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**ACTION PLAN FOR THE REDUCTION OF RELIANCE
ON DDT IN DISEASE VECTOR CONTROL,
INCLUDING THE REPORT OF AN EXPERT CONSULTATION ON THE
IMPLEMENTATION OF WHA50.13, WITH REFERENCE TO THE REDUCTION IN
RELIANCE ON DDT OF VECTOR CONTROL PROGRAMMES**



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FOREWORD

On 22 May 2001 the Stockholm Convention on Persistent Organic Pollutants was signed. Depending on the expedience of ratification by governments of the signatory Member States, the Convention is to take effect in the coming three to five years.

Concerning DDT, one of the twelve POPs chemicals included in this Convention, Annex B, part II reads, *inter alia*, that

- The production and use of DDT shall be eliminated except for Parties [to the Conference] that have notified the Secretariat of their intention to produce and/or use it.
- Each Party that produces and/or uses DDT shall restrict such production and/or use for disease vector control in accordance with the World Health Organization recommendations and guidelines on the use of DDT and when locally safe, effective and affordable alternatives are not available to the Party in question.
- Commencing at its first meeting, and at least every three years thereafter, the Conference of the Parties shall, in consultation with the World Health Organization; evaluate the continued need for DDT for disease vector control on the basis of available scientific, technical, environmental and economic information [...].

The text of the Convention thus recognises the urgent and immediate needs of a number of Member States to maintain their reliance on DDT for indoor residual spraying to control insect vectors of particularly malaria, for current lack of effective and/or affordable alternatives. It also recognises the need to accelerate research and development of safe and effective alternatives to DDT with a view to improving Member States' vector control programmes on the medium term, through the adoption and use of such alternatives. And it recognises, lastly, the need to work towards a longer-term goal of reducing reliance of vector control programmes on pesticides in general and DDT in particular (in line with World Health Assembly Resolution 50.13) to safeguard ecosystem and human health alike from the insidious effects of POPs pesticides.

The DDT Action Plan of the World Health Organization, presented in this document, can now be implemented to its full extent, in the spirit of the POPs Convention. The Action Plan emerged from an expert consultation held in 1999 when the POPs negotiations were in full swing. Some activity areas, related to the advocacy and information dissemination role of WHO during the negotiations, have been duly implemented, but for most areas, action will now start, in the wake of the signing ceremony in Stockholm. The technical support provided by the members of the WHO Intercluster Working Group on DDT and the resources provided by the Roll Back Malaria Secretariat towards the completion of the report of the 1999 meeting are gratefully acknowledged.

Dr Richard Helmer
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ACTION PLAN FOR THE REDUCTION OF RELIANCE ON DDT IN DISEASE VECTOR CONTROL.

INTRODUCTION

At the first meeting of the Intergovernmental Negotiating Committee (INC) for an international legally binding instrument for implementing international action on certain Persistent Organic Pollutants (POPs), the World Health Organization, mandated by World Health Assembly Resolution WHA50.13 (annex 1), proposed the development of an Action Plan to support its Member States in making informed decisions concerning the effect on disease transmission of a reduction and/or elimination of DDT, under a future POPs Convention. Such a WHO Action Plan would aim to increase public health staff awareness of the INC process. Ultimately, the Action Plan would assist Member States in their efforts to reduce their reliance on DDT use for public health purposes without jeopardizing the level of protection offered by their vector control programmes.

The Action Plan for the Reduction of Reliance on DDT in Disease Vector Control presented in this document emerged from an expert consultation held from 16 to 18 June 1999 at WHO, Geneva (see Annex 2 for the report of the consultation).

Three strategic *principles* have served as the basis for developing and formulating the Action Plan. They are: **involvement of countries concerned**, **early identification of funding mechanisms** and **advocacy**.

The most recent recommendations concerning DDT use for indoor residual spraying against malaria vectors date back to 1993. They list well-defined conditions and a number of precautions (WHO, TRS 857, 1995). DDT is also used at times for the control of kala-azar (visceral leishmaniasis), plague and tick-borne encephalitis, but is not formally recommended by WHO for these purposes. In malaria control, it is used in routine spraying operations, for prevention of disease transmission and in epidemic situations. Some countries reserve the right to maintain stockpiles of DDT for emergencies.

Preliminary data show that at least 24 countries use DDT for vector control. Yet, there is a great deal of variability in the intensity of its use. There is also a disparity between the geographical distribution of DDT use for malaria control and the areas of the world where the malaria burden weighs the heaviest.

The use of adulticides, including DDT, for indoor residual house spraying to control vectors is just one of several possible components of integrated vector management (IVM). In turn, IVM is just one component of integrated disease management. The strategy for the prevention and control of vector-borne disease places vector control in

the context of disease management and aims to seek tailor-made, flexible solutions to local malaria problems. In addition to its main objective of reducing disease transmission risks, another major goal of IVM is to reduce the use of insecticides whenever possible. It promotes decision-making criteria and management procedures that ensure the best local mix of *alternatives* at a given place and time.

For the purpose of this Action Plan, alternatives are defined as:

- alternative **products** for chemical and biological control.
- alternative **methods** of vector control such as environmental management and personal protection and
- alternative **strategies** that are based on scientifically sound criteria, cost-effectiveness analysis, and a delivery system compatible with current trends in health sector reform, including decentralization of health services, intersectoral action at the local level and subsidiarity in decision-making.

The concept of integrated vector management (IVM) as a sub-component of disease management will provide the decision-making framework for vector control in the future, including decisions on the use of DDT or other adulticides. This management approach has been highly successful in agriculture in the sustainable control of pests and in the reduction of reliance on insecticides.

The three main *instruments* for achieving the goals of the Action Plan are:

- **Integral research and capacity-building** to enable countries to introduce sustainable vector control alternatives based on a reduced reliance on insecticides including DDT,
- **Country-specific exemptions** in accordance with the procedures laid down in Annex B, part II of the Stockholm Convention, and
- Appropriate and timely **financial support and technical cooperation** for the implementation of the Action Plan.

It is recognised that there are several countries that continue to rely on DDT for public health purposes and that these countries should be allowed to do so until safe, effective and affordable alternatives are available and operational.

This is in line with recommendations made at the 20th Malaria Expert Committee meeting in October 1998 which, *inter alia*, state: *It is anticipated for some time to come that there will continue to be a role for DDT in combating malaria, particularly amongst the poorest endemic countries. Restrictions on DDT for public health use contained in a future POPs Convention should therefore be accompanied by technical and financial mechanisms to ensure that effective malaria control is maintained, at least at the same level, through vector control methods that depend less on pesticides in general, and on DDT in particular.*" (WHO, TSR 892, 2000).

It has, therefore, been a fundamental principle in the development of this Action Plan that any possible deadline in the POPs Convention should relate not to the phase-out of DDT, but rather to the time at which the financial, technical, and administrative tools are in place to begin a transition from DDT to an integrated deployment of alternatives, without any jeopardy to disease transmission risk. Thus, the original IFCS requirement of reduction and/or elimination of DDT at no cost to public health is fulfilled. In the final text of the Convention no such deadline is included.

Furthermore, support for the Action Plan or for the assistance to countries to make a successful transition to alternatives to DDT should not be at the expense of financial resources earmarked for other priority public health issues.

Taking into consideration the conclusions and recommendations of the group of experts, WHO has developed the following Action Plan.

