

**North American Task Force for Implementing the NARAP on DDT**

**North American Regional Action Plan on DDT  
Status and Closure Report**

**November 2005**

Prepared by Mario Caballero Ramírez for the  
North American Commission for Environmental Cooperation

## CONTENTS

<b>Executive Summary</b> .....	<b>iv</b>
<b>Acronyms</b> .....	<b>vii</b>
<b>1 Background</b> .....	<b>8</b>
1.1 Purpose of this Document .....	8
1.2 Background of the NARAP on DDT .....	8
1.3 Justification for the development of the NARAP on DDT .....	8
1.4 Objectives and Goals of the NARAP on DDT.....	9
<b>2 History of Actions under the NARAP on DDT</b> .....	<b>9</b>
2.1 DDT Task Force.....	9
2.2 Context of the DDT Task Force Work.....	10
2.3 CEC Support in Mexico .....	10
<b>3 Progress in Achievement of the Goals of the NARAP on DDT</b> .....	<b>11</b>
Goal 3.1 DDT Used in Mexico to Control Malaria Reduced by 80 Percent within Five Years.....	12
Goal 3.2 Assessment of Illegal Uses in Agriculture .....	12
Goal 3.3 Regional Collaboration Strategies.....	12
Goal 3.4 Greater International Cooperation to Accelerate the Implementation of Controls on DDT Production, Exportation and Use .....	13
<b>4 Current Status of Activities under the NARAP on DDT</b> .....	<b>13</b>
4.1 Alternatives for Vector Control .....	14
4.2 Public Health.....	14
4.3 Public Participation and Educational Activities.....	14
4.4 Industrial Sector .....	15
4.5 Law Enforcement .....	15
4.6 Waste Management.....	16
4.7 Integration of International Activities .....	16
4.8 Implementation .....	17
4.9 Reports .....	17
<b>5 Recommendations</b> .....	<b>17</b>
<b>Appendices</b> .....	<b>21</b>
<b>Appendix A – History of DDT TF Membership</b> .....	<b>22</b>
<b>Appendix B – Goals and Achievements under the NARAP on DDT</b> .....	<b>26</b>
<b>Appendix C – CEC Projects Supporting Compliance with the DDT NARAP</b> .....	<b>27</b>
<b>Appendix D – Progress on the Activities of the NARAP on DDT July 2005</b> .....	<b>30</b>
<b>Appendix E – Mexico’s DDT stockpile inventory (June 2005)</b> .....	<b>32</b>
<b>Appendix F – Coordination Meetings under the DDT-GEF Program</b> .....	<b>34</b>
<b>Appendix G – Summary Report on DDT Implementation Task Force Activities in 1999</b> .....	<b>36</b>



## **Acknowledgements**

The Commission for Environmental Cooperation, and the author of this report would like to thank the following people for their contributions to the development and finalization of this report. Dr. Jorge Méndez Galván, Enfermedades Transmitidas por Vectores, SALUD, Dr. Héctor Olguín Bernal, SALUD, Dr. Victor Hugo Borja Aburto, Centro Nacional de Salud Ambiental, Dr. Ángel Betanzos, Enfermedades Transmitidas por Vectores, Gustavo Sánchez, Enfermedades Transmitidas por Vectores, Keith Chanon, US Environmental Protection Agency, Mr. Luke Trip, Program Manager SMOC, Mr. Douglas Kirk, CEC, Mr. José Manuel Galindo, Consultant to the CEC, and Dr. Joanne O'Reilly, Consultant to the CEC. Their efforts and contributions are greatly appreciated.

## Executive Summary

### Background

In October 1995, under the auspices of the North American Agreement on Environmental Cooperation signed by Canada, Mexico and the United States as a side agreement to the North American Free Trade Agreement (NAFTA), the environment ministers of the three countries adopted Resolution 95–05, on cooperation to achieve environmentally sound management of chemicals in North America and an equal level of protection for all the region's inhabitants and ecosystems.

In order to put the resolution into practice, it was agreed to design and implement regional action plans to reduce the use and the release into the environment of certain persistent, toxic and bioaccumulative substances and, where possible, to eliminate them entirely. The first of these was DDT.

This report summarizes actions taken and progress to date in implementing the North American Regional Action Plan on DDT (NARAP on DDT). The report highlights outstanding issues and suggests a path forward for addressing these issues as the DDT Task Force activities cease.

The objective of the NARAP on DDT was to reduce human and environmental exposure to DDT and its metabolites in the North American region.

The four main goals were to:

- 1) reduce DDT use in Mexico by 80 percent within five years;
- 2) eliminate suspected illegal agricultural uses of DDT;
- 3) seek regional collaborative strategies to minimize the movement of malaria-infected populations across borders and to reduce illegal DDT imports; and
- 4) increase cooperation in international fora to address DDT production, export and use.

### History of Actions

Mexico has seen great progress on the elimination of DDT, thanks in large part to the NARAP on DDT. As was the case for other regional plans on different chemicals, this NARAP has served as a guide for governmental actions and research.

Mexico's Secretariat of Health (*Secretaría de Salud*—SS), acting through by the National Center for Epidemiological Surveillance and Disease Control (*Centro Nacional de Vigilancia Epidemiológica y Control de Enfermedades*—CENAVECE), administers the Program for the Prevention and Control of Vector-Transmitted Diseases (*Programa de Prevención y Control de Enfermedades Transmitidas por Vector*—PPCV) to develop and apply alternative methods to DDT use in the control of malaria. The program featured three key elements:

- a) identification of malarial families or foci;
- b) Single Dose Treatment; and
- c) community participation in the elimination of anopheline (carriers of malaria) mosquito breeding areas.

### Progress in Achieving Goals

The cooperative actions of Canada, the US and Mexico have enabled the SS to cease DDT use completely in the year 2000—two years ahead of schedule for compliance with the principal NARAP goal of an 80 percent reduction in DDT use by 2002.

In addition, an analysis of Mexico's DDT situation and that of the region (Mexico and Central America) was conducted and which provided standardized information from the eight countries on production, importation and

exportation of DDT, as well as on historic trends in malaria infection in each country. A regional action program (PRADDT) was developed to allow Mexico's experiences with DDT phase-out and control of malaria vectors to be shared with the seven Central American countries. Scientific expertise and financial contributions from Canada and the United States have been instrumental in carrying out these projects.

## **Recommendations**

The Task Force on DDT proposes the following recommendations to the Sound Management of Chemicals Working Group in order to facilitate close out of this NARAP:

- The North American Task Force for Implementing the NARAP on DDT shall be disbanded while lead members of the DDT Task Force, or their designates, from each country will act as country focal points and be available to provide the Secretariat with any pertinent changes or progress made, on an annual basis, including update information on domestic programs.
- The DDT Task Force recommends that the SMOC Working Group contact the North American Working Group on Environmental Enforcement and Compliance Cooperation (EWG) to request their cooperation in determining whether there is significant potential for illegal trade of DDT in Mexico, and to propose actions to be taken to strengthen the monitoring of these activities. The Enforcement Working Group will be encouraged to also address any discovery of illegal trade and report this information back to the SMOC Working Group and their national designates.
- Regarding auditing, verification and environmental monitoring of DDT, the DDT Task Force suggests that the SMOC Working Group instruct the CEC Secretariat to incorporate environmental monitoring and assessment needs for DDT into the Environmental Monitoring and Assessment Project of the Information for Decision Making Priority.
- It is also recommended that the Parties continue in an appropriate role in advising and following up on the ongoing actions of the PRADDT until its completion (proposed 2007)

## Acronyms

CEC	North American Commission for Environmental Cooperation
CENA VECE	National Center for Epidemiological Surveillance and Disease Control ( <i>Centro Nacional de Vigilancia Epidemiológica y Control de Enfermedades</i> )
Censa	National Environmental Health Center ( <i>Centro Nacional de Salud Ambiental</i> )
Cicoplafest	Intersecretarial Commission for the Control of the Production and Use of Pesticides, Fertilizers and Toxic Substances ( <i>Comisión Intersecretarial para el Control de la Producción y Uso de Plaguicidas, Fertilizantes y Sustancias Tóxicas</i> ) (Mexico)
CISEI-INSP	Center for Infectious Disease Research, National Institute of Public Health ( <i>Centro de Investigación Sobre Enfermedades Infecciosas, del Instituto Nacional de Salud Pública</i> )
CNEP	National Malaria Eradication Campaign ( <i>Campaña Nacional de Erradicación del Paludismo</i> )
DOF	Official Gazette of the Federation ( <i>Diario Oficial de la Federación</i> )
GEF	Global Environment Facility
IDRC	International Development Research Centre (Canada)
NAFTA	North American Free Trade Agreement
NARAP	North American Regional Action Plan
PAEDDT	Comprehensive Action Program to Phase Out DDT and Reduce the Long-term Effects of Exposure in Mexico and Central America ( <i>Programa de Acción Integral para Eliminar Progresivamente el DDT y Reducir los Efectos a Largo Plazo de la Exposición al Mismo en México y América Central—PAEDDT</i> )
PAHO	Pan American Health Organization
PDF	Project Development Funds
PMRA	Pest Management Regulatory Agency (Health Canada)
POPs	persistent organic pollutants
PRADDT	Regional Program of Action and Demonstration of Sustainable Alternatives to DDT for Malaria Vector Control in Mexico and Central America ( <i>Programa Regional de Acción y Demostración de Alternativas Sustentables para el Control de la Malaria sin el Uso del DDT en México y Centro América—PRADDT</i> )
PPCV	SS Program for the Prevention and Control of Vector-Transmitted Diseases ( <i>Programa de Prevención y Control de Enfermedades Transmitidas por Vector</i> )
Semarnap	Secretariat of the Environment, Natural Resources and Fisheries ( <i>Secretaría de Medio Ambiente, Recursos Naturales y Pesca</i> ), renamed <b>Semarnat</b> ( <i>Secretaría de Medio Ambiente y Recursos Naturales</i> ) in 2001.
SMOC	Sound Management of Chemicals
SS	Secretariat of Health ( <i>Secretaría de Salud</i> )
UNEP	United Nations Environment Programme

# 1 Background

## 1.1 Purpose of this Document

This report, prepared at the request of the North American Commission for Environmental Cooperation (CEC), offers an analysis of the information arising from various activities undertaken with respect to the North American Regional Action Plan (NARAP) on DDT, in order to measure its progress. The information was provided by CEC Secretariat staff, DDT Task Force members and researchers involved in specific projects, as well as being drawn from various publications.

