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**Undersecretariat for Environmental Management  
Initial Assistance Project to enable the Dominican Republic to fulfill its  
Obligations under the Stockholm Convention on Persistent Organic  
Pollutants**

**NATIONAL IMPLEMENTATION PLAN OF THE STOCKHOLM CONVENTION IN THE  
DOMINICAN REPUBLIC**

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## ACRONYMS

<b>AERODOM</b>	Aeropuertos Dominicanos Siglo XXI
<b>AIDSA</b>	Alianza Incineradora Dominicana, S.A.
<b>ALCHEM</b>	Altol Chemical Environmental Laboratory, Inc
<b>ALIDES</b>	Alianza Centroamericana para el Desarrollo Sostenible (Central American Alliance for Sustainable Development)
<b>ATV</b>	Acuerdo sobre Textiles y Vestidos (Textiles and Garments Agreement)
<b>BAGRICOLA</b>	Banco Agrícola de la República Dominicana (Dominican Agricultural Bank)
<b>CAASD</b>	Corporación de Acueducto y Alcantarillados de Santo Domingo (Aqueduct and Sewer System Corporation of Santo Domingo)
<b>CDE</b>	Compañía Dominicana de Electricidad (Dominican Electricity Company)
<b>CDEEE</b>	Corporación Dominicana de Empresas Eléctricas Estatales (Dominican Corporation of State Electricity Companies)
<b>CEDAF</b>	Centro para el Desarrollo Agropecuario y Forestal (Center for Agricultural and Forestry Development)
<b>CEI-RD</b>	Centro de Exportación e Inversión de la República Dominicana (Center for Export and Investment of the Dominican Republic)
<b>CENCET</b>	Centro de Control de Enfermedades Tropicales (Center for the Control of Tropical Diseases)
<b>CEPAE</b>	Centro de Acción y Planificación Ecuménica (Center for Ecumenical Planning and Action)
<b>CESDA</b>	Centro Sur de Desarrollo Agropecuario (Southern Center for Agricultural Development)
<b>CESFRONT</b>	Cuerpo Especializado de Seguridad Fronteriza (Specialized Border Control Corps)
<b>CEZOPAS</b>	Centro Zonal Pastoral Social (Zonal Social Pastoral Center)
<b>CITAR</b>	Centro de Investigación en Tecnología de Agua para Riego (Center for Research on Irrigation Water Technology)
<b>CITES</b>	Convention on International Trade in Endangered Species
<b>CNE</b>	Comisión Nacional de Energía (National Energy Commission)
<b>COAAROM</b>	Corporación de Acueducto y Alcantarillados de La Romana (Aqueduct and Sewer System Corporation of La Romana)
<b>CONABIO</b>	Consejo Nacional de Bioseguridad (National Biosafety Council)
<b>CONAMUCA</b>	Confederación Nacional de Mujeres del Campo (National Confederation of Rural Women)
<b>POPs</b>	Persistent Organic Pollutants
<b>COPDES</b>	Comisión Presidencial sobre los Objetivos del Milenio y Desarrollo Sostenible (Presidential Commission on the Millennium Goals and Sustainable Development)
<b>CORAAMOCA</b>	Corporación de Acueducto y Alcantarillados de Moca (Aqueduct and Sewer System Corporation of Moca)
<b>CORAASAN</b>	Corporación de Acueducto y Alcantarillados de Santo Domingo (Aqueduct and Sewer System Corporation of Santo Domingo)
<b>CORAPP</b>	Corporación de Acueducto y Alcantarillados de Puerto Plata (Aqueduct and Sewer System Corporation of Puerto Plata)
<b>COTERE</b>	Comités Técnicos Regionales (Regional Technical Committees)
<b>PCDD</b>	Dibenzo- <i>p</i> -Dioxinas Policloradas (Dibenzo- <i>p</i> -Polichlorinated Dioxins)
<b>DDT</b>	Dichloro-Diphenyl-Trichloroethane
<b>PCDF</b>	Polichlorinated Dibenzofurans (PCDF)
<b>DGA</b>	Dirección General de Aduanas (National Customs Department)
<b>DGII</b>	Dirección General de Impuestos Internos (National Department of Internal Taxes)
<b>DIA</b>	Departamento de Inocuidad de Alimentos (Department of Food Safety)
<b>DIGENOR</b>	Dirección General de Normas y Sistemas de Calidad (National Department of Quality Systems and Standards)
<b>DIGEPI</b>	Dirección General de Epidemiología (National Epidemiology Department)
<b>DIRENA</b>	Dirección de Recursos Naturales (Department of Natural Resources)