COMPONENTS OF THE ACTION PLAN

Based on the outcome of the expert consultation (Annex 2), five areas of major importance for the implementation of the Action Plan were identified. They include:

1. Country needs assessment,
2. Safe management of DDT stockpiles,
3. Institutional research networks,
4. Monitoring, and
5. Advocacy.

Objectives and activities for each of these are presented below. In addition, each activity has been earmarked as a immediate, medium- or long-term action. The time frame does not foresee action for all areas of importance under each time horizon.

TIMEFRAME

The proposed endpoints for the activities are as follows:

Immediate action - May 2001.

Medium-term action - just prior to the POPs Convention taking effect (i.e. after the government ratification threshold has been passed), to report on progress to the first meeting of the Conference of Parties to the Convention.

Long-term action - on-going technical cooperation with interested Member States among the Conference of Parties.

OBJECTIVES

Country Needs Assessment

- Ensure that health concerns are mainstreamed in the POPs negotiations in order to prevent any negative health impact as a result of the Convention's regulations concerning DDT.
- Provide a framework for a needs assessment in countries enabling the transition towards a reduced reliance on insecticides, while maintaining and, if possible, improving effective vector control.
- Provide incentives and leverage funds for strengthening the capacity of governments to promote, utilize and evaluate vector control alternatives.

Safe Management of DDT Stockpiles

- Prevent damage to the environment and minimise risk to human health.
- Develop criteria for decision making on options to use, reformulate, repack, or dispose of DDT stocks.
- Establish a reliable and verifiable management process that clearly defines the responsibility for stockpile management.

Institutional Research Network

- Formulate joint research projects of health and agriculture scientists/research institutions on the development of integrated pest and vector management strategies.
- Further develop, test and/or implement sustainable, environmentally safe and cost-effective alternatives to the use of DDT for vector control.

Monitoring

- Assist Member States in programming, monitoring and reporting information on the following DDT related issues:
 - Human exposure to DDT.
 - Public health outcomes of DDT reduction.
 - Production, storage and usage of DDT.
 - Efficacy and appropriateness of DDT in areas where it continues to be used.
 - Efficacy and appropriateness of alternatives to DDT, including integrated vector management (IVM).

Advocacy

- Provide background information on the POPs negotiations and on DDT to the health sector.

- Ensure that the health sector's views are known to delegations to the POPs negotiations.

IMMEDIATE ACTION

Country Needs Assessment

Prepare an inventory of current use, trends and regulatory status of DDT

To better understand what support Member States may need in order to reduce their reliance on DDT in vector control programmes, it will be necessary to review and update current information on the use of DDT in vector control. This will be done through the activities of WHO, FAO, and Global Crop Protection Federation (GCPF). The main categories of DDT use are:

- DDT in routine vector control programs.
- DDT in epidemic outbreaks; DDT reserved for epidemics only.
- DDT as an integral component of a disease management program such as is embodied in the Global Malaria Control Strategy.

Promotion of and incentives for the development of national action plans for the reduction and/or elimination of DDT

Country needs to facilitate a successful transition to a situation of reduced reliance on DDT in vector control should be assessed through Member State consultations at the WHO regional level or in different eco-epidemiological settings.

Safe Management of DDT Stockpiles

Co-operate with concerned organizations (FAO, UNEP) and non-governmental partners including the GCPF

A review, update and expansion of inventories of DDT stocks should be combined with efforts to encourage corporate partnerships that aid and fund proper storage and disposal of DDT.

Monitoring

Ensure a global program of monitoring exposure of DDT in humans

WHO, through the International Programme on Chemical Safety (IPCS) should promulgate standards, and identify regional laboratories to perform clinical and environmental sampling and analyses.

Advocacy

Furnish the appropriate information to the health sector to allow for balanced decisions based on "informed consent"

The provision and dissemination of appropriate information consists of the following elements:

- Information on the environmental and human health impact of DDT.
- Information on alternatives to DDT for disease prevention and control, including IVM.
- Estimates of the global mortality and morbidity (or DALYs) that are saved through programmes for the control of malaria and other vector-borne diseases, including the use of DDT indoor residual spraying.
- Information on the potential exemptions for DDT use in the POPs treaty.

WHO, the Secretariat of the Convention and industry through GCPF all have a role to play in this activity. Appropriate information should also be made available to NGOs.

Provide the health sector with the opportunity to have its views represented in the INC process and after

Firstly, participation of health ministries in the INC process should be encouraged through provision of information as described above, and the use of *Notes Verbales* of the WHO Director General and/or Roll Back Malaria to Member States.

In addition, it can be propose to national governments and/or Convention negotiating blocs (the WHO Regional Office for Africa, CRULAC, G77, etc.) that they adopt a joint position on DDT reduction. Action should also be undertaken to facilitate cooperation between NGOs and ministries of health and/or Convention negotiating blocs.

The DDT issue in the context of the POPs negotiations should be made a topic for internal discussions at WHO Regional Offices.

MEDIUM-TERM ACTION

Country Needs Assessment

Inventory of current use, trends and regulatory status of DDT

The inventory of actual current DDT usage prepared under *Immediate Action* should be expanded, taking into account the results of the review of the indications of use. The following elements should be taken into consideration:

- Decision-making criteria and procedures for the use of DDT in vector control programmes.
- Regulatory procedures, and where appropriate, the legal basis for the use of DDT.
- Amount of DDT actually used per year and where.
- Alternative vector control method(s) used.

Modalities for preparing the inventory should include a review of the presently used DDT reporting systems provided by country vector control programmes. Member States can furthermore be assisted in the development of DDT inventory questionnaires through

- the promotion and improvement of the process for obtaining information through questionnaires and other methods of data collection.
- Conducting regional workshops on DDT inventory information gathering mechanisms.
- Co-operation with FAO/UNEP in the collection of DDT use and regulatory information.
- Soliciting information/data on DDT use, and trends in future use from industry through GCPF and from non-governmental and private sector organizations engaged in market analysis.

Promotion and incentives for the development of national action plans for the reduction and/or elimination of DDT

This activity will entail the identification and promotion of incentives for the development of national action plans. It will also provide guidance and technical assistance to Member States for the development of national integrated disease control action plans.

Capacity building to promote, utilise, and evaluate alternative methods for vector control

In a comprehensive way, this activity will:

- Assist Member States in the review and adjustment of their vector control policies and programmes in the context of health sector reform, that will lead to a more decentralized, intersectoral delivery of vector control services.

- Promote, test, consolidate, and validate experiences on the use of alternatives for the control of malaria and other vector-borne diseases in areas where there is reliance on DDT.
- Train health sector personnel in the management and decision-making for integrated vector management. Include municipality level guidelines for the selection and evaluation of vector control options.
- Strengthen peripheral mechanisms (e.g. community participation, decentralised funding) for vector-borne disease control programme implementation.

Validation of effectiveness of different vector control interventions and analysis of their cost effectiveness

Past and present vector control programmes will be reviewed as to their (cost-) effectiveness and sustainability. Alternative disease and integrated vector management strategies will be designed, implemented and evaluated. In the context of comparative studies, cost-effectiveness analysis of DDT and alternatives in different settings will be conducted.

Safe Management of DDT Stockpiles

Safety measures - co-operation with organizations concerned (FAO, UNEP) to provide assistance to Member States

Based on the inventory preparation and partnership promotion under Immediate Action, this area of activity will now see action to assure safe containment of stockpiled DDT.