This report discusses the key aspects of the NARAP, compares scheduled activities with those originally proposed (identifying pending matters or partially completed actions) and offers recommendations.

This document also summarizes the relevant actions undertaken during the implementation of the DDT NARAP, in the hope that this can be useful for the implementation of other similar Action Plans.

## 1.2 Background of the NARAP on DDT

The Sound Management of Chemicals (SMOC) program, initiated through Council Resolution 95-05 (13 October 1995) of the CEC Council, is an ongoing intergovernmental initiative intended to reduce the risks posed by toxic substances to human health and the environment. The program provides a forum for the identification of substances causing significant regional pollution, and the development of action plans and oversight of their implementation. The initiative's priority is persistent, toxic and bioaccumulative substances. The NARAP on DDT, approved in June 1997 by the governments of Canada, Mexico and the United States, is the SMOC instrument through which concrete action is implemented for the "phased reduction, leading to the eventual elimination, of DDT use for malaria control in Mexico"<sup>1</sup> and, consequently, in North America.

Actions taken under Resolution 95-05 took into account the 1995 United Nations Environment Programme Council Decision 18/32, which states that 12 persistent organic pollutants (POPs) are a priority for phase-out on a global scale. Action was also taken in response to statements made at the 1994 Intergovernmental Forum on Chemical Safety, at which representatives of 114 countries determined priorities as well as mechanisms for carrying out their recommendations, including the progressive phase-out of DDT. The UNEP Governing Council and the World Health Assembly agreed to take immediate steps to protect human health and the environment against POPs, including DDT. The CEC was one of the first international agencies to implement regional action plans for addressing the reduction and eventual elimination of DDT in North America.<sup>2</sup>

Taking into account international actions mentioned above, and within the framework of the Resolution 95-05, a NARAP on DDT was developed and approved in June 1997. DDT was still being used in Mexico at that time.

---

<sup>1</sup> SMOC Initiative. Under the North American Agreement on Environmental Cooperation: Regional Commitments and Action Plans. CEC, June 1998. *North American Regional Action Plan on DDT*. Prepared by the North American Task Force on DDT and Chlordane, June 1997.

<sup>2</sup> SS. *Reducción del uso del DDT empleado con fines de salud pública en México* (Reduction of DDT Usage for Public Health Purposes in Mexico). Report submitted in the negotiation of persistent organic pollutants in Bonn, Germany, 21–25 March 2000.



### 1.3 Objectives and Goals of the NARAP on DDT

The objective of the NARAP on DDT was to reduce human and environmental exposure to DDT and its metabolites in the North American region.

The four main goals were to:

- 1) reduce the levels of DDT use in Mexico by 80 percent within five years;
- 2) eliminate illegal agricultural uses of DDT;
- 3) seek regional collaborative strategies to minimize the movement of malaria-infected populations across borders and to reduce illegal DDT imports; and
- 4) increase cooperation in international fora to address DDT production, export and use.

## 2 History of Actions under the NARAP on DDT

The NARAP on DDT was created due to concern for the effects of DDT on the North American population and environment. DDT use had been banned in Canada and the United States prior to the onset of this NARAP. As of 1997, DDT was still being used in Mexico for the control of malaria vectors. As a result, the majority of activities and responsibilities under the NARAP fell to Mexico. The implementation of the NARAP took place through the coordinated efforts of two secretariats in Mexico: the former Secretariat of the Environment, Natural Resources and Fisheries (*Secretaría de Medio Ambiente, Recursos Naturales y Pesca*—Semarnap) and the Secretariat of Health (*Secretaría de Salud*—SS). Both had been involved in the search for chemical and non-chemical alternatives to DDT for malaria control, and in determining the effects of DDT on humans and the environment.

Two Health bureaus had key roles: the Bureau for the Prevention and Control of Vector-Transmitted Diseases (*Dirección de Prevención y Control de Enfermedades Transmitidas por Vector*), under the National Center for Epidemiological Surveillance and Disease Control (CENAVECE), and the General Direction of Environmental Health (*Dirección General de Salud Ambiental*), through the former National Environmental Health Center (*Centro Nacional de Salud Ambiental*—Censa). Semarnap's key office was the former Coordination Unit of Chemicals and Environmental Assessment (*Unidad de Coordinación de Sustancias Químicas y Evaluación Ambiental*), under the National Institute of Ecology (*Instituto Nacional de Ecología*).

As was recognized in the NARAP, there was no one specific method for phasing out DDT, but rather “an iterative learning process where efforts will be concentrated on initiatives shown to have the greatest potential for success. Adjustments may be required as experience is gained during their implementation.”<sup>3</sup> An important indicator of success was the consideration of a regional perspective, including the active participation of Central and South American countries in the implementation of this NARAP.<sup>4</sup>

### 2.1 DDT Task Force

Following on Council Resolution 95-05, the North American DDT Task Force was formed in October 1996, based on recommendations of the SMOC Working Group. Its function was to facilitate regional cooperation in the implementation of the NARAP on DDT. The Task Force was comprised of

<sup>3</sup> SMOC Initiative. Under the North American Agreement on Environmental Cooperation: Regional Commitments and Action Plans. CEC, June 1998. *North American Regional Action Plan on DDT*. Prepared by the North American Task Force on DDT and Chlordane, June 1997.

<sup>4</sup> SMOC Initiative. Under the North American Agreement on Environmental Cooperation: Regional Commitments and Action Plans. CEC, June 1998. *North American Regional Action Plan on DDT*. Prepared by the North American Task Force on DDT and Chlordane, June 1997.

knowledgeable, scientific, environmental and health representatives of the governments of Canada, Mexico and the United States, and received administrative support from the CEC Secretariat, particularly the Mexico Liaison Office.

Since the beginning, the DDT Task Force coordinated its actions by means of meetings and conference calls in which representatives of each country participated, along with invited researchers and experts in the field.

In Task Force meetings members discussed and agreed to: strategies leading to proposals for the different project stages, the search for partners and funding sources, and mechanisms for publicizing the results. Membership to the DDT Task Force from 1999 to 2003 are listed in Appendix A.

## **2.2 Context of the DDT Task Force Work**

When the NARAP on DDT was approved in 1997, DDT use in North America had already been reduced substantially. DDT was never produced in Canada and by this time no longer produced in the United States, and its use in these countries had been banned. In Mexico, only one company, Tekchem, SA de CV, produced DDT for national use and exportation. From 1997 to 1999, DDT was exported to African countries, Turkey, Guatemala and Colombia. Furthermore, during 1997 and 1998, DDT was exported to France as a raw material for producing the organochlorine “dicofol”.<sup>5</sup>

DDT use in Mexico followed the same pattern as in Canada and the United States. It was introduced into the country in the 1950s for farm and public health uses. The National Malaria Eradication Commission (*Campaña de Erradicación del Paludismo* – CNEP) was created by decree on 17 December 1955,<sup>6</sup> and use of DDT began the following year. In the 1970s, DDT use in agriculture began to decline due to the environmental pollution it caused and the establishment of strict limits on DDT residues, principally with regard to food. DDT use in public health areas was to control malaria. Arguments for widespread use included its effectiveness, low cost, and absence of acute toxicity (as compared to other chemical pesticides) in those applying it and in the population exposed to it.

From 1940 to 1950, malaria was one of the four main causes of death in Mexico. No deaths from malaria have been recorded since 1982. However, in 1998, there was a considerable increase in the number of cases of malaria in the southern Pacific coastal region, the principal causes of which were believed to have been Hurricane Paulina, a lack of prevention and control of malaria vectors, and the need to manage an outbreak of hemorrhagic dengue that had struck the Oaxacan coast.<sup>7</sup>

## **2.3 CEC Support in Mexico**

Since 1996, the CEC has been supporting the phase-out of DDT in Mexico. In 1997 and 1998, the CEC supported three pilot projects for assessing alternative methods of malaria control in the state of Oaxaca. These three projects were: 1) the establishment of a pilot center for producing nematodes that act as parasites on mosquito larvae; 2) field testing of bed nets as a complementary control measure for mosquitoes; and 3) field testing of deltamethrin as a DDT substitute.

The scope of the NARAP on DDT made it necessary for the CEC to search for funding partners. A meeting of Mexican and Canadian scientists was held in Montreal, Canada, in December 1998, to design

---

<sup>5</sup> CEC. 2000. Situación Actual de la Malaria y el Uso de DDT en México. Prepared by Gallardo Díaz, E. G., Borja-Aburto, V. H., Méndez Galván, J. F., Sánchez Tejada, G., Olguín Bernal, H., and Ramírez Hernández, J. A. Commission for Environmental Cooperation.