<b>DOCALSA</b>	Empresa Dominicana de Cales S.A
<b>DPS</b>	Direcciones Provinciales de Salud (Provincial Health Departments)
<b>DR-CAFTA</b>	Dominican Republic-Central America Free Trade Agreement
<b>EDEESTE</b>	Empresa de Electricidad del Este (Electric Company of the East)
<b>EDENORTE</b>	Empresa de Electricidad del Norte (Electric Company of the North)
<b>EDESUR</b>	Empresa de Electricidad del Sur (Electric Company of the South)
<b>EPA</b>	United States Environmental Protection Agency
<b>EQT-I/a</b>	Equivalente Cuantitativo de Toxicidad Internacional por año. (Equivalent Quantitative Toxicity International per year)
<b>PRS-DR</b>	Poverty Reduction Strategy of the Dominican Republic
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FAMA</b>	Fundación Agricultura y Medio Ambiente (Agriculture and Environment Foundation)
<b>FERQUIDOS</b>	Fertilizantes Químicos Dominicanos
<b>FERSAN</b>	Fertilizantes Santo Domingo
<b>FFAA</b>	Fuerzas Armadas de la República Dominicana (Armed Forces of the Dominican Republic)
<b>GEM</b>	Fondo para el Medio Ambiente Mundial (Global Environment Facility- GEM)
<b>IMF</b>	International Monetary Fund
<b>GHG</b>	Greenhouse Gases
<b>LPG</b>	Liquefied Petroleum Gas
<b>GTZ</b>	German Agency for Technical Cooperation
<b>IAD</b>	Instituto Agrario Dominicano (Dominican Agriculture Institute)
<b>IDEAC</b>	Instituto de Desarrollo de la Economía Asociativa (Institute for the Development of an Associative Economy)
<b>IDDI</b>	Instituto Dominicano de Desarrollo Integral (Dominican Institute for Integral Development)
<b>IDSS</b>	Instituto Dominicano de Seguros Sociales (Dominican Social Security Institute)
<b>IIBI</b>	Instituto de Innovación en Biotecnología e Industria (Institute for Innovation in Biotechnology and Industry)
<b>IICA</b>	Instituto Interamericano de Ciencias Agrícolas (Interamerican Institute of Agricultural Sciences)
<b>INAPA</b>	Instituto Nacional de Aguas Potables y Alcantarillado (National Institute of Potable Water and Sewer Systems)
<b>INDRHI</b>	Instituto Nacional de Recursos Hidráulicos (National Institute of Water Resources)
<b>INFIS</b>	Instituto de Física (Institute of Physics)
<b>INTABACO</b>	Instituto Nacional del Tabaco (National Tobacco Institute)
<b>INTEC</b>	Instituto Tecnológico de Santo Domingo (Technological Institute of Santo Domingo)
<b>INVI</b>	Instituto Nacional de la Vivienda (National Housing Institute)
<b>IQUASD</b>	Instituto de Química de la Universidad Autónoma de Santo Domingo (Chemistry Institute of the Autonomous University of Santo Domingo)
<b>JAD</b>	Junta Agroempresarial Dominicana (Dominican Agro-business Council)
<b>JICA</b>	Japan International Cooperation Agency
<b>LAVECEN</b>	Laboratorio Veterinario Central (Central Veterinarian Agency)
<b>LMD</b>	Liga Municipal Dominicana (Dominican Municipal League)
<b>LNSPDD</b>	Laboratorio Nacional de Salud Pública Dr. Defilló (Dr. Defilló National Public Health Laboratory)
<b>METALDOM</b>	Complejo Metalúrgico Dominicano (Dominican Metalworks Complex)
<b>EBP</b>	Environmental Best Practices
<b>BAP</b>	Best Available Practices.
<b>MUDE</b>	Mujeres Dominicanas en Desarrollo (Dominican Women in Development)
<b>NIST</b>	National Institute of Standards and Technology
<b>OCI</b>	Organismos de Cooperación Internacional (International Cooperation Agencies ICA)