Evaluation will take place of security of local stockpile management in order to prevent illegal diversion. Designation of stockpile management responsibility to appropriate organizations will be pursued.

Co-operation with organizations concerned (FAO, UNEP) to review and/ or develop the criteria if there is to be disposal of a stockpile of DDT: (i.e. FAO Pesticide disposal series No.4, 1996) along the following categories:

- Materials meeting WHO criteria for use in public health.
- Materials able to be reformulated and repacked to meet WHO criteria.
- Materials which must be destroyed.

Institutional Research Network

Research on the use of alternative vector control methods and strategies should be promoted through inter-institutional co-operation. Primary research should be dedicated to:

- The development of integrated pest and vector management strategies (IPM/IVM). Joint agriculture (FAO) and public health (WHO) initiatives should be developed, including research on alternatives to pesticides and pesticide resistance management.
- Design and implement pilot integrated vector management programmes. Implementation should be based on a review of ongoing IVM/IPM programmes and locally appropriate technology.
- Conduct research on managerial support systems that facilitate the implementation of IVM.
- Conduct research on the incorporation of risk assessment and management measures into infrastructure projects.

In addition, research should be promoted on

- The cost-effectiveness of pyrethroids compared to DDT and other adulticides for indoor residual house spraying, in operational settings.
- Insecticide resistance management.
- Impregnated mosquito nets as an alternative to DDT. Such research should examine their effectiveness, sustainability, and affordability when provided free for users as a public health measure or commercially under a social marketing scheme.
- Pesticide pricing practices and patents expiration, and options for local production with a view to making alternatives affordable in the poorest countries.
- The potential and operational implications of environmental management for malaria reduction in urban and rural areas.
- The impact of selective biological control agents on disease vectors (e.g., applicability of recent positive results with fish in Karnataka, India).
- Social and behavioral research on perceived needs and willingness to participate in mosquito / disease control.
- The evaluation of nuisance mosquito control as an incentive for vector control.
- The use of biological control such as *Bacillus sp.*, fungi, nematodes, copepods and botanicals in routine programs. Such research should examine their applicability and local production potential.
-

Monitoring

Human exposure to DDT - assist in the development of a global program of monitoring exposure of DDT in humans.

Under the aegis of IPCS, this area of activity will see revision, updating and standardization of protocols for analyses and data reporting.

Public health outcomes of DDT reduction - ensure that DDT reduction is not causing adverse impacts on the health status.

A number of activities are foreseen under this heading:

- Revise, update, and standardize protocols for analyses and data reporting (IPCS, leverage national technical standards).
- Assist countries in monitoring transmission indicators in locations where DDT is being reduced (WHO Regional Offices, ministries of health).
- Assist countries in developing the capacity for rapid analysis of data collected in the monitoring programme.

Monitor the efficacy and appropriateness of DDT in areas where it continues to be used. Ensure that continuing the use of DDT is bringing positive public health gains.

WHO, together with ministries of health and where appropriate the Secretariat of the POPs Convention, will work towards the development of a comprehensive approach to evaluating the use of DDT for vector-borne disease control, including:

- A DDT guidance manual based on existing WHO guidelines for appropriate use of DDT in public health.
- Dissemination of this manual through national disease control capacity building programmes.
- Training exercises to teach public health personnel how to educate others on the use of the guidance manual as part of vector-borne disease capacity building.
- Compliance of national governments, as required by the Convention to report public health uses of DDT, preferably in advance of the use although this is not prescribed by the Convention.
- Audit national proposals for use of DDT for consistency with the guidance manual and identify opportunities to introduce alternative strategies for the control of vector-borne diseases.

Monitor efficacy and appropriateness of alternatives to DDT, including IVM.

Firstly, this activity will ensure that information is gathered on the performance of DDT alternatives, in order to make decisions on whether to substitute DDT with these alternatives. It will further provide assistance in the development of standard methods for governments to document the cost of deploying alternatives, disseminate these costing methods through national malaria control capacity building programmes, include training exercises to teach trainers how to educate

others on the use of costing methods, as part of vector-borne disease control capacity building, and finally, collect information on the cost increment of alternatives (*i.e.* the cost margin over and above the cost of DDT), for purposes of subsidizing the cost increment through a financial mechanism.

Advocacy

Develop methods for a full economic evaluation of the impact of the reduction or elimination of DDT use on malaria, including potential mortality and morbidity.

Communicate with industry to promote further collaboration in the area of IVM.

LONG-TERM ACTION

Country Needs Assessment

Capacity building needed to promote, utilise and evaluate alternatives for vector control

This will entail the strengthening of both institutions responsible for implementing and evaluating integrated disease programs and of country epidemiological and managerial information systems.

Validation of effectiveness of different vector control interventions and analysis of their cost-effectiveness

Studies on cost-effectiveness of alternatives to DDT will be continued and the applicability and reproducibility of alternative strategies to other locations, regions, and under different eco-epidemiological situations will be determined.

Institutional Research Network

Evaluate integrated vector management schemes. Compare their cost-effectiveness and sustainability with single method approaches

Advocacy

Expediently disseminate ongoing results of the WHO Action Plan to all interested parties. In particular, distribute the scientific results of alternative strategy implementation and IVM projects

REFERENCES

WHO, 1995. Vector control for malaria and other mosquito-borne diseases. Report of a WHO Study Group, *WHO Technical Report Series 857*, World Health Organization, Geneva

WHO, 2000. Twentieth report of the WHO Expert Committee on Malaria, *WHO Technical Report Series 892*, World Health Organization, Geneva

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Annex 1

FIFTIETH WORLD HEALTH ASSEMBLY
GENEVA 5-14 MAY 1997

**Resolution 50.13 Promotion of Chemical Safety, with special attention to
Persistent Organic Pollutants.**

The Fiftieth World Health Assembly,

Having considered the report of the Director-General on persistent organic pollutants;

Recalling resolutions WHA30.47, WHA31.28 and EB63.R19 on the evaluation of the effects of chemicals on health, and resolutions EB73.R10 and WHA45.32 on the International Programme on Chemical Safety;

Noting that the Director-General established in May 1996 a steering committee on sound management of chemicals to coordinate activities related to chemical safety;

Noting that the Memorandum of Understanding between UNEP, ILO and WHO concerning collaboration in the International Programme on Chemical Safety was renewed in 1996;

Noting that, in response to the call of the United Nations Conference on Environment and Development (UNCED) for improved international cooperation on sound management of chemicals, an Inter-Organization Programme for the Sound Management of Chemicals was established in 1995 with six participating organizations (UNEP, ILO, FAO, WHO, UNIDO and OECD) and that WHO is the administering organization;

Noting that, in response to a recommendation made at UNCED and to resolution WHA46.20, an intergovernmental forum on chemical safety was established in 1994 with WHO as the host agency,

1. ENDORSES the recommendation of the Intergovernmental Forum on Chemical Safety to the World Health Assembly on persistent organic pollutants, as presented in the report of the Director-General;

2. CALLS UPON Member States:

- (1) to involve appropriate health officials in national efforts to follow up and implement decisions of the UNEP and WHO governing bodies relating to the currently identified persistent organic pollutants;
- (2) to ensure that scientific assessment of risks to health and the environment is the basis for the management of chemical risk;
- (3) to continue efforts to establish or reinforce national coordinating mechanisms for chemical safety, involving all responsible authorities as well as non-governmental organizations concerned;