<sup>6</sup> DOF, 17 December 1955, Mexico, D.F.

<sup>7</sup> Héctor Olguín Bernal, PPCV Staff. January 2003. Personal communication.

research projects for assessing DDT alternatives. The meeting was funded by the CEC and the Canadian International Development Research Centre (IDRC). This and other meetings involving Mexican scientists led to the creation of the Plan to Implement Malaria Control with Alternative Methods to DDT in Mexico (*Plan de Implementación para el Control de Malaria con Métodos Alternativos al DDT en México—PIDDT*). The final proposal consisted of seven research protocols for studying the major factors in developing alternatives to the use of DDT, as well as the impact on human and ecosystem health. The proposal could not be funded as a whole, so each project received funding from different institutions.<sup>8</sup>

In March 1999, the CEC organized a meeting in Cuernavaca, Morelos, where participants represented the DDT Task Force, IDRC, the Pan American Health Organization (PAHO) and government agencies involved in malaria-control programs in Mexico, Belize, Honduras, Costa Rica and Panama.<sup>9</sup> The meeting resulted in a regional project for DDT phase-out, the Comprehensive Action Program to Phase Out DDT and Reduce the Long-term Effects of Exposure in Mexico and Central America (*Programa de Acción Integral para Eliminar Progresivamente el DDT y Reducir los Efectos a Largo Plazo de la Exposición al Mismo en México y América Central—PAEDDT*), proposed to be funded by the Global Environment Facility (GEF) under its Project Development Funds (PDF). Given its regional nature, PAHO acted as the project's regional executing agency. PAEDDT actions were carried out between July 2000 and June 2001.<sup>10</sup>

Important results of this phase of the project were regional<sup>11</sup> identification of DDT and malaria status in eight countries (including Mexico<sup>12</sup>), as well as development of a final proposal to the GEF, entitled “Regional Program of Action and Demonstration of Sustainable Alternatives to DDT for Malaria Vector Control in Mexico and Central America”<sup>13</sup> (*Programa Regional de Acción y Demostración de Alternativas Sustentables para el Control de la Malaria sin el Uso del DDT en México y Centro América—PRADDT*). This proposal was subsequently approved as a full-size project being funded jointly by the GEF, the governments of the eight participating countries and the CEC, with PAHO as the regional executing agency, and UNEP as the implementation agency. PRADDT was funded at US\$ 13.9 million, with a US\$ 7.5 million GEF contribution under PAHO's administration.

### 3 Progress in Achievement of the Goals of the NARAP on DDT

This section describes the goals met regarding the activities listed in the original NARAP on DDT (Appendix B). The main purpose of this section is to review the work that has been done and highlight those community initiatives that have been given inadequate attention. It is also valuable in looking towards new approaches for the next steps in eliminating DDT use in the region in a sustainable manner. The results presented and analyzed here refer to actions undertaken in Mexico. When possible, a comparative approach was used.

<sup>8</sup> Implementation Plan to Control Malaria with Alternative Methods to DDT in Mexico, 1999–2001. Submitted to CEC by the Mexican government. 14 January 1999.

<sup>9</sup> Participants: Mexico—Victor Hugo Borja Aburto, Censa; Mario Henry Rodríguez, CISEI-INSP; and Carlos Santos Burgoa, Institute for Health, Environment and the Workplace (*Instituto de Salud, Ambiente y Trabajo*). Belize—Gilbert Linares. Honduras—Eduardo Fernández. Costa Rica—José Luis Garcés. Panama—Cornelio Campos. US—Keith Chanon, EPA. Canada—Suzanne Fortin Pest Management Regulatory Agency (Health Canada). PAHO—Luis Augusto Galvao. CEC—Hernando Guerrero. CEC's consultant—Kirk Rodgers.

<sup>10</sup> CEC. Comprehensive Action Program to Phase Out DDT and Reduce the Long-term Effects of Exposure in Mexico and Central America (*Programa de Acción Integral para Eliminar Progresivamente el DDT y Reducir los Efectos a Largo Plazo de la Exposición al Mismo en México y América Central*). Informational pamphlets.

<sup>11</sup> ISAT. 2001. *Diagnostico Situacional del Uso de DDT y el Control de la Malaria: Informe Regional para México y Centroamérica*. CEC working paper by the *Instituto de Salud, Ambiente y Trabajo S.C.* February 2001.

<sup>12</sup> CEC. 2000. *Situación Actual de la Malaria y el Uso de DDT en México*. Prepared by Gallardo Díaz, E. G., Borja-Aburto, V. H., Méndez Galván, J. F., Sánchez Tejeda, G., Olguín Bernal, H., and Ramírez Hernández, J. A. Commission for Environmental Cooperation.

<sup>13</sup> <<http://www.gefweb.org/>>

### **Goal 3.1 DDT Used in Mexico to Control Malaria Reduced by 80 Percent within Five Years**

The progress made by the Mexican SS for controlling malaria was based mainly on three components; a) localization and management of endemic foci or families with recurrent cases; b) application of a Single Dose Treatment (3x3x3)<sup>14</sup> to control parasites in those localities; and c) elimination of anopheline mosquito breeding areas with full community participation. Actions which began in Oaxaca were later extended to other affected states. The excellent outcome of these actions led the SS to voluntarily cease all DDT use in Mexico in the year 2000, thus meeting this NARAP goal two years ahead of schedule.

### **Goal 3.2 Assessment of Illegal Uses in Agriculture**

In Mexico, the Intersecretarial Commission for the Control of the Production and Use of Pesticides, Fertilizers and Toxic Substances (*Comisión Intersecretarial para el Control de la Producción y Uso de Plaguicidas, Fertilizantes y Sustancias Tóxicas*—Cicoplafest) classifies DDT as a restricted-use pesticide due to its high risk to human health and the environment, as well as its high persistence, bioaccumulation and biomagnification properties as discovered during the 1980s.<sup>15</sup> It was used only by the Secretariat of Health in public health campaigns (malaria control), according to a ruling published in the Official Gazette of the Federation (*Diario Oficial de la Federación*—DOF) on 19 August 1991.<sup>16</sup> As of that date, DDT was officially no longer used for agriculture or any other purpose, although, as mentioned, DDT in the agricultural sector had been severely restricted since 1970 to prevent hazardous waste and the rejection of farm product exports. For these reasons, any illegal use, if it exists, is minimal, although verification is pending. In Mexico, law enforcement to verify illegal DDT use is complex because it must be addressed by more than one agency. The agencies do not have specific resources (manpower or finances) allocated for this matter. Another confounding aspect to identify illegal use of DDT in agriculture in Mexico is the generic use of the term “DDT”. This name has been commonly applied to various insecticides used by farmers or applicators.

### **Goal 3.3 Regional Collaboration Strategies**

#### **3.3.1 Minimize movement of malaria-infected population across borders**

Along with the Central American countries, Mexico has been working to identify migratory movements of human populations from endemic areas. Through epidemiological surveillance, infected populations are being detected by the voluntary notification network of the Mexican southern border and are being given prompt attention by first-level sanitary units. These activities are carried out mainly in areas and during seasons where major migratory movements have been registered. In addition to these undertakings, health programs addressing Chagas disease in Chiapas, Tabasco and Campeche, and onchocerciasis (river blindness) are being improved in the states of Chiapas and Oaxaca.

Localities on the southern border of Mexico have voluntary programs for notification, detection and suppressive single dose treatment (suppressive SDT) of infected people through active and passive case searches. These programs sample blood and administer treatment in order to prevent epidemiological

---

<sup>14</sup> The Single Dose Treatment consists of a single dose of chloroquine (10 mg/kg) and primaquine (0.25-0.75 mg/kg) administered once a month for three months, followed by a three-month period without medication, followed by another three months of treatment. This regimen is repeated over the course of three years. The Single Dose Treatment (also called 3x3x3 treatment) is administered only to persons detected as positive malaria cases.

<sup>15</sup> Official Catalog of Pesticides (*Catálogo Oficial de Plaguicidas*), 1991. Cicoplafest, Secretariat of Agriculture and Hydraulic Resources, Secretariat of Urban Development and Ecology, Secretariat of Health, Secretariat of Trade and Industrial Development, Mexico, D.F., January 1991.

<sup>16</sup> DOF. Restricted Pesticides (*Plaguicidas Restringidas*). *Diario Oficial de la Federación*. Mexico, 19 August 1991.

outbreaks in other parts of Mexico. These health units work 24 hours a day in order to meet national and foreign service demands.

In spite of these efforts, a full differentiation of local and imported cases of malaria still needs to be explored. The SS has established regional cooperation agreements with its counterparts in Guatemala and Belize for malaria control on their borders with Mexico. The CEC and its DDT Task Force have made an important regional contribution to these efforts through the preparation and formulation of the PAEDDT proposal and the implementation of the PRADDT project, involving both North and Central America.

### **3.3.2 Assessment of illegal DDT imports**

DDT has not been manufactured in any of the three countries since 1999. Mexico stopped using DDT for control of malaria vectors in 2000. As a result, any legal international trade in DDT no longer exists. However, the extent to which illegal trade can be measured is problematic. There is no official information on any illegal importation of DDT to Mexico, but import enforcement by Mexico is very difficult. The verification of possible illegal DDT imports through Mexican Customs is made by personnel with little or no training. Further, the World Customs Organization's internationally harmonized customs codes are not necessarily very helpful in identifying specific chemicals; the chemical categories tend to be quite generic.