<b>MDG</b>	Millennium Development Goals
<b>OG</b>	Organismos Gubernamentales (Government Agencies)
<b>OIRSA</b>	Organismo Internacional Regional de Sanidad Aeroportuaria (International Regional Airport[sic] Health Agency)
<b>WTO</b>	World Trade Organization
<b>ONE</b>	Oficina Nacional de Estadísticas (National Office of Statistics)
<b>NGO's</b>	Non-governmental Organizations
<b>UN</b>	United Nations
<b>PAHO</b>	Panamerican Health Organization
<b>PCB</b>	Polichlorinated Biphenyl
<b>GDP</b>	Gross Domestic Product
<b>NIP</b>	National Implementation Plan
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>AOPs</b>	Annual Operations Plan
<b>PPS</b>	Programa de Pequeños Subsidios (Small Grants Program)
<b>PROFER</b>	Programa de Fomento de las Energías Renovables. (Program to Promote Renewable Energies)
<b>PRONATURA</b>	Fondo Pro Naturaleza (Pro-nature Fund)
<b>RAMSAR</b>	Convention on Wetlands of International Importance
<b>RAP-AL</b>	Red de Acción en Plaguicidas y sus Alternativas para América Latina y el Caribe (Action Network on Pesticides and their Alternatives for Latin America and the Caribbean)
<b>REDIAF</b>	Red de Documentación e Información en el Área Agropecuaria y Forestal (Network for Documentation and Information on Agriculture and Forestry)
<b>NIR</b>	Net International Reserves
<b>APCS</b>	Air Pollution Control System
<b>SCJ</b>	Suprema Corte de Justicia (Supreme Court of Justice)
<b>SEA</b>	Secretaría de Estado de Agricultura (Ministry of Agriculture)
<b>SEE</b>	Secretaría de Estado de Educación (Ministry of Education)
<b>SEED</b>	Superintendencia de Electricidad y Empresas Distribuidoras (Superintendence of Electricity and Distribution Companies)
<b>SEESCyT</b>	Secretaría de Estado de Educación Superior, Ciencia y Tecnología (Ministry of Higher Education, Science and Technology)
<b>SEIC</b>	Secretaría de Estado de Industria y Comercio (Ministry of Industry and Commerce)
<b>SEMARENA</b>	Secretaría de Estado de Medio Ambiente y Recursos Naturales (Ministry of the Environment and Natural Resources)
<b>SEOPC</b>	Secretaría de Estado de Obras Públicas y Comunicaciones (Ministry of Public Works and Communications)
<b>SESPAS</b>	Secretaría de Estado de Salud Pública y Asistencia Social (Ministry of Public Health and Social Assistance)
<b>SGA</b>	Subsecretaría de Gestión Ambiental (Undersecretariat for Environmental Management)
<b>SIE</b>	Superintendencia de Electricidad (Superintendence of Electricity)
<b>SINAP</b>	Sistema Nacional de Áreas Protegidas (National System of Protected Areas)
<b>SOEBA</b>	Sociedad Ecológica de Barahona (Ecological Society of Barahona)
<b>SOECI</b>	Sociedad Ecológica del Cibao (Ecological Society of the Cibao)
<b>SPAW</b>	Specially Protected Areas and Wildlife
<b>TJ</b>	Terajoules
<b>UASD</b>	Universidad Autónoma de Santo Domingo (Autonomous University of Santo Domingo)

## EXECUTIVE SUMMARY

In May 2001, the Dominican Republic signed the Stockholm Convention on Persistent Organic Pollutants, a legally binding instrument, whose main objective is to protect human health and the environment from the effects of these pollutants. The country ratified its adherence to same via National Congress Resolution No. 445-06, dated 6 December 2006, in this way becoming a Party to same.

Article 7 of the Convention requires member countries to develop a National Implementation Plan (NIP) to demonstrate how they will put the assumed obligations into practice and enforce same. This plan must be submitted to the Conference of the Parties within a period of two years, as of the date of entry into effect of the Convention for such Party.

In order to fulfill this commitment and develop the National Implementation Plan for the Convention, the “Initial Assistance Project to Empower the Dominican Republic to Fulfill its Obligations with the Stockholm Convention on Persistent Organic Pollutants” was executed. The project was financed by the Global Environment Fund (GEM) and managed jointly by the United Nations Development Programme (UNDP) and the Ministry of the Environment and Natural Resources (SEMARENA), via the Undersecretariat for Environmental Management (SGA).

The NIP was developed by a team of national consultants under the supervision of an international consultant, via a participatory process, which involved groups considered to be stakeholders, among which were government institutions, regional and local authorities, business associations, non-governmental organizations and academic and research institutions. Some of whose members form the National Coordination Committee, a committee supervising the development of the NIP.

To develop same, the technical guidelines recommended by the Chemicals Branch of the United Nations Environment Programme (UNEP) and the World Bank were followed, the “Provisional Handbook for the Development of a National Implementation Plan of the Stockholm Convention”.

The NIP document is composed of several parts: first, a general profile of the country which details aspects related to the geography, population, politics, legislation, economy and the environment; the second part is an assessment of the real situation of persistent organic compounds in the country; the third part describes the elements of the country strategy and its 11 action plans. Last are the tables-a summary of the implementation timetable and resource requirements, respectively.

The POP’s situation in the country was determined by means of 11 preliminary inventories conducted in 2007 and through which information was identified regarding the production, import, use and management of POP’s, the regulatory and institutional framework of the country concerning hazardous chemical compounds, obsolete or contaminated storage sites, the technical structure that we have to monitor and assess POP’s, the systems for registering both new chemicals and those already existing on the market and the level of information and awareness about POP’s among stakeholders and as a result of dissemination to the Dominican population in general.

