobilization for such proposals.

6. The workshop urges FAO, UNEP and WHO to strengthen the coordination of their efforts to assist Member States in the implementation of the Stockholm Convention and in strengthening environmental health programmes. The workshop further recommends that the outcome of this meeting be sent to FAO, UNEP and WHO offices in all WHO Eastern Mediterranean Region Member States, and that all future relevant documents and publications be forwarded to these country offices. The workshop also recommends that the WHO Regional Office expedite the distribution of the final workshop report in the three official languages of the Eastern Mediterranean Region to all relevant focal points in the Member States.

## Annex 1

## PROGRAMME

**Sunday, 7 December 2003**

| | |
|---|---|
| 08:30–09:00 | Registration |
| 09:00–10:30 | Opening Session:<br>Message from Dr Hussein A. Gezairy,(WHO) Regional Director for the Eastern Mediterranean<br>Message from H.E. Eng. Saeed Darwazeh, Minster of Health, Jordan<br>Nomination of officers<br>Objectives of the workshop and method of work/Dr A. Mnzava |
| 10:30–11:00 | Status of vector-borne disease control in the WHO Eastern Mediterranean Region/Dr A. Mnzava |
| 11:00–11:30 | Public health pesticide management – An urgent need/Dr M. Zaim |
| 11:30–12:00 | The Stockholm Convention on Persistent Organic Pollutants – an overview/Mr R. Fenner |
| 12:00–13:30 | Discussion |
| 13:30–14:00 | The Stockholm Convention on persistent organic pollutants: the implications for vector control programmes/Dr J. Williams |
| 14:00–14:30 | A partner in the Global Environment Facility for life on earth/Mr W. Jarman |
| 14:30–15:00 | Integrated vector management: prospects for intersectoral collaboration/Dr R. Bos |
| 15:00–15:30 | Linking health and agriculture: prospects for farmer field schools in IPVM/Mr H. van den Berg |
| 15:30–15:45 | Discussion |
| 16:00–17:10 | Pesticide management practices by the Member States: country reports/assessments in relation to the elements of the WHO guidelines on the management of public health pesticides<br>Afghanistan<br>Bahrain<br>Djibouti<br>Egypt<br>Islamic Republic of Iran<br>Jordan |

**Monday, 8 December 2003**

| | |
|---|---|
| 08:30–09:30 | Pesticide management practices by the Member States: country reports/assessments (continued)<br>Lebanon<br>Saudi Arabia<br>Morocco |

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|---|---|
| | Oman<br>Pakistan<br>Discussion |
| 09:30–10:45 | Sudan<br>Syrian Arab Republic<br>Tunisia<br>Libyan Arab Jamahiriya<br>Yemen<br>Discussion |
| 10:45–14:00 | Country team discussions: completion of country profiles/assessments |
| 14:00–17:00 | Working group discussions (3 groups): review the gaps and weakness in the management of public health pesticides and propose regional strategies and key activities for its improvement; propose regional targets and relevant indicators for monitoring and evaluation |

**Tuesday, 9 December 2003**

| | |
|---|---|
| 08:30–10:30 | Plenary session: working group presentations on proposed regional strategies and activities for the management of public health pesticides |
| 10:30–14:00 | Plenary discussions on the proposed regional strategies and activities for the management of public health pesticides |
| 14:00–14:45 | Introduction of the proposal to the Global Environmental Facility (GEF) on strengthening national vector control to reduce reliance on, and prevent the re-introduction of DDT for malaria and other vector-borne diseases in the East Mediterranean Region/ Dr A. Mnzava |
| 14:45–16:00 | Working group discussions: consideration of the GEF proposal |
| 16:00–17:00 | Visit to CEHA and presentations on the activities of CEHA/Dr M. Khan |

**Wednesday, 10 December 2003**

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|---|---|
| 08:30–12:30 | Working group discussions: consideration of the GEF proposal (continued) |
| 12:30–16:00 | Plenary session: group presentations on the GEF proposal and discussion |
| 16:00–17:00 | Finalization of the draft GEF proposal |

**Thursday, 11 December 2003**

| | |
|---|---|
| 08:30–10:15 | Finalization of the draft GEF proposal (continued) |
| 10:15–16:00 | Finalization of the regional strategy for public health pesticide management |
| 16:00–16:30 | Conclusion and Recommendations |
| 16:30–17:00 | Closing session |

**Annex 2**

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## Annex 3

## REGIONAL DIRECTOR'S MESSAGE

Distinguished Guests, dear Colleagues, Ladies and Gentlemen, it gives me great pleasure to welcome you all to the WHO/UNEP Intercountry Workshop on Public Health Pesticides Management in the Context of the Stockholm Convention on Persistent Organic Pollutants (POPs). The workshop is being held as part of ongoing efforts to strengthen national vector control programmes and support country capacity-building to meet obligations under the Stockholm Convention on POPs. Furthermore, as part of the WHO action plan for the reduction of reliance on DDT in disease vector control, the workshop will also look into ways in which countries can implement cost-effective and sustainable alternative vector control interventions within the context of integrated vector management.