## **Goal 3.4 Greater International Cooperation to Accelerate the Implementation of Controls on DDT Production, Exportation and Use**

The most important development in the area of DDT control at global scale is the Stockholm Convention on Persistent Organic Pollutants, May 2001, which the NAFTA Parties have signed. Article 3 of the Convention calls for worldwide restrictions on the production and use of DDT.<sup>17</sup> The actions under the NARAP on DDT have enabled accelerated implementation of these controls in North America.

Mexico is developing its National Implementation Plan (NIP) in accordance with paragraph 1 of Article 7 of the Stockholm Convention. This NIP will be supported by the World Bank. The Stockholm Convention is in effect, as of May 17, 2004. Canada and Mexico have ratified, and the US is developing legislation that will enable US to also ratify.

## **4 Current Status of Activities under the NARAP on DDT**

The NARAP on DDT has been useful as a planning guide for governmental actions and research with respect to the study and use of DDT as a malaria vector control in Mexico. US and Canadian experiences in DDT management have facilitated activities in Mexico, and have played an important role in providing advice regarding funding sources.

To achieve the goals of the NARAP on DDT, the participation of representatives of various institutions in each country was sought for the DDT Task Force. Participants included the United States Environmental Protection Agency; Health Canada, the Canadian IDRC; Mexico's Health Secretariat and Mexico's Secretariat of the Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*).

In the case of Mexico, the National Program for the Prevention and Control of Vector-Transmitted Diseases (*Programa de Prevención y Control de Enfermedades Transmitidas por Vector—PPCV*) has

---

<sup>17</sup> Stockholm Convention On Persistent Organic Pollutants ([http://www.pops.int/documents/convtext/convtext\\_en.pdf](http://www.pops.int/documents/convtext/convtext_en.pdf))

focused its actions on compliance with the NARAP on DDT, with promising results for the control of malaria without DDT.

Appendix C provides a summary tabulation of projects approved by the DDT Task Force and funded mainly by CEC. Appendix D provides a tabulation of the progress on the activities originally proposed in the NARAP on DDT.

#### **4.1 Alternatives for Vector Control**

As stated in the NARAP on DDT, this section includes not only alternative methods for controlling vectors that transmit malaria, but also an assessment of potential impacts these alternatives may have on human health and the environment.

As mentioned in section 2.3, one of the first projects supported by CEC was the use of nematodes for controlling the larvae of the mosquito that transmits malaria. The results of this project were promising at the experimental level, however, in practice this alternative was not feasible as had been hoped.

The Mexican Secretariat of Health developed a mosquito larvae control method based on the elimination of green algae at sites where mosquitoes are likely to breed. This method has made it possible to break the life cycle of the malaria vector, reducing the mosquito population. This has resulted in reduced malaria transmission. Algae removal is performed by local people living in areas along the coast of Oaxaca.

The Mexican Secretariat of Health studied the effectiveness of alternative insecticides, determining “deltamethrin” to be the most cost-effective insecticide for in-home spraying using low-volume motorized equipment. The PPCV has been using deltamethrin as a DDT substitute since the late 1990s.

A preliminary assessment has been conducted to look at the possible effects of alternative insecticides on human health and the environment. The assessment specifically looks at deltamethrin in malarial areas of Oaxaca. The effects of residual DDT on this area are also being studied. However, the use of deltamethrin will continue to decline, with a clear intent to eliminate its use and that of all other chemical insecticides for malaria control while concentrating on implementing community programs and supporting the use of alternatives.

#### **4.2 Public Health**

Improving health services coverage in Mexico is a responsibility of the SS. There is a specific program focusing on early detection and treatment of malaria cases, which is supported through the voluntary involvement of people living in the communities affected by this disease. Other activities include the search for infected individuals, surveillance of treatment applications, and the efforts noted in 3.3.1.

Given the results of malaria control in Mexico, the Ministry of Health initiated, in 2004, a “Certification of Geographic Areas Free of Malaria Transmission” (*Certificación de Áreas Geográficas con Eliminación de la Transmisión del Paludismo*). This certification program is led by a National Committee to which the CEC contributes expertise.

#### **4.3 Public Participation and Educational Activities**

Educational materials have been developed to improve public awareness and further the participation of interested groups in malaria prevention and control. Traditionally, under the SS prevention program, the health authority holds talks, distributes pamphlets and posters in schools and social organizations, and makes personal door-to-door appearances.

In 2002, under the umbrella of the PRADDT project, CEC and PAHO produced a video, *La experiencia de México en la eliminación del uso del DDT: Modelo de tratamiento focalizado* (Mexico's Experience on the Eradication of DDT's use: Focalized ),<sup>18</sup> treatment model that highlights Mexico's experiences in phasing out DDT. This video has helped to make public the strategies used and their results. The video was premiered on March 2002 at the First Joint Meeting of the Health and Environment Ministers of the Americas, Ottawa, Ontario, Canada. A second training video is being made which will outline techniques used by the operational staff of the Mexican PPCV, in order to help other staff members of the region's malaria vector control programs to carry out those activities. The script for the new video, titled *Tratamiento focalizado del paludismo en México: Modelo ecológico con trabajo* (Focalized Malaria Treatment in Mexico: Ecological Model and Research), was written by CENAVECE staff under the SS's National Center for Epidemiological Surveillance, and was made possible through financial support from the United States Environmental Protection Agency and the SS.

In addition, the pesticide industry offers SS vector control staff several training sessions on the use and handling of application equipment, as part of their national campaign on the proper handling and use of pesticides.

It is important to acknowledge the Mexican Health Secretariat's success in community organization and participation, especially in the state of Oaxaca, where the community effort effectively controls mosquito reproduction.

#### **4.4 Industrial Sector**

The Mexican pesticide industry has made Cicoplafest-registered alternative chemicals, as well as new products, available to SS for use in controlling malaria vectors. In coordination with PPCV, the industry has held technical information talks, as well as field testing of its products to instruct PPCV staff on how those products are used and applied.

#### **4.5 Law Enforcement**

No known law enforcement actions, such as those mentioned in the relevant section of the NARAP, have been implemented on a regional scale. In Canada, the use, sale or import of DDT for pest control is prohibited by the Pest Control Products Act. Recent amendments to regulations under the Canadian Environmental Protection Act further prohibit the manufacture, use, sale, offer for sale, or importation of DDT for all other uses. There have been no reports of recent activity specific to DDT.

The sale and distribution of DDT for use in the United States is explicitly prohibited by law and regulation. Law enforcement is conducted by the state lead agencies. State agencies have not reported recent activities specific to DDT.

As mentioned in the NARAP, activities in Mexico would have to focus on strengthening Cicoplafest's surveillance of illegal uses of DDT. Although Cicoplafest carries out surveillance on the production, use, importation and trade of pesticides, this focuses on the enforcement of laws related to trade and use aspects, such as labeling, ingredients, expiration, weight, etc. No specific activities on DDT illegal uses or trade have been reported to 2000.<sup>19</sup>

<sup>18</sup> Available through the CCE's webpage at: [http://www.cec.org/pubs\\_docs/documents/index.cfm?varlan=english&ID=883](http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=883)

<sup>19</sup> *Informe Sexenal de la Cicloplafest 1994–2000. Memoria.* See <<http://www.stps.gob.mx/312/publicaciones/cicloplafest.htm>>.

## 4.6 Waste Management

CENAVECE reports 42,043 Kg of DDT at 75 percent purity, and 45,268 Kg of DDT at 100 % purity are being held in good storage conditions in 21 Mexican states. Appendix E lists Mexico's current (2005) DDT storage centers. These stockpiles are the sole responsibility of the Mexican health authorities. The stockpiles are to be eliminated along with other stockpiles of the Central America countries under the PRADDT project.<sup>20</sup>

As a result of the SS's voluntary reduction in the use of DDT to control malaria, and the closing of the sole Mexican manufacturer of DDT, there is no increase DDT stockpiles in Mexico.

Canada has programs to collect hazardous waste, including pesticides, set up at the provincial and municipal levels. The pesticide manufacturing industry has also established a program to collect obsolete pesticides. Small amounts of DDT have been collected during municipally sponsored household hazardous waste events but the actual volumes have not been determined due to the dispersed nature of the information. These events are supervised by relevant authorities who ensure appropriate removal, treatment or destruction of collected materials is undertaken.

An analysis of data collected under the US Clean Sweep program indicates that in 2004 a total of 43,662,274 pounds of pesticides were collected as wastes from 46 states. It is estimated that approximately 3 % of that total was DDT.

## 4.7 Integration of International Activities

The seven Central American countries showed interest in the Mexican experience of controlling malaria using alternatives to DDT use. This region influences Mexico's health and safety, as there is a high incidence of malaria in the countries on Mexico's southern border, specifically Guatemala, Honduras, Nicaragua and Belize.

The preparation and development of a regional proposal which included the seven Central American countries and Mexico (PRADDT), and which was accepted for Global Environment Facility (GEF) funding, allowed the CEC to approach the health authorities responsible for malaria prevention and control in the seven Central America countries. In addition to carrying out assessments of the current status of malaria control and DDT use, it endeavored to identify existing DDT stockpiles in the region. The PRADDT encourages the complete integration of efforts to control malaria without using DDT in the Central American region.

The CEC has played an important role in the coordination and supervision of the PRADDT. It has been involved in promotion and liaison since the start of the project. The coordination meetings coordinated by the CEC are shown in Appendix F.

The PRADDT has stimulated interest in other parts of the world. The African Regional Office of the World Health Organization sent a communication through PAHO to the Mexican health authorities and held a meeting at which they benefited from the Mexican experience in controlling malaria without DDT, and discussed how this can be shared with the other regions.