In addition to the 11 action plans, the strategy presents a country Declaration, which communicates acceptance of the developed Plan and the commitments for execution of same via the Ministry of the Environment and Natural Resources and inclusion of same in the environmental policies, within the general framework of the national strategy to achieve sustainable development.

With respect to the resources required for implementing these action plans, the NIP specifies that same must be shared by the Dominican Government and international cooperation from international cooperation agencies or from other country Parties to the Convention.

According to the compiled information, it has been ascertained that:

- In order to enforce the Stockholm Convention on Persistent Organic Pollutants, the Dominican Republic has the legal instruments to control hazardous chemical substances (decrees, regulations, technical standards). These legal instruments lack the strictness and systematic nature needed for their effective enforcement. To complete the legal and institutional adaptation of the country to the demands of international agreements concerning the management of hazardous chemical products, the Stockholm, Basel and Rotterdam Conventions, the country requires a legal instrument that assembles the regulations on hazardous chemical substances, which would include POP's (Law on Hazardous Chemical Substances), identifies the institutions responsible for executing same and adapts the existing legal instruments to the requirements of these agreements.
- Neither the legal use nor the sale of the nine persistent organic pollutants listed in Annexes A and B of the Stockholm Convention has been detected. This information was obtained from the review of a total of 22,064 records of import of chemical products contained in the data bases of the National Customs Department and the Ministry of Agriculture. Decree 217-91 prohibits the import, use, commercialization of a group of toxic pesticides, which includes those vetoed by the Stockholm Convention.
- The inventory detected denouncements of the illegal entry across the Dominican – Haitian border of pesticides with characteristics and effects very similar to the products prohibited by the Convention, which are introduced and commercialized with other names. However, it was not possible to confirm these denouncements.
- In the Dominican Republic there are currently 20 tons of DDT stored as waste at the installations of the Center for the Control of Tropical Diseases (CENCET), an agency of the Ministry of Public Health and Social Assistance (SESPAS). This quantity of DDT was imported in 1989 and stored at the Center when Decree No. 217-91, which prohibits the production, use, import and export of organochlorinated pesticides in the country, entered into effect. At present, the deterioration of the boxes and plastic packing bags is apparent, which causes the chemical to be dispersed throughout the site, with the risk of contamination and impacts on the health of personnel and the surrounding community. Along with the DDT, other products used to control vectors are present (cypermethrins, detamethrins, among others), which leads to cross contamination and thus, even greater risks.
- It was estimated that some 350 tons of transformer, capacitor and other equipment oils contaminated with PCB's are in existence. Given its duration, the inventory did not contemplate open systems contaminated with PCB's or transmission line transformers and low tension distribution transformers in operation. Therefore, the inventory must be continued until an information baseline is obtained with respect to PCB's in use and the storage of wastes and obsolete equipment up to their final disposal.



- Practices for handling PCB's and storage of same are not managed adequately. The degree of knowledge concerning the risk posed to health and the environment is low, especially among security guards at storage sites and among civil society, which tends to use the contaminated oils inappropriately for medicinal purposes. On the other hand, storage sites for equipment owned by the state electric company are few and too small for the quantity of transformers with PCB's that are no longer in use, which forces them to be left outdoors, which in turn causes many of them to become contaminated sites.
- In the country three categories of sources were responsible in 2005 (base year) for 97.1% (154.72 gEQT-I/a\*) of the unintentional emissions of POP's (dioxins and furans). These categories are: Open Burning, with 54.2% (86.96 gEQT-I/a), Energy and Heat Generation with 23.4% (37.55 gEQT-I/a) and Waste Incineration with 19.46% (31.22 gEQT-I/a).
- Within the category of Open Burning, a major contribution of emissions was produced by the subcategories of Agricultural Waste Burning, with an estimated 85.989 gEQT-I/a, and the subcategories of Forest Fires and Burning of Fields and Scrubland. The lack of data in the country prevented the calculation of emissions for this latter subcategory, although it was possible to establish that in 2005, there were 116 forest fires in the country, which affected 24,501.64 hectares.
- The second largest contribution of emissions was produced by the subcategories of Energy Generation with Wood and Power Generation Plants using Biomass. Both subcategories reported 30,388 gEQT-I/a and 6,475 gEQT-I/a, respectively.
- The third largest contribution of dioxin and furan emissions was found in releases from the subcategories of Medical/Hospital Waste Incineration with 26,699 gEQT-I/a and Hazardous Waste Incineration with 4,511 gEQT-I/a
- A large number of informal metal scrap smelting workshops were identified, which, although they do not produce major dioxin and furan emissions, place the worker population, as well as the nearby residents, at risk of contamination from emissions released when the compounds associated with the scrap are smelted.
- The inventory was not able to quantify the emissions from all sources of dioxins and furans existing in the country. In light of the fact that Article 5 of the Convention requires an assessment of current and projected releases, the first objective of the action plan is to continue the identification and quantification of emitting sources.
- Few sites contaminated with persistent organic compounds are known in the Dominican Republic. At present only the information compiled during the inventory is available. At none of the identified, categorized and classified sites was the presence of these pollutants confirmed through the use of analytical techniques. Nor in the country is there any history of remediating sites contaminated with these compounds. Of the 39 contaminated or potentially contaminated sites identified, 64% were contaminated with dioxins and furans (25), 31% with PCB's (12) and 5% with pesticides (2). One hundred percent (100%) of the landfills, hospital incinerators, forest fires, open solid waste burning and 58% of the electricity substations and generators were classified as Class 1 (requires action); sediment dredging and reconditioning of beaches, metal smelting workshops, and 25% of electricity generators and distributors were