Let me take this opportunity to thank the Government of Jordan for hosting this workshop, and extend my sincere gratitude to His Excellency Eng. Saeed Darwazeh, Minister of Health, for his keen interest and for the excellent support received in organizing this workshop. I hope that the participants will not only enjoy the generosity of this hospitable community, but also be able to benefit from the experience of Jordan.

As you are aware, at the beginning of this year, the Regional Office, together with experts and country representatives, developed a regional strategic framework on integrated vector management (IVM). This policy document stresses the need for intersectoral collaboration and full utilization of available tools for maximum impact of individual interventions in reducing vector-borne disease risks. As most of these tools rely on the use of insecticides, the strategic framework also emphasizes their impact on human health and the environment.

Insecticides and pesticides were originally developed to address problems of crop pests and insect vectors of diseases. With the use of such chemicals, mankind would be ensured of sufficient food and cash from agricultural produce, as well as of protection from insect-borne diseases. Indeed, in the early years this was the case, but several years later crop pests and insect vectors were reported to have developed resistance, leading to greater dependency on insecticides. It was also revealed that a number of such insecticides were unsafe to the environment and to human health.

Realizing the global concern about the environment and human health, a number of Conventions (Basel, Rotterdam and Stockholm) were established to address these problems. One such convention is the Stockholm Convention, which either totally bans the use of certain insecticides (POPs) or restricts some of them for specific use. These are insecticides that are not easily biodegradable and persist in the environment. DDT is one such insecticide, the use of which has been restricted to vector control and specifically to indoor residual house spraying.

Under the Convention, countries intending to use DDT for vector control are obliged to seek exemption and its continued use must be regularly reviewed. As a requirement, countries

are also expected to sign and subsequently ratify the Convention. While a number of countries of the Eastern Mediterranean Region have signed the Convention (16), only three have ratified it. In this regard, I call upon Member States to speed up the process that, I trust, has already been started in order to ratify the Convention.

Countries of the Eastern Mediterranean Region are faced with a huge vector-borne disease burden. They continue to rely on the use of insecticides and in some countries they still use DDT for emergency response to vector-borne disease outbreaks. A number of countries that stopped using DDT many years ago have informally communicated to WHO their intention to revert to DDT. In fact, there are few alternatives to DDT and these are expensive as they have to be applied frequently because of their short residual efficacy, unlike DDT.

Moreover, issues related to management of insecticides (both for agriculture and health use) are a problem in most countries of the Region. Such problems include lack of legislation, poor enforcement of regulations, illegal importation of insecticides, inappropriate facilities to transport and store insecticides, and total lack of facilities to handle and destroy stockpiles/obsolete insecticides. The WHO recently developed guidelines on the management of public health pesticides. It is my sincere hope that these guidelines will be widely disseminated to countries and that participants to this workshop will develop strategies and activities to implement the guidelines.

The WHO Regional Office for the Eastern Mediterranean supports the global efforts to reduce and eventually eliminate the use of POPs (DDT) in disease vector control in countries of the Region. Already the Region is implementing alternative strategies, which either use safe insecticides in small quantities, for example on insecticide-treated bednets (ITNs), or apply non-chemical methods, such as larvivorous fish. Six countries endemic for vector-borne diseases in the Region have recently finalized national strategic plans to expand use of ITNs.

Recognizing the lack of national capacity to implement vector control activities, which will subsequently lead to reducing the reliance on the use of POPs in particular and on insecticides in general, the Regional Office has had discussions with a number of Member States on how best to strengthen this capacity. I am indeed gratified to know that such discussions were part of a previous UNEP/WHO subregional meeting held in Tunis, Tunisia, recently, at which Member States agreed to approach the Global Environmental Facility (GEF) for funding opportunities. The purpose of such funding is to strengthen national capacity in the implementation of integrated vector management leading to reduction/elimination of DDT and other insecticides.

As you meet this week to review pesticide management practices in countries of the Region, and develop strategies and activities for strengthening such activities at national level, remember also to look at ways in which implementation of vector control will ultimately lead to the reduction and elimination of POPs and insecticides in the Region. This will only be possible through the implementation of integrated vector management and through mobilization of additional resources. I wish you a successful workshop and a pleasant stay in this beautiful city of Amman.

## Annex 4

## REGIONAL STRATEGY ON PUBLIC HEALTH PESTICIDE MANAGEMENT

To strengthen public health pesticide management practices, as a key component of IVM, through appropriate national legislation and policies, and capacity strengthening.