Activities of the DDT Task Force have received international recognition following the publication of a paper in the International Journal of Hygiene and Environmental Health in 2003 on the cooperative

---

<sup>20</sup> Jorge Méndez Galván, Head of the Malaria Department, Bureau of Vector-transmitted Diseases, SS National Epidemiology Center. Personal communication.



actions in the North American region to phase out DDT for controlling malaria.<sup>21</sup> This paper was cited by the Worldwatch Institute in its *State of the World 2003*<sup>22</sup> and in the *Environmental Health Project Library Malaria Bulletin*.<sup>23</sup>

## 4.8 Implementation

Since its creation, the DDT Task Force has assisted in the preparation of proposals for implementing the NARAP on DDT, specifically in Mexico. One joint proposal by researchers of the three countries is the Action Plan for Malaria Control with Alternative Methods to DDT in the Oaxaca Coastal Region,<sup>24</sup> another is the Implementation Plan for Malaria Control with Alternative Methods to DDT in Mexico, 1999–2001.<sup>25</sup>

One of the most important implementation actions of the DDT Task Force was to participate on the development of the PAEDDT project and to leverage funds from GEF for its implementation during July 2000 and June 2001, resulting in the final PRADDT project.<sup>26</sup> This was achieved through support to Mexico and the promotion and sharing of the experience gained in Mexico among the Central American countries.

## 4.9 Reports

In 1997, each of the three NAFTA countries submitted a report on their national DDT situation: production, importation and exportation, as well as experiences in controlling contraventions of the current provisions. The DDT Task Force later submitted to the SMOC Working Group a progress report in the form of minutes from meetings. These have functioned as reports with respect to the activities proposed in the NARAP.

On April 19, 1999, Dr. Victor Hugo Borja Aburto, Chair of the DDT Task Force, provided an update of the implementation activities carried on from October 1998 to that date (see Appendix G).

## 5 Recommendations

In general, the objectives of the NARAP on DDT have been met, most notably, the phasing out of DDT for malaria control in Mexico in 2000, while maintaining, to the extent possible, malaria vector control without use of this insecticide.

In addition, analysis of Mexico's DDT situation and that of the region (Mexico and Central America) was carried out and provided standardized information from the eight countries on production, importation and exportation of DDT, as well as on historic trends in malaria infection in each country. A regional action program (PRADDT) was developed to allow Mexico's experiences with DDT phase-out and control of malaria vectors to be shared with Central America and others.

---

<sup>21</sup> Chanon, K. F., J. F. Méndez-Galván, J. M. Galindo-Jaramillo, H. Olguín-Bernal and V. H. Borja-Aburto. 2003. Cooperative actions to achieve malaria control without the use of DDT. *International Journal of Hygiene and Environmental Health*. Aug; 206(4–5): 387–394

<sup>22</sup> Worldwatch Institute. 2003. Combating Malaria. *State of the World 2003*.

<sup>23</sup> *EHP Library Malaria Bulletin* 67. 8–21 Sept 2003, <<http://www.ehproject.org/Library/MalariaBulletin67.pdf>>.

<sup>24</sup> Action Plan to Control Malaria with Alternatives Methods to DDT in the Coastal Region of Oaxaca, Mexico, 1998–2000. Presented by the government of Mexico to the CEC, 14 October 1998.

<sup>25</sup> Implementation Plan for Malaria Control with Alternative Methods to DDT in Mexico, 1999–2001, 14 January 1999.

<sup>26</sup> CEC. 2001. *Regional Program of Action and Demonstration of Sustainable Alternatives for Malaria Control in Mexico and Central America Without the Use of DDT*. PAHO and governments of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama.

The Task Force on DDT proposes the following recommendations to the Sound Management of Chemicals Working Group in order to facilitate close out of this NARAP:

- The North American Task Force for Implementing the NARAP on DDT shall be disbanded while lead members of the DDT Task Force and their respective institutions, including Mr. Lars Juergensen (the Pest Management Regulatory Agency of Health Canada) in Canada, Ms. Cathleen Barnes (the Office of Pesticides Program of the U.S. Environmental Protection Agency) in the United States and Dr. Jorge Méndez Galván (Enfermedades Transmitidas por Vectores. SS) in Mexico, or their designates, will act as country focal points and be available to provide the Secretariat with information on any pertinent changes or progress made, on an annual basis including information on domestic programs. The Secretariat will contact Mr. Juergensen, Ms. Barnes and Dr. Méndez or their designates on a yearly basis, prior to the preparation of the report.
- Regarding possible illegal trade of DDT, the DDT Task Force recommends that the SMOC Working Group contact the North American Working Group on Environmental Enforcement and Compliance Cooperation (EWG) to request their cooperation in determining whether there is significant potential for illegal trade of DDT in Mexico, and what actions might be proposed to strengthen the monitoring of these activities. The EWG will be encouraged to address any discovery of illegal trade and report this information back to the SMOC Working Group.
- Regarding auditing, verification and environmental monitoring of DDT, the DDT Task Force recommends that the SMOC Working Group advise the CEC Secretariat to incorporate environmental monitoring and assessment needs for DDT into the ongoing work under the Environmental Monitoring and Assessment Project of the Information for Decision Making Priority, to assure NARAP implementation effectiveness. Monitoring and assessment work for DDT should be incorporated into any strategy for catalyzing cooperation that involves looking at other POPs in North America. The Secretariat may assume the role of facilitator to ensure appropriate flow of information between the DDT focal points and the Environmental Monitoring and Assessment Standing Committee. Topics to be considered for monitoring or assessment initiatives may include but are not limited to:
  - Promoting entomological studies to give an understanding of changes in vector population dynamics over long periods, as well as the relationship of these vectors to natural enemies. This would increase the likelihood of a biological control program's success.
  - Continuous evaluations of humans and the environment for exposure to DDT residues and other pesticides used in malaria vector control.
  - Use of indicator species to monitor exposures to DDT in the environment
- It is also recommended that the Parties continue, in an appropriate role, in advising and following up on the ongoing actions of the PRADDT to the end of 2007 with respect to actions including, but not limited to:
  - Providing advice to PPCV regarding scientific research on methods for controlling malaria without DDT.
  - Attending technical exchange meetings to discuss and define strategies for malaria prevention and currently available control methods.
  - Providing technical expertise for research into alternative methods for vector control, such as the use of entomopathogenic bacteria (*Bacillus sphaericus*), the use of the neem tree, and channeling of rainwater.
  - Providing technical expertise for research into pyrethroid resistance in mosquitoes.
  - Providing technical expertise for research contributing to a greater understanding of malaria trends in the region, for example, climatic change resulting from extreme weather phenomena such as El Niño and La Niña.
  - Looking for opportunities to share experiences with other similar projects.





# Appendices

## **Appendix A – History of DDT TF Membership**

**(1999)**

**Ms. Suzanne Fortin**

Project Manager  
Alternative Strategies and Regulatory Affairs  
Pest Management Regulatory Agency  
Health Canada  
2250 Riverside Drive, 7th floor (A.L. 6607D)  
Ottawa, Ontario, K1A 0K9  
Tel: (613) 736-3688  
Fax: (613) 736-3699  
E-mail: [sfortin@pmra-arla.hc-sc.gc.ca](mailto:sfortin@pmra-arla.hc-sc.gc.ca)

**Dr. Jean Lebel**

Senior Program Officer,  
Ecosystem Approaches to Human Health  
International Development Research Centre – IDRC  
B.P 8500, Ottawa, Ontario K1G 3H9  
Tel: (613) 236-6163 x 2539  
Fax: (613) 567-7748  
E-mail: [jlebel@idrc.ca](mailto:jlebel@idrc.ca)

**Mr. Keith Chanon**

Office of Pesticide Programs (7506C)  
U.S. Environmental Protection Agency  
Washington D.C. 20460  
Tel: (703) 308-1090  
Fax: (703) 308-1850  
E-mail: [chanon.keith@epa.gov](mailto:chanon.keith@epa.gov)

**Dr. Victor Hugo Borja Aburto**

Director  
Dirección General De Salud Ambiental  
Centro Nacional de Salud Ambiental  
Rancho Guadalupe S/N  
52140, Metepec, Edo. de México  
Tel: (527) 271-1091/1093  
Fax: (527) 271-1090  
E-mail: [vborja@toluca.podernet.com.mx](mailto:vborja@toluca.podernet.com.mx)

**Dr. Jorge Méndez Galván**

Enfermedades Transmitidas por Vectores. SSA  
Calle de San Luis Potosí #199, piso 6  
Col. Roma, 06700 México D. F.  
Tel: (525) 574-9250, 584-3456  
Fax: (525) 574-9250  
E-mail: [jibva@data.net.mx](mailto:jibva@data.net.mx)

**Dr. Ángel Betanzos (Alternate)**

Enfermedades Transmitidas por Vectores. SS

Calle de San Luis Potosí #199, Piso 6  
Col. Roma, 06700 México D. F.  
Tel: (525) 574-9250, 584-3456  
Fax: (525) 574-9250

**(2000)**

**Mr. William Murray**  
Pest Management Regulatory Agency  
Health Canada  
2250 Riverside Drive, room D749  
Ottawa, Ontario K1A 0K9  
Tel: (613) 736-3671  
Fax: (613) 736-3699  
E-mail: [bmurray@hc-sc.gc.ca](mailto:bmurray@hc-sc.gc.ca)

**Dr. Jean Lebel**  
**Dr. Gilles Forget**  
International Development Research Centre – IDRC  
B.P 8500, Ottawa, Ontario, K1G 3H9  
Tel: (613) 236-6163 x 2539  
Fax: (613) 567-7748  
E-mail: [jlebel@idrc.ca](mailto:jlebel@idrc.ca)