- (2) to ensure that scientific assessment of risks to health and the environment is the basis for the management of chemical risk;
- (3) to continue efforts to establish or reinforce national coordinating mechanisms for chemical safety, involving all responsible authorities as well as non-governmental organizations concerned;
- (4) to take steps to reduce reliance on insecticides for control of vector-borne diseases through promotion of integrated pest management approaches in accordance with WHO guidelines, and through support for the development and adaptation of viable alternative methods of disease vector control;
- (5) to establish or strengthen governmental mechanisms to provide information on the levels and sources of chemical contaminants in all media, and in particular in food, as well as on the levels of exposure of the populations;
- (6) to ensure that the use of DDT is authorized by governments for public health purposes only, and that, in those instances, such use is limited to government-authorized programmes that take an integrated approach and that strong steps are taken to ensure that there is no diversion of DDT to entities in the private sector;
- (7) to revitalize measures for training and for increasing public awareness in collaboration with intergovernmental and nongovernmental organizations, in order to prevent poisonings by chemicals and, in particular, pesticides;

3. REQUESTS the Director-General:

- (1) to participate actively in the intergovernmental negotiating committees on the currently identified persistent organic pollutants, in the drafting of a legally binding instrument for the "prior informed consent" procedure, and in other intergovernmental meetings on issues requiring health expertise, in particular those relating to the use of pesticides for vector control, in order to ensure that international commitments on hazardous chemicals are realistic and effective and that they protect human health and the environment;
- (2) to support research on integrated approaches to the control of vector-borne diseases, including environmental management, and involving appropriate WHO collaborating centres in this effort;
- (3) to continue to support the acceleration and expansion of WHO's activities for the assessment of chemicals risks as a basis for national decision-making on its management, including the joint FAO/WHO programmes on food additives and contaminants and veterinary drug residues and on pesticide residues;
- (4) to cooperate with Member States in facilitating the exchange of information on chemicals utilizing modern technology, especially in the collection and provision of reliable and comparable data, in particular from developing countries, on human exposure, incidents of poisonings and other adverse health effects;

- (5) to take necessary steps to reinforce WHO's leadership in undertaking risk assessment as a basis for tackling high-priority problems as they emerge, and in promoting and coordinating related research, for example, on potential endocrine-related health effects of exposure to chemicals and on possible causal links with cancer and reproductive, neurological and immunological disorders;
- (6) to continue efforts to enhance technical cooperation with Member States for the determination of their capability-building needs, and for the implementation of programmes for the management of chemicals risk, in collaboration with participants in the Inter-organization Programme for the Sound Management of Chemicals and with other organizations;
- (7) to report on the outcome of the deliberations at the Health Assembly to the UNEP Governing Council;
- (8) to report to a future Health Assembly on progress in implementing this resolution.

Annex 2

REPORT OF AN EXPERT CONSULTATION ON THE IMPLEMENTATION OF WHA50.13, WITH SPECIAL REFERENCE TO THE REDUCTION IN RELIANCE OF VECTOR CONTROL PROGRAMMES ON DDT

Geneva, 16-18 June 1999

Background

In May 1997, the World Health Assembly (WHA) adopted Resolution 50.13 on "Promotion of chemical safety, with special attention to persistent organic pollutants". The Resolution called upon Member States to, *inter alia*,

- involve appropriate health officials in national efforts to follow-up and implement decisions of the UNEP and WHO governing bodies relating to the currently identified persistent organic pollutants;
- take steps to reduce reliance on insecticides for control of vector-borne diseases through promotion of integrated pest management approaches in accordance with WHO guidelines, and through support for the development and adaptation of viable alternative methods of disease vector control;
- ensure that the use of DDT is authorized by governments for public health purposes only, and that, in those instances, such use is limited to government-authorized programmes and strong steps are taken to ensure there is no diversion of DDT to entities in the private sector.

The WHA also requested that the Director General

- participate actively in the intergovernmental negotiating committees on persistent organic pollutants.
- support research on integrated approaches to vector-borne disease control, including environmental management.

Following the first meeting of the Intergovernmental Negotiating Committee on POPs (INC-1, Montreal, 29 June-3 July 1998), WHO concluded that there was an urgent need to bring ministry of health staff responsible for malaria vector control programmes into the mainstream of the POPs discussions at the national government level. This would be a first step towards ensuring that concerns over the impact of reduction and/or elimination of reliance on DDT on malaria and its control under a future POPs treaty were tabled adequately at the POPs negotiations. At INC-1,

WHO announced that it would develop an Action Plan, that would aim at assisting Member States to generate substantial inputs on the DDT/malaria issue into the negotiations. Further, it would define WHO activities in the wake of the agreement on the convention text and WHO long-term technical assistance in concordance with the implementation of the convention.

The WHO inter-cluster working group on DDT took the lead in formulating the Action Plan. This group consists of WHO staff from the clusters of Communicable Diseases, External Relations and Governing Bodies, and Sustainable Development and Healthy Environments. The composition of the inter-cluster working group reflects the multiple concerns of the World Health Organization in relation to DDT, including:

- chemical safety - human and eco-toxicity of DDT use;
- communicable diseases control - the continued public health importance of DDT, in particular in relation to malaria;
- integrated vector control - promotion of research and development of alternatives to DDT, including environmental management.

The position of the inter-cluster working group was that the POPs negotiations should be seen as an opportunity to redirect and strengthen malaria vector control programmes. They, therefore, called for an Expert Consultation to be held on the implementation of WHA 50.13. The goal of the Expert Consultation was to make recommendations to WHO on the objectives and scope of the Action Plan and on the conditions to be met for the successful implementation of WHA 50.13.

Objectives and expected outputs of the expert consultation

Objectives

- To share selected country experiences in the use of DDT, prospects for gradually phasing out this insecticide and options for effective vector control alternatives.
- To discuss and reach consensus on the issues raised in the draft framework of the Action Plan and to identify additional issues that needed to be addressed.
- To develop the objectives of the Action Plan.
- To identify, for each objective, activities and purpose a timeframe for implementation.
- To define the roles and responsibilities of countries, WHO, international community (UN agencies, NGOs, Donors) and Industry.
- To review options for an analysis of the cost-effectiveness of DDT in public health and its alternatives.
- To make final recommendations for the implementation of WHA Resolution 50.13.

Expected outcomes

- Finalize a draft framework for WHO that incorporates additional issues raised from country presentations and from expert discussion.
- Preliminary objectives for the WHO action plan to implement the WHA Resolution 50.13.
- Activities and their timeframe for implementation drafted.

- Roles and responsibilities of countries, WHO, international community and industry defined.
- A proposal for the analysis of the cost-effectiveness of DDT in public health applications and its alternatives formulated.
- Final recommendations on the implementation of the WHA 50.13 resolution made.

Summary of the minutes of the Expert Consultation:

The Consultation was held at the World Health Organization, Geneva, from 16 to 18 June 1999. Twelve temporary advisors, seven secretariat members and seven observers on behalf of other United Nations agencies, government agencies of Member States and non-governmental organizations (NGOs) attended the Consultation. The list of participants is presented in appendix 1.