Class 2 (probability of an action). No sites contaminated with Aldrin, Endrin, Dieldrin, Chlordane, Heptachlor, Hexachlorobenzene, Mirex and Toxaphene were found and only CENCET has DDT.

- It was evident that in order to comply with Art. 9 of the Stockholm Convention with respect to the exchange of information with other related government institutions, the major problems at present are the duplication of efforts, the lack of adequate communication mechanisms and the lack of participatory planning among ministries.
- There is no adequate monitoring, registration and control system for POP's releases; hence there is no data base that facilitates the exchange of precise, reliable and updated information on the reduction or elimination of the production, use and release of same. The country does not have research institutions devoted to the issue, nor information and education systems that have the specific mission of assessing the economic and social costs and dangers caused by same at the country level. Added to this is the fact that supervision and control of the commercialization and use of chemical products is the competence of several ministries, but there is at present no adequate coordination that prevents the duplication of efforts and overlapping competencies and gaps. In the midst of this general situation, one of the advantages of the country for effectively implementing this article of the Convention is the existence of Law No. 200-04 on Free Access to Public Information, which establishes the obligations and procedures that ensure the availability of relevant information generated by the various agencies from the public and private sectors.
- The Inventory and Analysis of the existing Levels of Information, Awareness and Education about POP's revealed a weakness or absence of educational programs and plans related to POP's aimed at risk groups and the general population.
- The government entities responsible for implementation of the Convention have not yet incorporated the process to educate, inform and raise awareness on POP's within their programs. Only the Ministry of Agriculture has implemented informational programs related to the elimination of agro-chemicals, which have mostly been a part of organic agriculture projects and not awareness-raising on POP's. This situation has contributed to the low level of information among sectors such as electricity and industry.
- Compliance with the provision concerning provision of comprehensive or assumed statistical data is a difficult task in the country, given the difficulty that exists to collect, compile and manage same. Information generated about the handling of hazardous chemical products, including POP's, is dispersed and its use is limited to the same institutions that produce it. Due to this weakness in data processing, obtaining accurate statistics currently implies high costs in terms of money and time.
- However, the country does have legal provisions which, if observed, would force stakeholders who handle chemicals to provide accurate information. In fact, there is currently a lack of compliance in the country with procedures that do require registration, handling and dissemination through national reports of data generated during the process of handling chemicals.

- Having accurate and reliable information that contributes to providing a comprehensive view and that is presented in an appropriate format is essential, not only for timely decision making, but also to inform society and human groups who use and/or come into contact with these hazardous substances. (Articles 3, 6 10). In addition to compliance with the duty to inform the Conference of the Parties (Art. 15).
- The Convention stipulates that its reports be presented at periodic intervals in a format agreed to by the Conference of the Parties and that same complement the other provisions of the Convention. The recommended intervals for submitting national reports may be chosen so as to coincide with alternate meetings of the Conference of the Parties, in other words, every four years.
- The inventories identified significant deficiencies and gaps in the safe and sound management of POP's. The country does not have a reference laboratory to measure PCB's in various environments, nor dioxin and furan emissions. Analytical capabilities are limited, although they can be improved through technical and financial assistance and a genuine national effort. According to the classification in the Handbook for the Global POP's Monitoring Program, the country is at Level 2, in which there is only one laboratory that is partially equipped with the infrastructure to conduct POP's measurements. Research conducted with respect to POP's is scarce, being limited basically to pesticides.
- Although precarious, the Dominican Republic does have the legal mechanisms to assess, select and register new pesticides and industrial chemicals and to manage those already existing on the market.

The specific objectives and criteria of the country established with the National Coordinating Committee allowed 8 priority lines to be identified that the country must adopt in order to decrease or eliminate the impacts of POP's on human health and the environment. These priority lines are as follows:

- Review and updating of the national legal and regulatory framework related to POP's;
- Environmental management of PCB's and equipment containing PCB's;
- Reduction of the immediate risks to the environment and health resulting from obsolete stockpiles and/or contaminated sites;
- Reduction of unintentional POP's releases (dioxins and furans);
- Systematic development of education and public awareness raising programs with respect to POP's;
- Development of a more efficient national infrastructure for the management and handling of POP's;
- Know the effects of POP's on public health and the environment through appropriate research studies;
- Identification of potential cross-border entry of POP's.