**Cathleen McInerney Barnes**  
International Programs Manager  
Office of Pesticide Programs (7506-C)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460  
Tel: 703-305-7101  
Fax: 703-308-1850  
E-mail: [barnes.cathleen@epa.gov](mailto:barnes.cathleen@epa.gov)

**Mr. Keith Chanon**

**Dr. Victor Hugo Borja Aburto**  
**Dr. Jorge Méndez Galván**  
**Dr. Ángel Betanzos (Alternate)**

**Dr. Hernando Guerrero**  
Head, Capacity Building and Mexico Office Liaison  
Progreso No.3 (Viveros de Coyoacán)  
Delegación Coyoacán  
04110 México, D. F.  
Tel: (525) 659-5021  
Fax: (525) 659-5023  
E-mail: [guerrero@cec.org](mailto:guerrero@cec.org)

**(2001)**

**Ms. Ginny Moore**  
Pest Management Regulatory Agency  
Health Canada

2250 Riverside Drive, Room D758  
Ottawa, ON K1A 0K9  
Tel: (613) 736-3576  
Fax: (613) 736-3699  
E-mail: [ginny\\_moore@hc-sc.gc.ca](mailto:ginny_moore@hc-sc.gc.ca)

**Dr. Jean Lebel**  
**Dr. Gilles Forget**

**Mr. Keith Chanon**  
**Mr. Kennan Garvey**  
U.S. Environmental Protection Agency  
Office of Pesticide Programs, 7506 C  
Washington, D.C. 20460  
Tel: (703) 305-7106  
Fax: (703) 305-6244  
E-mail: [garvey.kennan@epa.gov](mailto:garvey.kennan@epa.gov)

**Dr. Victor Hugo Borja Aburto, Chair**  
**Dr. Jorge Méndez Galván**  
**Dr. Carlos Santos Burgoa, Chair (as of 271101)**  
Director General  
Direccion General de Salud Ambiental, SSA  
Avenida Mariano Escobedo 366, 3er piso  
Col. Nueva Anzures, México, D.F. 11590  
Tel: (525) 203-5011  
Fax: (525) 255-4564  
E-mail: [csantos@ssa.gob.mx](mailto:csantos@ssa.gob.mx)

**Mr. José Carlos Tenorio**  
Program Manager, SMOC  
393 St-Jacques Street West, Room 200  
Montreal (Quebec) H2Y 1N9  
Tel: (514) 350-4367  
Fax: (514) 350-4314  
E-mail: [jctenorio@cec.org](mailto:jctenorio@cec.org)

**Mr. José Manuel Galindo**  
Progreso No. 3  
Viveros de Coyoacán  
04110 México, D.F.  
México  
Tel: (525) 55 659-5021  
Fax: (525) 55 659-5023  
E-mail: [jmgalindo@cec.org](mailto:jmgalindo@cec.org)

**Dr. Tom Conway**  
Resource Futures International  
858 Bank Street, Suite 103  
Ottawa, Ontario K1S 3W3  
Tel: (613) 235-4343, Ext. 227  
Fax: (613) 235-9916



E-mail: tconway@rfigroup.com

**Ms. Abigail Curkeet**

Resource Futures International

**(2003)**

**Dr. Renaud De Plaen**

Senior Program Specialist

Ecosystem Approaches to Human Health

IDRC 250 Albert St., 12<sup>th</sup> Floor

Ottawa, Ontario K1G 3H9, Canada

Tel: 613-236-6163 x 2545

Fax: 613-567-7748

E-mail: rdeplaen@idrc.ca

**Dr. Jean Lebel**

**Mr. Kennan Garvey**

**Mr. Keith Chanon**

**Dr. Jorge Méndez Galván, Chair**

**Mr. Mario Caballero Ramírez**

Instituto de Salud, Ambiente y Trabajo

Cerrada del Convento 48 A, Oficina H, Acceso D

Col. Santa Ursula Xitla, Tlalpan

México, D.F.14420

Tel: 525-573-6929

Fax: 525-513-3151

E-mail: mario.caballero-ramirez@isat.org.mx

**Victor Shantora**

Head of Pollutants and Health Program

Commission for Environmental Cooperation

393 St-Jacques Street West, Room 200

Montreal, Québec H2Y 1N9, Canada

Tel: 514-350-4355

Fax: 514-350-4314

E-mail: [vshantora@cec.org](mailto:vshantora@cec.org)

**José Manuel Galindo Jaramillo**

**Dr. Joanne O'Reilly**

221 Av. Berkley

St. Lambert, Quebec J4P 3C9

Canada

Tel: 450-672-6418

E-mail: [j\\_oreilly@vl.videotron.ca](mailto:j_oreilly@vl.videotron.ca)

## Appendix B – Goals and Achievements under the NARAP on DDT

Goal	Achievement
1. DDT use in Mexico to be reduced by 80 percent within five years	Achieved two years before deadline
2. Elimination of illegal uses in agriculture	Canada and United States: adequate Mexico: adequate information unavailable
3. Regional collaboration strategies	
3.1. minimize movement of malaria-infected population across borders	In progress. It is important to control movements at the Southern Mexican border
3.2. reduce illegal DDT imports	adequate information unavailable
4. Increase international cooperation to accelerate the implementation of controls on DDT production, exportation and use	In progress through the DDT-GEF program

## Appendix C – CEC Projects Supporting Compliance with the DDT NARAP

### PROJECTS UNDERTAKEN DURING 1996

<b>Project</b>
1. Biological control of malaria's vector mosquito larvae with parasite nematodes in Oaxaca, Mexico

### PROJECTS UNDERTAKEN DURING 1997

<b>Project</b>
1. Use of deltamethrin impregnated bed nets as a complementary measure to control malaria
2. Field evaluation of deltamethrin pyrethroid as a possible substitute of DDT in controlling malaria in the coast of Oaxaca, Mexico
3. Establishment of a plant for massive production of malaria's vector mosquito larvae parasite nematodes in the coast of Oaxaca, Mexico
4. DDT exposure risk assessment in application workers at Veracruz, Mexico

### PROJECTS UNDERTAKEN DURING 1998

<b>Project</b>
1. Environmental assessment program on malaria control in rural zones
2. Exposition assessment to DDT's alternative pesticides (piretroids and organophosphorates) in the Chiapas coast, Mexico
3. DDT's alternative pesticides (CEC supported Mexico's Ministry of Health in the acquisition of DDT's alternative pesticides to be used in malaria's outbreaks)

### PROJECTS UNDERTAKEN DURING 1999

<b>Project</b>
1. Guide for submitting country diagnoses regarding status of DDT and malaria control methods
2. Review of feasibility of environmental management alternatives to malaria vector control in Mexico, and certain field tests
3. Review of Management Alternatives for DDT Stockpiles
4. Information system for malaria control
5. Environmental and human tracking of DDT and deltamethrin in malarial communities in the state of Oaxaca, emphasizing routes that carry insecticides to international waters
6. DDT tracking in humans: in search of sensible indicators for detecting effects on the health of children of mothers environmentally exposed to DDT
7. DDT tracking in humans: mortality in vector-transmitted disease control program workers, exposed to DDT and other pesticides
8. Status report on DDT usage and malaria in Mexico, in a regional context

### PROJECTS UNDERTAKEN DURING 2000

Project
1. Preparation of final draft report on DDT usage and malaria in Mexico
2. Identification of high-risk communities due to exposure to insecticides used in public health
3. Identification of indicator species for exposure to pesticides in trophic chains in places with high malaria incidence

### PROJECTS UNDERTAKEN DURING 2001

Project
1. Guide for submitting country diagnoses regarding status of DDT and malaria control methods
2. Persistence of human exposure to DDT and deltamethrin in malarial communities
3. Identification of DDT in indicator species in trophic chains in hyperendemic malarial areas
4. Assessment of results of studies on malaria control alternatives without using DDT in the Pochutla, Oaxaca, area
5. Mexico's experience on the eradication of DDT's use: Focalized treatment model

### PROJECTS UNDERTAKEN DURING 2002

Project
1. Comprehensive assessment of residual exposure to DDT in human settlements in malarial sites in Mexico
2. Assessment of the biomagnification of DDT in the food chains of malarial towns on Mexico's southern Pacific coast
3. Assessment of DDT mobility through bodies of water of human importance in Mexico
4. Regionally important birds as indicators of risk of pesticide exposure
5. Manual for sample-taking and analysis of DDT and its metabolites in biological and environmental matrices in Mexico and Central America

### PROJECTS UNDERTAKEN DURING 2003

Project
1. Evaluation of the DDT biomagnification in trophic chains in Southeast Mexican malaria localities
2. DDT exposure evaluation in Mexican rural communities
3. DDT monitoring and evaluation on wild populations of indicator species: Snowy Egret ( <i>Egretta thula</i> ), American crocodile ( <i>Crocodylus acutus</i> ) and Mullet ( <i>Mugil sp.</i> ) on the Mexican Pacific coast
4. Manual for sample-taking and analysis of DDT and its metabolites in biological and environmental matrices in Mexico and Central America II

### PROJECTS UNDERTAKEN DURING 2004

<b>Project</b>
1. Evaluation of DDT and its metabolites in human populations at 4 malarial communities of the Southeast zone of Mexico
2. Evaluation of the biomagnification of DDT in food chains on malaria communities of the Southeast zone of Mexico II
3. Evaluation and monitoring of DDT in wildlife indicator species Snowy Egret ( <i>Egretta thula</i> ), American crocodile ( <i>Crocodylus moreletii</i> ) and Mullet ( <i>Mugil sp.</i> ) in the coastal zone of the Gulf of Mexico