Meeting dynamics

The meeting adopted the agenda, which is presented in Appendix 2. The WHO Secretariat explained the meeting structure and purpose of the Expert Consultation. Professor W. Kilama was elected as chairman of the meeting and Dr R.H. Zimmerman as the meeting rapporteur. The Secretariat presented the specific objectives and the expected outcomes of the meeting for review. Clarification of the objectives was made with respect to a number of topics, the most important being cost-effectiveness, relative risk and time to complete action. The Executive Secretary of the International Forum on Chemical Safety reviewed WHO's involvement in the International Negotiating Committee for a legally binding instrument on POP's (Appendix 3) and the Secretariat examined the WHO 50.13 mandate to participate in the process of POP's negotiations. It was emphasized that the ministries of health had a lower representation in the INC process than did other government agencies (i.e. Ministry of Foreign Affairs) and that whatever ministry of health representation there was focused on chemical safety issues rather than on concerns of malaria control programmes.

Country presentations on the current status of the use of DDT in India and Venezuela

Three countries had been invited to present their perspective on the malaria/DDT links. They were Ethiopia, India and Venezuela. The representative from Ethiopia was unable to attend. Following are summaries of the presentations by the other two countries.

India - An historical perspective of the Indian National Anti-Malaria Programme's use of DDT was presented by its Director, Dr Shiv Lal. After early success with the control of malaria there was resurgence in the 1970s. Reasons for the resurgence differed from one part of India to another, but vector resistance to insecticides, including DDT, drug resistance, low coverage of indoor residual house spraying and administrative changes were all considered to be contributing factors to a greater or lesser extent. The use of DDT in agriculture was banned in the 1970s and DDT has been used exclusively for public health purposes since then. The impact of agricultural use of pyrethroids on mosquito vector resistance to these insecticides was not clear, but it was obvious that a monitoring programme was a first requirement. Presently, there is a yearly evaluation of DDT use in the country. The cost of DDT in India is four times less than other insecticides such as synthetic pyrethroids and malathion. There is a new initiative to phase out DDT for malaria control in India. It consists of focal use of DDT in high transmission areas,

development of alternative vector control methods and diversification of malaria control interventions. Newer technologies such as impregnated mosquito nets, and bioenvironmental methods are being tested.

Venezuela - The present malaria situation in Venezuela was presented by Lic. Molina de Fernandez. In 1998, 123,000 cases of malaria were reported in the country. Malaria was concentrated in seven states with 50% of the cases being from the southeastern state of Bolivar. Eighty-three percent of these cases were associated with agriculture and mining. Vector control strategies are determined using epidemiological and entomological information that is collected by the Rural Endemic Division of the Ministry of Health. The main vector control methods used are indoor residual house spraying and space spraying. In some states larviciding and environmental modification of the larval habitats are being used to control malaria. A reduction has occurred from DDT use in seven states to DDT use in only three. No cost data were available. Alternative control methodologies are presently being researched with the intent of gradually replacing DDT. Alternatives must be cost-effective. Resistance monitoring showed a high resistance of primary vectors to DDT and pyrethroids. Low insecticide resistance to organophosphates was shown. Venezuela reserves the right to use DDT and no clear political decision has been made on its banning.

Issues framework - the basis for the WHO Action Plan

A document on the major issues (Issues Framework) related to the development of a plan of action for the implementation of WHA 50.13 was included in the meeting documents to provide guidance to the Expert Consultation in the development of an Action Plan. The Group of Experts approved the Issues Framework as a starting point of discussion as they prepared their recommendations for the Action Plan.

It was once again stressed that the present meeting was not about toxicology or alternative methods. Reports exist on DDT and in particular malaria and DDT (WHO Technical Report 857, 1995). Others exist on alternative insecticides (WHO/CTD/WHOPES/97.2) on integrated vector management and non-insecticide methods of control (WHO Technical Report 688, 1983) and on environmental management for mosquito control (WHO Offset document 66, 1982).

DDT and the Issue Framework

The meeting discussions evolved along two interwoven threads that were raised throughout its entirety. They were

- concerns related to the definition and impact of the gradual phasing out of DDT and,
- content refinement and additions to the Issue Framework - WHO Action Plan.

Gradual phasing out of DDT- Topics of discussion ranged from whether there is any convincing evidence of DDT toxicity to humans, whether DDT for public health use leaks into the environment and to what extent, questions on management of DDT stockpiles - their use and storage -, costs vs. poverty issues, the actual impact of DDT on disease control, to whether there should be a statement of a fixed date for the elimination of DDT. The issue of precautionary principle vs. burden of proof (evidence of harm) was debated openly in the meeting. Experts agreed on several points and disagreed on several other aspects of the use of DDT in public health. Unanimous agreement was rare.

Not included in this report are issues that were discussed by the group, but for which WHO recommendations are already documented elsewhere. For example, the *Use of DDT in vector control* presented as an annex in the WHO Technical Report 857 (1993) covers the areas of public health effects, conditional use of DDT, and policy.

Most, but not all of the participants agreed on the following key issues:

- Any deadline in the POP's treaty should relate not to the phase-out of DDT, but to the date by which the financial, technical and administrative tools are in place to assure the implementation of alternatives to DDT.
- DDT reduction should not get ahead of the resources that would be available to fully replace it with effective alternatives.
- The reduction or elimination of DDT should be done with the knowledge that there should be no cost to public health. Support for countries to make a successful transition should not be at the expense of financial resources earmarked for other priority public health issues.
- A sound management system needs to be developed to monitor the process.
- DDT residual house spraying can be highly effective and a comparatively inexpensive form of malaria control, depending on the local entomological and epidemiological setting. It may or may not be the insecticide of choice or fit the needs of the country.
- Integrated vector management (IVM) as a sub-component of disease management will provide the decision-making framework for vector control including decisions on the use of DDT.
- Effective alternatives to DDT including alternative products, methods and strategies need to be urgently addressed, particularly their relative efficacy, operational costs, international pricing patterns and procurement options.

All issues were discussed and appropriate ones were incorporated into the recommendations for the WHO Action Plan. Alternatives to DDT were discussed and agreed upon by the Expert Committee. They were further defined in the Action Plan (Appendix 4).

Formulation of the WHO Action Plan

The strategy for developing the Action Plan for the reduction and /or elimination of DDT involved three principles. They were:

- Involvement of countries concerned.
- Early identification of funding mechanisms.
- Advocacy.

Also, the WHO Secretariat emphasized three important issues to consider in achieving the goals of the Action Plan. They were:

- Need for integral research and capacity-building to enable countries to introduce sustainable vector control alternatives based on a reduced reliance on pesticides,
- Exemptions for specific countries (to be listed in an annex to the Convention, based on agreed criteria) to be established in the POPs Convention and,
- Need for appropriate and timely financial and technical development aid for implementation of the Action Plan.

In addition the WHO Secretariat identified five themes of major importance for the implementation of the Action Plan. They were:

- 1) Country Needs Assessment.
- 2) Safe Management of DDT Stockpiles.
- 3) Institutional Research Networks.
- 4) Monitoring.
- 5) Advocacy.

It was agreed that the participants of the Consultation would divide into working groups, each with one of the five themes as their core topic for in-depth discussion. Working groups would make recommendations, present results to the plenary, which would then incorporate any changes into the Issues Framework document - to become the WHO Action Plan.