Within this context, the Dominican Republic assumes and agrees, via the Ministry of the Environment and Natural Resources (SEMARENA), and with the support of international cooperation, to put the National Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants into practice and include same in its environmental policies, within the general framework of the national strategy to achieve sustainable development. Implementation will be carried out via a unifying action that engages a group of state institutions and Civil Society organizations, including businesses, universities and Non-Governmental Organizations (NGO's).

The Principles that will guide the implementation of the NIP are the following:

- Shared responsibility
- Free access to information.
- Polluters pay.
- Articulation with the National Development Strategy, the Policies of Environment and Natural Resources and the relevant sectoral programs and plans.
- The use of more appropriate technologies and of international standards or parameters concerning POP's.
- Education and public awareness raising.

Below is a table showing the details for execution of the 11 action plans that comprise the strategy.

<b>Action plan</b>	<b>Responsible institution</b>	<b>Timetable</b>	<b>Financing sources</b>	<b>Total Cost</b>
3.3.1. Institutional and regulatory strengthening measures and waste.	SEMARENA	2008-2015	International cooperation and local resources	US\$77,800
3.3.3 Production, import and export, use, storage and pesticide wastes	DGA-SEA-SEMARENA-SESPAS	2009-2015	International cooperation and local resources	US\$45,500
3.3.4. Production, import and export, use, identification, marking, removal, storage, and disposal of PCBs and equipment containing PCBs (chemicals annex a, part ii, of the Stockholm Convention)	SESPAS, SEMARENA, SEA, DGA, CDEEE	2009-2015	International cooperation and local resources	US\$1,439,500
3.3.5 Production, import and export, use, storage and DDT wastes	SESPAS, SEMARENA, SEA, DGA	2009-2015	International cooperation and local resources	US\$180,000
3.3.7 Dioxin and furan emissions	SEMARENA-SESPAS	2009-2015	International cooperation and local resources	US\$165,041,000
3.3.11 Identification of Contaminated Sites and remediation of same in an environmentally sound manner.	SESPAS, SEMARENA, SEA,	2010-2015	International cooperation and local resources	US\$120,000
3.3.12 Facilitate or undertake the Exchange of Information and Involvement of Key Stakeholders.	SESPAS, SEMARENA, SEA, DGA		International cooperation and local resources	US\$1,478,000
3.3.13 Public awareness raising, information and education	SEMARENA, SEE-SESPAS y SEA	2010-2015	International cooperation and local resources	US\$1,181,818
3.3.15 Reporting	SEMARENA, SESPAS, SEA, DGA,	2009-2015	International cooperation and local resources	US\$84,500
3.3.16 Research, Development and Monitoring	SEMARENA, SESPAS	2010-2015	International cooperation and local resources	US\$981,000
3.3.17 Technical and Financial Assistance	SEMARENA	2008-2015	International cooperation and local resources	US\$41,500

The cost of implementing the NIP is US\$171.5 million, which will be financed from internal and external sources.

Implementation of the National Implementation Plan will be carried out starting in 2009, with the initiation of activities scheduled in Action Plans No. 3.3.3 - 3.3.4 - 3.3.5 - 3.3.7 - 3.3.15 and 3.3.17. However, due to exceptional causes, Action Plan No. 3.3.1, corresponding to the Regulatory and Institutional Framework, is scheduled to start implementation at the end of 2008, with the introduction of the environmental component into the Political Constitution of the Nation. This measure forms a part of the constitutional reform proposed and submitted by the Executive Power to the National Congress. Other Action Plans, such as No.3.11 -3.3.13- and 3.3.16 will begin implementation in 2010. All of the action plans will be completed in 2015.

The Ministry of the Environment and Natural Resources is the Focal Point for all agreements concerning this issue, as established in article 18, numeral 21 of Law 64-00, and has delegated in the Undersecretariat for Environmental Management, the Focal Point of the Stockholm Convention on POP's. The Designated National Authority is the head of the Environmental Quality Department of the Undersecretariat for Environmental Management, as verified in a communication addressed to the Secretariat of the Convention via the Ministry of Foreign Relations.

The Department of Environmental Quality of the SEMARENA will monitor and assess the execution of the activities identified in the NIP and in the Strategy, under the coordination of a National Implementation Commission. This Commission will be the National Implementation Authority, will be advisory in nature before the SEMARENA, and will be formed by representatives of those institutions related to POP's management.