### **PROJECTS UNDERTAKEN DURING 2005**

<b>Project</b>
1. Evaluation of DDT and its metabolites in human populations at 4 malaric communities of the Southeast zone of Mexico II
2. Evaluation of the biomagnification of DDT in food chains of malaric localities in Southwestern Mexico III
3. DDT evaluation and monitoring in wild populations of American alligator Río ( <i>Crocodylus acutus</i> ) in the Mexican Pacific Coast

## Appendix D – Progress on the Activities of the NARAP on DDT July 2005

Activities	Progress *			
	25%	50%	75%	100%
1. Alternatives for vector control				
1.1. Promote prioritization of biological control and the reduction of reproduction sites to fight malaria vectors				
1.2. Assessment of insecticide handling, study of health and environmental impacts				
1.3. Compare the effectiveness of DDT with that of alternative pesticides in malaria vector control in the household environment				
1.4. Strengthen programs to test the effectiveness of substitute insecticides				
2. Public health				
2.1. Improve service coverage				
2.2. Establish mechanisms for the exchange of information with other countries in the region				
3. Public participation and educational activities				
3.1. Educational material on the effect of DDT and alternatives thereto in health and the environment				
3.2. Participation of local community organizations in project development and implementation				
3.3. Information on illegal agricultural usage and advisement on alternative practices				
3.4. Educational materials and awareness and information programs				
4. Industrial sector				
4.1. Assessment of effectiveness of alternative insecticides				
4.2. Testing costs for each insecticide for a two-year period				
4.3. Applicator training				
4.4. Change of equipment as needed				
4.5. Assessment of insect resistance				
5. Law enforcement				
5.1. Canada				
5.2. United States of America				
5.3. Mexico (to strengthen programs to control illegal DDT usage, supervised by CICOPALFEST)				
6. Waste management				
6.1. Canada				
6.2. United States of America				
6.3. Mexico				
7. Integration of international activities				
7.1. Sharing experiences of this NARAP with other countries in Latin America and the Caribbean				
7.2. Cooperation with the initiative for the sound management of chemicals (SMOC) and with the pesticides working group				
7.3. Reduce or discontinue DDT usage, and share experiences				

Activities	Progress *			
	25%	50%	75%	100%
7.4. Involvement of major international organizations				
7.5. The United States will seek the legislative and administrative authority to comply with a prior informed consent (PIC) agreement				
7.6. As of 1999, Mexico no longer exports DDT, so the PIC is no longer necessary for this substance				
8. Implementation				
8.1 Cooperation in the development of proposals and procurement of necessary funding				
9. Report				
9.1 The three countries will submit a report in 1997 on DDT usage, production, import and export, and contraventions to rules				
9.2 Canada, the United States and Mexico will submit annual reports to the SMOC working group, on the progress of the NARAP and their cooperation and support for its launch				

## Appendix E – Mexico’s DDT stockpile inventory (June 2005)

State	D D T ( Kg )		
	75%	100%	Total
Aguascalientes	490.0	200.0	690.0
Baja California	0.0	0.0	0.0
Baja California Sur	210.0	0.0	210.0
Campeche	0.0	5,200.0	5,200.0
Coahuila	280.0	20.0	300.0
Colima	12,280.0	1,604.0	13,884.0
Chiapas	2,400.0	2,100.0	4,500.0
Chihuahua	0.0	300.0	300.0
Durango	2,030.0	250.0	2,280.0
Distrito Federal	0.0	0.0	0.0
Estado de México	1,505.0	0.0	1,505.0
Guanajuato	0.0	466.0	466.0
Guerrero	0.0	144.0	144.0
Hidalgo	455.0	1,500.0	1,955.0
Jalisco	1,221.0	232.0	1,453.0
Michoacán	35.0	10,599.0	10,634.0
Morelos	164.0	1,736.5	1,900.5
Nayarit	1,295.0	200.0	1,495.0
Nuevo León	0.0	2,610.0	2,610.0
Oaxaca	150.0	3,800.0	3,950.0
Puebla	0.0	0.0	0.0
Querétaro	0.0	206.0	206.0
Quintana Roo	0.0	1,685.0	1,685.0
San Luis Potosí	0.0	0.0	0.0
Sinaloa	0.0	1,300.0	1,300.0
Sonora	0.0	200.0	200.0
Tabasco	0.0	0.0	0.0
Tamaulipas	156.0	0.0	156.0
Tlaxcala	0.0	0.0	0.0
Veracruz	19,337.0	10,916.0	30,253.0
Yucatán	0.0	0.0	0.0
Zacatecas	35.0	0.0	35.0
<b>Total</b>	<b>42,043.0</b>	<b>45,268.5</b>	<b>87,311.5</b>





## Appendix F – Coordination Meetings under the DDT-GEF Program

<b>Date</b>	<b>Location</b>	<b>Meeting</b>	<b>Purpose</b>	<b>Participants</b>	<b>Typ</b>
March 1999	Cuernavaca, Mexico	Malaria experts meeting	To present the current status of malaria control in Mexico and Central America, and to identify some potential options for alternative controls to DDT use	Representatives of the health sector involved in malaria control and malaria researchers in Mexico and Central America	Closed
March 1999	Cuernavaca, Mexico	Malaria experts meeting	To prepare the first draft proposal for funding outside the CEC on eliminating DDT in Mexico and Central America	Representatives of the health sector involved in malaria control from Belize, Costa Rica, Honduras, Panama and Mexico, in addition to representatives of CEC, IDRC, PAHO	Closed
July 1999	Washington, DC, USA	Follow-up meeting	To discuss the scope of a program to research and implement strategies on malaria control in Mexico without the use of DDT	Representatives of the DDT Working Group, CEC and PAHO	Closed
December 1999	San Salvador, El Salvador	Follow-up meeting for the Comprehensive Action Program to Phase Out DDT and Reduce the Long-Term Effects of Exposure in Mexico and Central America—PAEDDT)	To present the program in Central America and follow-through	Representatives of the health sector from El Salvador, Costa Rica, Panama and Mexico, as well as representatives of the DDT working group and the CEC	Closed
July 2000	Metepec, Mexico	Assessment meeting	To assess progress in the projects undertaken in the framework of the NARAP on DDT and to determine courses of action that may be included in the PAEDDT	Consultants who developed the projects, Mexican representatives on the DDT working group, and CEC representatives	Closed
July 2000	Washington, DC, USA	PAEDDT preparation meeting	To prepare a first draft of the workplan to be submitted to the Program's Management Committee	Representatives of the DDT working group, CEC and PAHO	Closed
September 2000	Mexico City, Mexico	First meeting with the PAEDDT management committee	To establish the PAEDDT Management and Operating Committees and to approve the workplan in its PDF phase	Representatives of the governments of the eight governments participating in the PAEDDT, as well as representatives of CEC, PAHO and UNEP	Closed
December 2000	Mexico City, Mexico	PAEDDT presentation meeting	To present the PAEDDT to the different sectors involved in the DDT elimination process in Mexico	Representatives of the academic, NGO, industrial and government sectors to the PAEDDT	Public by invitation

<b>Date</b>	<b>Location</b>	<b>Meeting</b>	<b>Purpose</b>	<b>Participants</b>	<b>Typ</b>
February 2001	Panama City, Panama	Scientific meeting on basic methodologies of the PAEDTT	To identify and establish the best methods and technologies for malaria control and to assess the environmental effects of DDT for the PAEDDT	Representatives of the governments of the eight governments participating in the PAEDDT, as well as representatives of CEC and PAHO	Closed
March 2001	Guatemala City, Guatemala	Regional diagnostic workshop on current status of malaria and the use of DDT in Mexico and Central America, and presentation of the PAEDDT proposal	To conclude the final draft proposal to the Global Environment Facility (GEF) to undertake the PAEDDT	Representatives of the governments of the eight governments participating in the PAEDDT, as well as representatives of CEC and PAHO	Closed
May 2001	Washington, DC, USA	PAEDDT follow-up meeting	To establish the activities, indicators and resources needed for the execution of the PAEDDT, as well as the workplan in its implementation phase	Representatives of the DDT working group and PAHO	Closed
July 2001	Mexico City, Mexico	Presentation meeting on current status of PAEDDT in Mexico	To present the regional action plan for the elimination of DDT usage in Mexico and Central America	Representatives of the academic, NGO, industry and government sectors to the PAEDDT	Public by invitation
August 2001	Tegucigalpa, Honduras	Meeting of WHO initiative "Roll Back Malaria"	To release the PAEDDT actions and follow-through on program actions with the representatives of the participating countries	Representatives of the governments of the eight governments participating in the PAEDDT, as well as representatives of CEC and PAHO	Closed
September 2001	Mexico City, Mexico	Second meeting of PAEDDT Management Committee	To determine the status of progress in the countries and to present the final PAEDDT document, the result of the PDF phase to be submitted to GEF for funding	Representatives of the governments of the eight governments participating in the PAEDDT, as well as representatives of CEC, PAHO and UNEP	Closed
September 2002	Washington, DC, USA	Preparatory meeting for PAEDDT implementation	To prepare the document for the program to be funded by GEF, as well as proposed actions at the program implementation sites	Mexican representatives on the DDT working group, CEC and PAHO	Closed

# **Appendix G – Summary Report on DDT Implementation Task Force Activities in 1999**

(prepared for the CEC by Victor Borja)

## **UPDATE OF DDT IMPLEMENTATION TASK FORCE ACTIVITIES**

19 April 1999

### ***I Activities and Organization of the DDT ITF Task Force***

At the October 1998 meeting of the Working Group on the Sound Management of Chemicals (SMOC), the DDT Implementation Task Force (ITF) was established in order to facilitate regional cooperation for the implementation of the North American Regional Action Plan (NARAP) on DDT. The ITF is composed of representatives from Mexico, the U.S. and Canada and is supported administratively by the Commission for Environmental Cooperation (CEC). Since December 1998, the ITF has engaged in developing further Mexico's Implementation Plan and in leveraging additional financial resources from donor organizations. Currently, the ITF is working with two donors that have expressed interest in supporting the DDT phase-out activities in Mexico: the International Development Research Council (IDRC) in Canada and the Global Environment Facility (GEF).