Key subject matter discussed by the Expert Consultation regarding the development of the Action Plan included:

- Partnership development is needed to effectively carry out the Action Plan. For example, FAO has offered to share data on DDT stockpiles worldwide, including procurement procedures that prevent stockpiles of obsolete pesticides from accumulating.
- There is a need to go beyond MOHs and include other public sectors and organizations in the development of malaria control programmes.
- A clear definition of the role of partners or expert institutions (i.e., FAO, CDC and USEPA) in the process of reducing and/or eliminating DDT needs to be developed.
- A definition of integrated vector management needs to be shaped that does not exclude adulticides, but rationally approaches the selection of methods, products and strategies and considers sustainability issues associated with vector control.
- A better understanding of the country situations where DDT is presently being used and those that presently reserve the right to use DDT is needed.
- The position and guidelines for the use of DDT during epidemics should be clarified.
- One will need to consider situation specific exemptions as possible alternatives to country specific exemptions when the Action Plan is developed.
- All situation assessments should include an analysis of the epidemiological conditions that lead to the use of DDT.
- The use of epidemiological stratification as a tool to minimize and target the use of DDT is necessary.
- The financial, technical and administrative barriers that prevent a move away from the reliance on DDT for vector control should be defined.
- There should be no phase out of DDT without alternatives in place that are effective, locally appropriate, sustainable, available and affordable.
- A public health network related to WHA 50.13 and DDT needs to be developed. The CGIAR network was mentioned as a good example in agriculture.

- There is a need for IVM case studies, including joint research projects with agriculture on the development of integrated pest management strategies where agriculture pests and human disease vectors overlap.
- Advocacy should be encouraged at all levels of decision making.
- Requirements for safeguards to prevent DDT leakage into other sectors needs to be defined and put into place as necessary.

Cost Analysis of alternatives, with special reference to insecticides

An important topic of discussion was the cost of DDT vs. other adulticides in public health. DDT is often claimed to be cheaper to buy and operational costs are low. Dr K. Walker presented a cost analysis and comparison of insecticides for indoor vector control. Eight of the 14 insecticides that WHOPES/WHO has recommended for alternatives to DDT for indoor residual house spraying were compared (WHO/CTD/WHOPES/97.2, 1997). Although DDT was at the low end of the cost scale there was some overlap with other insecticides. Even for an individual insecticide there was variation in cost depending on country. Operational costs were influenced by many other factors including total surface sprayed, number of cycles per year, and equipment wear. Insecticide resistance to alternatives and DDT were also influencing choice of insecticide. It was agreed that this issue needed to be covered in greater detail and the results needed to be disseminated to affected WHO Member States as soon as available.

Note: The presentation by Dr Walker was updated and published (*Med. Vet. Entomol.*, 14:345-54, 2000).

Objectives of the Action Plan

The first step taken by the consultation members was to develop the objectives. The themes proposed by WHO in the Issues Framework mentioned above were to be the objective headings of the Action Plan's objectives. The objectives are listed below.

A. Country Needs Assessment

- 1) Ensure that health concerns are mainstreamed in the POPs negotiations in order to prevent any negative health impact as a result of the Convention's regulations concerning DDT.
- 2) Provide a framework for needs assessment in countries enabling the transition towards reduced reliance on insecticides, while maintaining, and, if possible, improving effective vector control.
- 3) Provide incentives and leverage funds for strengthening the capacity of governments to promote, utilise, and evaluate alternatives for vector control.

B. Safe Management of DDT Stockpiles

- 1) Prevent damage to the environment and minimise risk to human health.
- 2) Develop criteria for decision making on options to use, reformulate, repack, or dispose of DDT stocks.

- 3) Establish a reliable and verifiable management process that clearly defines the responsibility for stockpile management.

C. Institutional Research Network

- 1) Formulate joint research projects of health and agriculture scientist/research institutions on the development of integrated pest and vector management strategies.
- 2) Further develop, test and/or implement sustainable, environmentally safe and cost-effective alternatives to the use of DDT for vector control.

D. Monitoring

- 1) Assist Member States in programming, monitoring and reporting information on the following DDT related issues,
 - a) Human exposure to DDT.
 - b) Public health outcomes of DDT reduction.
 - c) Production, storage and usage of DDT.
 - d) Efficacy and appropriateness of DDT in areas where it continues to be used.
 - e) Efficacy and appropriateness of alternatives to DDT, including integrated vector management (IVM).

E. Advocacy

- 1) Provide background information on the POP's agreement and on DDT to the public health sector.
- 2) Ensure that the health sector's views are known to the delegations to the POPs negotiations.

The final steps were to develop the activities for each objective, a timetable for action, and a list of potential partnerships.

The outcomes of the working groups were presented in the plenary, discussed, amended and approved.

Appendix 1

LIST OF PARTICIPANTS

Temporary advisors

- Dr A. Attaran
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- Professor C. Curtis
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- Professor M. Maroni
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Appendix 2

PROGRAMME OF WORK

Wednesday, 16 June

- 09:00 **Agenda item 1**
Opening of the meeting and address by Dr David Nabarro, Manager, Roll Back Malaria
- Agenda item 2**
Introduction participants, secretariat members and observers
- Agenda item 3**
Election of Chair and Rapporteur
- 09:15 **Agenda item 4**
Approval of proposed agenda and programme of work
- 09:20 **Agenda item 5**
Objectives and expected outputs of the consultation - Maged Younes
- 09:30 Refreshments
- 09:50 **Agenda item 6**
Review of the Intergovernmental negotiating process on POPs International Action on Persistent Organic Pollutants (POPs) including DDT - Judy Stober
- 10:10 **Agenda item 6** (continued)
WHO action related to the Intergovernmental Negotiations on POPs - Robert Bos
- 10:30 **Agenda item 7**
Country perspectives on the nature and magnitude of DDT use for public health purposes and the implications of its possible phasing out
- 10:30 India- Shiv Lal
- 11:00 Venezuela - Darjaniva Molina
- 11:30 **Agenda item 8**
Review of the Issues Framework as a basis for the WHO Action Plan
Introduction of the issues framework document - Robert Bos
- Discussion on the scope and completeness of the issues framework under review from a global perspective and on the relevance of the issues framework from the country perspective.
- 12:00 Lunch
- 13:30 **Agenda item 8** (continued)
Issue number 1: Needs of WHO Member States
- 14:15 Elements for the Action Plan
- 15:00 Refreshments
- 15:15 **Agenda item 8** (continued)
Issue number 2: Safe management of DDT stockpiles
- 16:00 Elements for the Action Plan

16:45 **Agenda item 9**
Partnerships
 Perspectives of international agencies (FAO, UNEP)
 Perspectives of government agencies (EPA)
 NGO perspectives (WWF, PSR)

17:30 Closure of the first day's session

Thursday, 17 June

09:00 **Agenda item 8** (continued)
Review of the Issues Framework as a basis for the WHO Action Plan
Issue number 3: Institutional Research Network

09:45 Elements for the Action Plan

10:30 Refreshments

10:45 **Agenda item 8** (continued)
Review of the Issues Framework as a basis for the WHO Action Plan
Issues numbers 4 and 5: Monitoring and advocacy

11:30 Elements for the Action Plan

12:15 Lunch

13:45 **Agenda item 8** (continued)
Review of the Issues Framework as a basis for the WHO Action Plan
Writing Groups on the Action Plan components

15:00 Refreshments

15:20 Writing groups (continued)

17:30 Submission of draft texts to the rapporteur and closure of the second day's session

Friday, 18 June

09:00 **Agenda item 10**
Cost analysis of alternatives, with special reference to alternative pesticides
A joint WHO/EPA initiative - Kathleen Walker

10:00 Refreshments

10:15 **Agenda item 11**
Conclusions and recommendations towards the completion of the draft Action Plan

11:30 **Agenda Item 12**
Other business

12:00 **Agenda item 13**
Closure of the consultation

Appendix 3

International Actions on Persistent Organic Pollutants including DDT *An Overview*

Dr J. Stober

The risks posed by persistent organic pollutants (POPs) have become of increasing concern to many countries, resulting in actions to protect human health and the environment being taken or proposed at the national level, the regional level¹ and, more recently, in international initiatives. The following provides an overview of the major events and efforts leading up to the establishment of an Intergovernmental Negotiating Committee for a legally binding instrument on POPs. It lists the work and involvement of WHO.