## 1. INTRODUCTION

The high risk associated with Persistent Organic Pollutants (POPs) led the United Nations Environment Programme (UNEP) to recognize the need to develop an International Treaty that would protect the health of humans and the environment from the adverse effects produced by same. After years of negotiation, the countries that accepted the UNEP proposal met in Stockholm, Sweden, on the 22 and 23 of May 2001 and adopted the text of the Convention, which entered into force on 17 May 2004. To date, 151 countries are signatories and 124 are Parties to same. To comply with the objective of protecting human health and the environment, the Stockholm Convention seeks, in its first stage, to reduce and subsequently to eliminate twelve of the most hazardous POPs, nine of which are pesticides (Aldrin, Dieldrin, Endrin, Clordane, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene and DDT), three correspond to unintentional emissions (Dioxins and Furans, PCBs and Hexachlorobenzene) and one is a compound used industrially (PCBs).

The Dominican Republic signed the Convention in May of 2001, ratifying its adherence via National Congress Resolution No. 445-06, dated 06 December 2006, in this way becoming a Party to same. Articles 3 and 5 of the Convention indicate to the member countries the measures for reducing or eliminating releases deriving from the production and intentional use (products listed in Annexes A and B) and releases from unintentional production (Annex C). In Article 7 of the Convention, the Parties are required to develop a national plan for compliance with their obligations and to endeavor to execute same. Said plan must be forwarded to the Conference of the Parties within a period of two years, as of the date of the entry into force of the Convention for such Party. Same shall be reviewed and updated as required regularly and in the manner determined by decision of the Conference of the Parties.

For the purposes of compliance with this commitment, the Dominican Republic developed its National Implementation Plan (NIP) for the Convention via the project: “Initial Assistance to Enable the Dominican Republic to comply with its Obligations under the Stockholm Convention on Persistent Organic Pollutants”. This project was financed by the Global Environment Facility (GEM), administered via the United Nations Development Programme (UNDP) and executed by the Ministry of the Environment and Natural Resources (SEMARENA). The NIP was developed by a team of national consultants, under the supervision of an international consultant, via a participatory and consensus-building process, which involved groups considered of public interest, among which were government institutions, regional and local authorities, business associations, non-governmental organizations and academic and research institutions.

## 2. BASE LINE OF THE DOMINICAN REPUBLIC

### 2.1. COUNTRY PROFILE

#### 2.1.1. Geography and Population

##### Geography

The Island of Hispaniola, the second largest in the Greater Antilles, is shared by two countries: the Republic of Haiti, located on the western third, measuring 27,686 km<sup>2</sup>, and the Dominican Republic, with a surface area of 48,730 km<sup>2</sup> on the remaining two eastern thirds. The island is located between 17°36' y 19°58' Latitude N and 68°18' and 71°45' Longitude W (Fig. 1). The territory of the Dominican Republic forms a triangular shape, the base of which is the Dominican-Haitian border. Its irregular perimeter is approximately 1,648 km. long, of which 1,288 is coastline and 360 km is the border. Of the 48,730 km<sup>2</sup> that comprise the Dominican geography, 48,380 km<sup>2</sup> are occupied by land and 350 km<sup>2</sup> by inland waters. The land space of the Island is expanded by several keys and small islands, such as Saona (111 km<sup>2</sup>), Beata (47 km<sup>2</sup>) and Catalina (16 km<sup>2</sup>) Islands, which are among the largest. The aquatic space includes several inland lagoons, such as Lake Enriquillo (265 km<sup>2</sup>), the largest in the country, and coastal lagoons, Rincón (47 km<sup>2</sup>) and Oviedo (28 km<sup>2</sup>).



Figure1. Geographical location of the Dominican Republic in the context of the Caribbean.

Four major mountain ranges crisscross the country: the Cordillera Septentrional, parallel to the north coast; the Cordillera Central, with an average distance across of 80 km., occupying the largest surface area in the central part of the country (Pico Duarte, 3,175 m), and two smaller ranges: the Sierra de Neiba and the Sierra de Bahoruco, located in the southeast, and which are a continuation of the major Haitian mountain ranges, and the Cordillera Oriental or Sierra del Seybo. These mountain ranges are surrounded by three large valleys: Cibao, San Juan and the Enriquillo basin. The first is located between the Cordillera Septentrional and the Central, the second between the Cordillera Central and the Sierra de Neiba, and lastly, the third is between the Sierra de Neiba and the Bahoruco. The Caribbean Coastal Plain (between the Cordillera Oriental and the Caribbean Sea) is the largest and most important, formed by terraces measuring 10 to 40 km wide. The lowest point in the country is Lake Enriquillo (46 m below sea level) and the highest is Pico Duarte (3,185 m high).