In December 1998, following an initiative of a group of Mexican scientist, a meeting co-sponsored by the Commission for Environmental Cooperation (CEC) and IDRC was held in Montreal in order to design a research project in Mexico to test and evaluate alternative methods for controlling malaria. Several scientists from Mexico and Canada attended this meeting and identified specific objectives to provide a framework for developing a proposal. A follow-up meeting was held in Cuernavaca, Mexico March 24-26, 1999 in order to finalize the research proposal. In addition, a meeting was held March 29-30 in Cuernavaca with officials representing malaria control programs in Mexico and Central America. The purpose of this meeting was to define and develop a regional proposal integrating Central America in the phase-out of DDT, for consideration by the GEF, which was identified as a possible supporting agency by a consultant hired by CEC. The first workshop in Cuernavaca was co-sponsored by CEC and IDRC, and the second workshop was fully sponsored by CEC.

### ***II Specifics of the IDRC and GEF Proposals***

During a 3-day session in Cuernavaca, the Mexican and Canadian researchers presented and refined specific research proposals supporting the general objective of developing and testing several malaria control strategies using alternatives that maximize community participation and do not impact negatively on human and ecosystem health. Specific projects were developed addressing the following areas: a) alternative control methods, b) rapid malaria diagnosis and treatment, c) environmental and health effects of chemical alternatives and DDT, and d) risk factors (i.e. determinants) involved in malaria transmission. Each of these projects will integrate community participation using a framework discussed during the meeting and contribute to the implementation plan presented by Mexico in October 1998.

The combined proposal, appended to this report, was submitted to the IDRC in April 15, 1999. The estimated cost of the proposal is \$1.3 million (US). If accepted, the IDRC can provide approximately \$300,000 (CAN). It is expected that some funds from the CEC Capacity Building Program can be used

to finance the project. In addition, other funding sources and collaborators will be consulted, including the Mexican Ministry of Health, the U.S. Agency for Toxic Substances and Disease Registry and the U.S. Department of State.

## 2. GEF Proposal

By virtue of the GEF funding criteria, the GEF proposal must address the phase-out of DDT on a regional basis, and therefore must include the participation of countries in Central America. Thus, the 2-day session in Cuernavaca involved the participation of Central American governments as well as the Pan-American Health Organization (PAHO), which would likely serve as the Executing Agencies for the first phase of the GEF project.

Under the framework of the GEF, initially, a Proposal for Project Development Funds (PDF Block B) request must be submitted. This request is to fund the project development phase of the activity which can extend close to a year. The main activities of this PDF phase will be to bring together the involved institutions and countries in order to develop (a) national reports for the phase-out of DDT summarizing the DDT/malaria situation in each participating country, and (b) a regional plan identifying those elements of the DDT/malaria situation that can be the subject of regional cooperation. Once this baseline information is gathered from each of the countries and an overall coordination and decision-making mechanism is created to facilitate regional action, funding for the second i.e. full phase of the project can be requested. While approximately \$4.5 million may be available for the entire project (including the participation of other possible agencies and governments, and a few hundred thousand may be available for the PDF phase).

Based on the presentations from Mexico and the Central Americans (noting that the Central American countries represented at the meeting included Belize, Honduras, Costa Rica, and Panama; not represented were Guatemala, and El Salvador), several common issues and needs were identified (see Appendix for notes on each country's program). Mexico and Belize are the two remaining countries in the region using DDT for malaria control, but these and other countries are facing significant numbers of malaria cases. Honduras referred to the possibility of resuming the use of DDT. For these reasons, the scope of the GEF project needs to address the overall management of DDT issues. Thus, the following issues were identified:

- 1 Prevent the reintroduction of DDT in cases of emergency outbreaks (i.e., impact of Hurricane Mitch)
- 2 Evaluate and find safer alternatives
- 3 Promote an integrated (multi-faceted, multi-sectoral) control program
- 4 Identify and control determinants of vector/disease transmission.
- 5 Address illegal uses of DDT
- 6 Safe disposal of DDT stockpiles
- 7 Address disease transmission from cross-border immigration

While many of the key issues listed above apply to all of the countries in the region, Mexico is ahead of the other Central American countries in the development of an implementation plan and research proposal focussing on the evaluation and implementation of safer alternative products and approaches. Mexico also has a reasonably well defined infrastructure for malaria control. Thus, it is in the interest of the DDT ITF to ensure that adequate resources are directed toward Mexico, and that the broader regional involvement does not negatively affect progress in Mexico. Furthermore, the ITF believes that Mexico should maintain a key role in the GEF project so that its experiences and research findings can be shared with the other Central American countries, as well as other countries world wide that are considering the phase-out of DDT. And given the different stages of the DDT phase-out and management activities in different countries, it is necessary to ensure that the GEF project recognizes and promotes common as well as customised activities in the different countries.

It is recognized that the GEF funding would be shared among all participating Central American countries. As well, in order to leverage GEF funds it is necessary to identify other partners/donors. Thus additional funding would be needed as a component of the estimated 4.5 million US total budget. It is important, for instance, to consider the CEC funding possibilities and the resources (financial or in kind) that may be available from governments.

### ***III Issues of Concern***

In recent months the staff of the CEC office responsible for coordinating activities of the DDT and other task forces has been reduced. Thus the assistance that can be provided by the CEC has been reduced. As an example, a CEC representative did not participate in the Cuernavaca meeting with IDRC. It is the opinion of members of the DDT task force that the current level of assistance provided by the CEC office is insufficient, and that the gap created by the recent departure of an employee from the CEC office should be filled with a full-time officer, or another mechanism for ensuring assistance to the task force, without further delay.

#### **2 Difficulties in seeking funding for Mexico's DDT phase-out activities**

It is of concern to the task force that the GEF project may result in having Mexico's needs overshadowed by the needs of other participating countries, and it is important therefore that the task force play a central role in the development of the GEF project.

It is also of concern to the task force that sources of funding other than the GEF and IDRC have not been identified.

#### **3 Possible delays in making progress in Mexico's phase-out activities**

As a result of the current efforts being placed on the development of proposals for IDRC and GEF funding, it is conceivable that specific activities aimed at DDT phase-out in Mexico are being delayed. It is the opinion of members of the task force that projects and CEC funding, as appropriate, should not be placed on hold in anticipation of the two possible funding options currently being addressed. Progress should continue to be made.

### ***IV Recommendations***

- 1 Support current activities to develop funding proposals for IDRC and GEF. In particular, continue to support the development of proposals (IDRC, GEF, maybe others.) that will enable Mexico to make significant progress in its phase-out of DDT, in accordance with the NARAP.
- 2 Continue to support ongoing activities in Mexico to fulfill commitments under the DDT NARAP, outside of the IDRC and GEF proposals. In particular, CEC should support an initiative currently being developed to systematize Mexico's information and data pertaining to DDT phase-out and malaria control (a draft proposal is presented as an appendix).
- 3 Be prepared to support these activities through a commitment of CEC resources as appropriate, and government contributions (financial or in kind) given the potential of these projects to result in significant progress on the DDT phase-out in Mexico and Central American countries.
- 4 Commitment of CEC contribution to the GEF project, either monetary or in kind, must be determined following a review of the final draft of the GEF proposal by US, Mexico and Canada. The final draft is

expected by the end of April, 1999 (draft 4 is presented as an appendix). The GEF proposal is still being modified in a number of respects. In the preparation of the GEF PDF proposal, the task force is still working to ensure that Mexico's and CEC's interests are adequately reflected and some changes must still be made to the proposal e.g. it is to include the need to design an appropriate body/mechanism for coordination and decision-making during the full project phase.

- 5 Schedule a meeting of the task force with GEF/PAHO/UNEP directly (e.g. in Washington). The purpose of this meeting would be to discuss the following:
- final stages of preparation of the GEF PDF proposal, including any final modifications to the proposal that may be needed (e.g. benefits of including separate phases for Mexico and other countries),
  - the stages of the implementation of the PDF project once funding is granted,
  - the formation and responsibilities of the steering committee for the PDF project, and
  - the overall management of the process (PDF phase).

This meeting will also give the task force the opportunity to discuss issues such as:

- progress on the IDRC research proposal,
- the pending proposal to the CEC for funding to systematize documentation and information on the DDT phase-out and related malaria control activities,
- mechanisms for integrating stakeholders from the three NAFTA countries into the activities of the task force, etc.

- 6 Ensure effective CEC coordination with task force(s) in other ongoing and future activities. For instance, we would like the DDT ITF work more closely coordinated with the consultant hired by CEC.

#### DDT IFT Members (1999)

Victor Hugo Borja (Mexico)  
Jorge Mendez (Mexico)  
Angel Betanzos (Mexico)  
Suzanne Fortin (Canada)  
Jean Lebel (Canada)  
Keith Chanon (USA)