**Activities**

1. Review/revise national policies and guidelines on management of public health pesticides.

2. Situation analysis and needs assessment for strengthening public health pesticide management in the context of integrated vector management.

3. Review/revise the operational framework of public health pesticide management as part of a broader functional restructuring for IVM.

4. Develop national manuals and procedures for safe handling and effective application of public health pesticides for professionals at different levels, adapted to the need of different target groups.

5. Train and certify public health professionals in charge of vector control on safe and effective application of pesticides including judicious use of insecticide and insecticide treated mosquito nets (ITNs).

6. Establish/strengthen national pesticide quality control facilities and enforcement.

7. Strengthen post-registration monitoring and evaluation of public health pesticides.

8. Establish/enhance a national pesticide information system.

9. Raise public awareness on public health pesticides.

| Activity | Country contribution | WHO/other UN organization support | Target | Indicators |
|---|---|---|---|---|
| Review/revise national policies and guidelines on management of public health pesticides | Review and adopt the WHO guidelines for management of public health pesticides<br>Initiate the review of national legislation if necessary | WHO guidelines on pubic health pesticide management<br>WHO/other UN technical support | One year | Revised policies/guidelines<br>Adoption of WHO guidelines |

| Activity | Country contribution | WHO/other UN organization support | Target | Indicators |
|---|---|---|---|---|
| Situation analysis and needs assessment for strengthening public health pesticide management in the context of integrated vector management | Carry out situation analysis and needs assessment<br>Development of action plan | WHO guidelines on needs assessment<br>WHO technical support | Two years | Development of action plan |
| Review/revise the operational framework of public health pesticide management as part of a broader functional restructuring for IVM | Develop a proposal, based on situation analysis and needs assessment for the operational framework, with supportive justification, and financial and resource implications<br>Submit the proposal to relevant authorities<br>Follow-up<br>Corrective actions | WHO guidelines on pubic health pesticide management<br>WHO guidelines on needs assessment<br>WHO/other UN technical support | Two years | Development of an operational framework |
| Develop national manuals and procedures for safe handling and effective application of public health pesticides for professionals at different levels, adapted to the need of different target groups | Review the existing manuals, guidelines and information<br>Identify the needs per target group<br>Develop a plan for development of necessary documentation to include different aspects relating to handling, transport, storage, disposal, pesticide application and equipment | Various relevant WHO/FAO/UNEP guidelines | Two years | National plan for the development of documents (national manuals and procedures)<br>Formalization of procedures |
| Train and certify public health professionals in charge of vector control on safe and effective application of pesticides including judicious use of insecticides and insecticide treated mosquito nets (ITNs) | Identify training needs for different target groups based on situation analysis and needs assessment<br>Develop plans for training and certification of staff with clear timetable and resources required<br>Develop evaluation | Facilitator and participant training manual on judicious use of insecticide (mid-2004)<br>Technical support for national training programme | Two years | Number of professionals trained and certified |

| Activity | Country contribution | WHO/other UN organization support | Target | Indicators |
|---|---|---|---|---|
| | criteria and evaluate training programmes and the trainees | | | |
| Establish/strengthen national pesticide quality control facilities and enforcement | Identify a potential centre in consultation with other relevant sectors<br>Provide necessary equipment, training and other resources | Checklist of essential requirements of a quality control centre (under development) | | Establishment/accreditation of quality control centre |
| | Conduct proficiency testing | WHO assistance in proficiency testing | | |
| | Accreditation/quality assurance | | | |
| | Documentation/ publishing quality control on imported and inspected pesticides | | | |
| Strengthen post-registration monitoring and evaluation of public health pesticides. | Maintain records of public health pesticide usage by product, quantity and location at national level | WHO standard data collection form<br>WHO standard poisoning reporting forms | Two years | Availability of data on pesticide usage and poisoning events at national level |
| | Maintain records on all poisoning events and report each such event to national level | | | Availability of national guidelines on pesticide application efficacy and pesticide resistance |
| | Routinely monitor exposure of personnel/community to pesticides | | | Mechanisms for information exchange established |
| | Develop national guidelines and procedures for routine monitoring of pesticide application efficacy and vector resistance | | | |
| | Establish and maintain an information exchange between health and agriculture ministries, including pesticide resistance | | | |
| Establish/enhance a national pesticide | Develop a mechanism for sharing of | | Two years | Information system established |

| Activity | Country contribution | WHO/other UN organization support | Target | Indicators |
|---|---|---|---|---|
| information system | information taking into consideration information infrastructure, availability of resources and legal requirements | | | |
| Raise public awareness on public health pesticides | Develop a comprehensive plan of action for public education and awareness on public health pesticides | WHO/WHO Mediterranean Centre for Vulnerability Reduction technical support | | Plan of action developed |