1993	<p>WHO Study Group on Vector Control for Malaria and Other Mosquito-borne Diseases Annex 1 of the report of this meeting addresses the DDT issue (<i>Vector control for malaria and other mosquito-borne diseases</i>, WHO Technical Report Series 857)</p>
May 1995	<p>UNEP Governing Council Decision 18/32 Persistent Organic Pollutants called for an expeditious assessment process², initially beginning with 12 POPs (PCBs, dioxins, furans, aldrin, dieldrin, DDT, endrin, chlordane, hexachlorobenzene, mirex, toxaphene and heptachlor). Based on the results of this process, the IFCS was invited to develop recommendations and information on international action, including any information that would be needed for a possible decision on an appropriate international legal mechanism on POPs, to be considered at the 1997 sessions of the UNEP Governing Council and the World Health Assembly (WHA).</p>
June 1995	<p>International Experts Meeting on Persistent Organic Pollutants: Toward Global Action, jointly organized by Canada and the Philippines. Meeting made a number of statements including that domestic regulatory arrangements are not effective in managing the adverse global impacts of POPs.</p>
November 1995	<p>UNEP Intergovernmental Conference to Adopt a Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (Washington, D.C.) - <i>source areas addressed included POPs</i> IPCS - Persistent Organic Pollutants, An Assessment Report on DDT, Aldrin, Dieldrin, Endrin, Chlordane, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene, Polychlorinated biphenyls, Dioxins and Furans prepared by L. Ritter, consultant (PCS/95.13) Report was submitted to the Conference as a basic review of chemistry and toxicology on the initial list of 12 POPs ; the report was subsequently submitted to the IFCS Intersessional Group Meeting (ISG2), March 1996, Canberra</p>

¹ . the UN ECE Convention on Long Range Transboundary Air Pollution (LRTAP), the North American Commission for Environmental Cooperation, the Arctic Environmental Protection Strategy, and the Barcelona Resolution on the Environment and Sustainable Development in the Mediterranean Basin

²Request direct to the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), International Programme on Chemical Safety (IPCS), and Intergovernmental Forum on Chemical Safety (IFCS)

	<p>Countries adopted a Global Programme of Action for the Protection of the Marine Environment which, in part: recognized the importance of controlling releases of POPs; specified actions that should be taken on POPs; and encouraged countries to participate actively in implementing UNEP GC 18/32. The following paragraph is from the <i>Washington Declaration on Protection of the Marine Environment from Land-based Activities</i> (November 2, 1995)</p> <p><i>"17. Acting to develop, in accordance with the provisions of the Global Programme of Action, a global, legally binding instrument for the reduction and/or elimination of emissions, discharges and, where appropriate, the elimination of the manufacture and use of the persistent organic pollutants identified in decision 18/32 of the Governing council of the United Nations Environment Programme. The nature of the obligations undertaken must be developed recognizing the special circumstances of countries in need of assistance. Particular attention should be devoted to the potential need for the continued use of certain persistent organic pollutants to safeguard human health, sustain food production and to alleviate poverty in the absence of alternatives and the difficulty of acquiring substitutes and transferring of technology for the development and/or production of those substitutes;</i></p>
March 1996	<p>ISG2 - second meeting of the Intersessional Group of the IFCS (Canberra, Australia) established an IFCS Working Group on POPS (an international multistakeholder group was established which included representatives from governments, industry, public interest groups, intergovernmental organizations and scientific organizations from around the world) and agreed on a work plan to complete the assessment process and develop recommendations and international action on POPS including any information that would be needed for a possible decision on an appropriate international legal mechanism on POPS as called for in UNEP GC 18/32.</p>
April 1996	<p>WHO Steering Committee for the Sound Management of Chemicals³</p> <p>The UNEP GC Decision 18/32 on POPs and subsequent IFCS efforts presented a policy issue for WHO; recognized that there was confusion and lack of knowledge of WHO's policy toward the use of DDT for disease vector control. An inter-programme technical group was convened to prepare an abstract and paper for the IFCS Experts Meeting on POPs to be held to assess the socio-economic aspects and alternatives concerning the list of initial substances.</p>
18 April-3 May 1996	<p>Fourth Session of the Commission on Sustainable Development (New York)</p> <p>In accordance with the Global Programme of Action, recognised the intention of the governments to take action to develop a global legally binding instrument on POPs.</p>
June 1996	<p>IFCS Experts Meeting on Persistent Organic Pollutants, Manila, co-hosted by the Republic of the Philippines and Canada [Final Report: Persistent Organic Pollutants: Considerations for Global Action, IFCS/Exp.POPs./Report.1, 20 June 1997] examined the sources, benefits, risks and other considerations relevant to production and use; evaluated the availability, including costs and effectiveness, of preferable substitutes, where applicable; as well as socio-economic issues associated with production and use of POPs and with preferable substitute products and technologies.</p> <p>WHO contributed paper: <i>Persistent Organic Pollutants (IFCS/EXP.POPs.12, 6 June 1996).</i></p>
June 1996	<p>IFCS Working Group on POPS [Final Report: IFCS/WG.POPs/Report.1, 1 July 1996] Met, in an open forum, in Manila to review the results of the IFCS Experts Meeting, to assess realistic response strategies, policies and mechanisms for reducing and/or eliminating</p>

³Established by the Director-general in March 1992; membership includes all headquarters programme offices with chemical safety components and IARC

	<p>emissions, discharges and losses of POPs, and to develop a report containing information and recommendations on international action, to be considered at the 1997 sessions of the UNEP GC and the WHA. The primary conclusion was that available information is sufficient to demonstrate the need for international action. IFCS recommended that UNEP GC and WHA initiate immediate international action to protect human health and the environment through measures which will reduce and/or eliminate the emissions and discharges of the 12 specified POPs and, where appropriate, eliminate production and subsequently the remaining use of those POPs that are intentionally produced. It was noted that socio-economic factors should be addressed in developing and implementing international action. The following are a number of the relevant key points from the deliberations and conclusions of the IFCS:</p> <ul style="list-style-type: none"> • IFCS concluded that there are alternatives (potentially including indigenous methods) for all the pesticide POPs, although at present the applicability of these alternatives for some uses may be limited in some parts of the world or in some situations. IFCS recommended that the availability of information and expertise on alternatives to POPs should be improved through information exchange and education programmes. (ref: para 31) • IFCS recommended that guidance on the selection of replacements for POPs pesticides should be developed; the guidance should cover non-chemical as well as chemical alternatives and include advice on the factors to be considered in choosing alternatives and sources of information. A proposed alternative should be considered inappropriate by national or regional governments if national or regional conditions make it unlikely that the alternative can be managed in ways that avoid significant injury to workers, local communities or the environment. (ref: para 33) • IFCS concluded that efforts should be taken to reduce the reliance on DDT for vector control and efforts should be directed toward making viable alternatives readily available, including indigenous medicinal plants, in order to phase out the use of DDT. However, DDT should only be used in the context of a fully integrated approach for vector control (e.g., incorporating sanitation, public health programs, environmental management, etc.) and in accordance with related WHO Guidelines. (ref: para 34) • IFCS recommended that UNEP GC invite UNEP to prepare for and convene, together with other relevant international organisations, an intergovernmental negotiating committee (INC), with a mandate to: <ul style="list-style-type: none"> (a) prepare an international legally binding instrument for implementing international action, initially beginning with the 12 specified POPs; (b) take into account the conclusions and recommendations contained in the report of the IFCS <i>ad hoc</i> Working Group on POPs; • IFCS recommended that an expert group be established at the first meeting of the INC to develop expeditiously science-based criteria and a procedure for identifying additional POPs candidates for future international action. <p>The Final Report Of the IFCS Working Group including its recommendations was submitted to UNEP and WHO in September 1996.</p>
<p>July 1996</p>	<p>WHO Steering Committee for the Sound Management of Chemicals</p> <p>Informed the Regional Offices on the Final Report and recommendations of the IFCS Working Group on POPs and agreed to prepare a report and present the item to the WHO Executive Board for discussion in January 1997.</p>
<p>December 1996</p>	<p>UN General Assembly adopted a resolution (A/C.2/51/L.2) on institutional arrangements for the implementation of the Global Programme of Action which endorsed the <i>Washington Declaration</i> and called on the various UN bodies concerned to take specific actions at the</p>

	next meeting of their governing bodies.
January 1997	<p>WHO Executive Board</p> <p>Recommended that the WHA endorse the recommendations of the IFCS on POPs and agreed on a resolution for consideration by the WHA on "Promotion of chemical safety with special attention to persistent organic pollutants." An aim was to ensure that WHO participated in the intergovernmental negotiations relating to POPs, with specific reference to DDT, in view of the experience it had acquired with the use of that compound in the control of malaria and other diseases. More generally, WHO must have a voice in any intergovernmental negotiations on environmental subjects requiring health expertise.</p>
February 1997	<p>UNEP Governing Council Decision 19/13C</p> <ul style="list-style-type: none"> • endorsed the conclusions and recommendations of the IFCS Working group on POPs • requested UNEP to convene an intergovernmental negotiating committee (INC) to prepare, preferably by 2000, a global legally binding instrument for implementing international action on POPs. • urged governments to initiate action on the IFCS Working Group recommendations and to provide technical assistance, capacity building and funding to enable developing countries and countries with economies in transition to take appropriate action on POPs. <p>UNEP was requested to initiate a number of immediate actions on POPs.</p>
May 1997	<p>The World Health Assembly adopted Resolution 50/13 on "Promotion of chemical safety with special attention to persistent organic pollutants." that:</p> <ul style="list-style-type: none"> • ENDORSES the recommendations made by the Intergovernmental Forum on Chemical Safety to the World Health Assembly on persistent organic pollutants • CALLS UPON Member States: <ul style="list-style-type: none"> (1) to involve appropriate health officials in national efforts to follow-up and implement decisions of the UNEP and WHO governing bodies relating to persistent organic pollutants; (4) to take steps to reduce the reliance on insecticides for vector-borne disease control through promotion of integrated pest management approaches in accordance with WHO guidelines and through support for the development and adaptation of viable alternative methods of disease vector control; (6) to ensure that the use of DDT is authorized by governments for public health purposes only, and that, in those instances, such use is limited to government-authorized programmes and strong steps are taken to ensure there is no diversion of DDT to entities in the private-sector; • REQUESTS the Director General: <ul style="list-style-type: none"> (1) to participate actively in the intergovernmental negotiating committees on persistent organic pollutants. (2) to support research on integrated approaches to vector borne disease control, including environmental management;
July 1997	<p>WHO Steering Committee for the Sound Management of Chemicals</p> <p>Working Group comprised of all WHO programmes concerned was constituted to carry out a full review of all issues concerned and develop a work plan to respond to WHA 50/13 in particular the elements concerning vector control and DDT.</p>
June 1998	<p>UNECE Convention on Long Range Transboundary Air Pollution (LRTAP) Protocol on POPs adopted by a special session of the Executive Body for the Convention on 24 June 1998 in Aarhus, Denmark</p>

	<p>Protocol includes DDT in Annex I & II:</p> <p>Annex I - Substances scheduled for elimination</p> <p>Production:</p> <ol style="list-style-type: none"> 1. Elimination production within one year of consensus by the Parties that suitable alternatives to DDT are available for public health protection from diseases such as malaria and encephalitis. 2. With a view to eliminating the production of DDT at the earliest opportunity, the Parties shall, no later than one year after the date of entry into force of the present Protocol and periodically thereafter as necessary, and in consultation with the World Health Organization, the Food and Agriculture Organization of the United Nations and the United Nations Environment Programme, review the availability and feasibility of alternatives and, as appropriate, promote the commercialization of safer and economically viable alternatives to DDT. <p>Annex II - Substance scheduled for restrictions on use</p> <p>Restricted to uses:</p> <ol style="list-style-type: none"> 1. For public health protection from diseases such as malaria encephalitis. 2. As a chemical intermediate to produce Dicofol. <p>Conditions:</p> <ol style="list-style-type: none"> 1. Use allowed only as a component of an integrated pest management strategy and only to the extent necessary and only until one year after the date of the elimination of production in accordance with annex I. 2. Such use shall be reassessed no later than two years after the date of entry into force of the present Protocol. <p><i>Note:</i> as of 8 May 1998 the LRTAP convention had been ratified by 43 parties. As of 1 February 1999 36 parties had signed the POPs Protocol and 1 government had ratified it.</p>
29 June - 3 July 1998	<p>Intergovernmental Negotiating Committee for an Internationally Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants - <i>First Session</i></p> <p>WHO information paper: DDT - Proposal for an International Public Health Approach: Effective, Integrated Vector Control Programmes and Development of a Plan of Action for the Reduction of Reliance on DDT for Public Health - Contribution to the International Effort on POPs by the World Health Organization.</p>
October 1998	<p>WHO 20th Expert Committee on Malaria Control</p> <p>Recommendations made concerning the issue of DDT use for malaria vector control in the context of the POPs negotiations.</p>
25-29 January 1999	<p>Intergovernmental Negotiating Committee for an Internationally Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants - <i>Second Session</i></p> <p>WHO information paper: Progress Report The Development of a Plan of Action for the Reduction of Reliance on DDT for Public Health - Contribution to the International Effort on POPs by the World Health Organization.</p>
21 May 1999	<p>Roll Back Malaria Resolution adopted by the 52nd World Health Assembly. In the discussions, delegations from the US, New Zealand and Zimbabwe referred to the DDT issue. US delegation requested progress report on the WHO Action Plan at the WHO</p>

	Executive Board meeting in January 2000
16-18 June 1999	WHO Expert Consultation on The WHO Action Plan for the Gradual Phasing Out of DDT for Malaria Vector Control, Geneva
6-11 September 1999	Intergovernmental Negotiating Committee for an Internationally Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants - <i>Third Session</i>, Geneva
[February 2000] <i>anticipated</i>	Intergovernmental Negotiating Committee for an Internationally Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants - <i>Fourth Session</i>
[September 2000] <i>anticipated</i>	Intergovernmental Negotiating Committee for an Internationally Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants - <i>Fifth Session</i>