The coastal zone drains water from 108 independent water networks, grouped in some thirty-nine basins and hydrographic regions, with available surface water of approximately 20,000 million m<sup>3</sup>/year (data from the Undersecretariat for Soil and Water/ SEMARENA). Of these, the Artibonito, Yuna, Ozama, Yaque del Norte and Yaque del Sur Rivers are considered to be major river basins.

The legal instrument on which the Dominican territorial division is based is Law No. 5220, dated 21 September 1959, which has undergone several modifications. When the VIII National Population and Housing Census was conducted in 2002, the country had 31 provinces and one National District, 127 municipalities, 98 municipal districts, 917 *sections*, 11,469 *parajes* (districts) and nine regions. The major cities are Santo Domingo de Guzmán, the capital of the country (1,913,540 inhabitants), Santiago de los Caballeros (908,250 inhabitants), San Francisco de Macorís, La Romana and Puerto Plata.

### Population

The VIII National Population and Housing Census registered a population in the country in 2002 of 8,652,541 inhabitants, with 4,265,215 men and 4,297,326 women for a masculinity index of 0.99. The projected population in 2050 is 13,176,592 inhabitants, with 6,496,162 men and 6,680,431 women. The Dominican Republic is a country that is in full demographic transition, presenting moderate fertility and low mortality rates. This particularity is reflected in a population that is growing moderately and with an age structure that is predominantly young, but with a tendency toward aging, as shown in an inter-census growth rate of 3.6% between 1950-1960 to 1.8% between the censuses of 1993 to 2002. This was due mainly to the reduction in the fertility rate, which went from 7.5 children per woman in the 1960's to 3.0 at the end of the millennium. The population density is 194 inhabitants per square kilometer and the average growth rate is 17 per one thousand inhabitants (ONE, 2008).

#### **2.1.2. Political profile**

The Dominican Republic has a democratic, republican civil and representative system of government. It is a unitary State. The Constitution of the Republic includes the principle of separation of the powers of the State, establishing three: Executive, Legislative and Judicial.

The Executive Power resides in the Presidency of the Republic, which is comprised of the President and the Vice-president, elected by popular and direct vote for four-year terms. The President is assisted in fulfilling his or her functions by Ministers (Secretaries of State) and other public officials, chosen by him or her (Under-secretaries of State, General Directors, General Administrators, Superintendents, etc.), and together they comprise the public administration.

The Legislative Power consists of a Senate and a Chamber of Representatives (National Congress). The Senate is comprised of 32 senators, one per province and the National District. The Chamber of Representatives has 150 members, one per every 50,000 inhabitants or fraction of 25,000. Each Chamber is independent in the organization and regulation of the matters for which it is responsible. The positions of Senator or Representative are incompatible with any other function or job within the public administration, pursuant to Article 18 of the Constitution of the Republic.



The Judicial Power is independent and is exercised via a Supreme Court of Justice with 16 judges, an Attorney General, 108 Courts of Appeal and 174 Provincial Courts in the major provinces and municipalities of the country. The SCJ is responsible for administering justice and guaranteeing equality before the law for all citizens. The government of the Municipalities is responsible for the City Governments, which are formed by a Mayor and a Board of Councilors. These local officials are elected by direct and secret vote by citizens from each district for a period of four years. They are independent from the other State powers in exercising their functions.

As in all democratic-representative systems, the Constitution of the Republic establishes the procedures and agencies of the State responsible for defining and executing foreign policy and obligating the State before the international community. Article 3 of the Constitution of 2002 establishes: “The Dominican Republic recognizes and enforces the standards of general and American International Law to the extent that its public powers have adopted same”, from which it is implied that Treaties, Agreements, Conventions or any other type of international legal instrument, agreed to by the Executive Power, as established in Article 55, Number 6, of the Constitution, in order to obligate the Dominican State, must be adopted (ratification or adherence) by the Legislative Power (Congress), pursuant to that which is established in Article 37, number 14, of the Constitution.

Once the international legal instrument is approved by the National Congress, it is the responsibility of the Executive Power, via the competent administrative agency (Ministry, National Department, etc.) to ensure compliance and implementation of said instrument, which then becomes an internal legal norm.

In the case of the legal instruments that make up International Environmental Law, which have been adopted by the Dominican State, it is SEMARENA that must ensure implementation and compliance with same as the focal point, according to Article 18, numeral 21, of Law 64-00, the General Law on the Environment and Natural Resources.

### **2.1.3. Economic profile**

With a per capita Gross Domestic Product (GDP) of 3,247 dollars, the Dominican Republic has had a sustained growth in the economy over the past 50 years that is above the average for the countries in the Caribbean region. The country reached a GDP of 35,890 million dollars in 2006. Of this total, 6.5% comes from the agro-livestock sector, the industrial sector contributes 27.4%, and the service sector makes up 58.6% of the total.

The agro-livestock sector is composed of 60% livestock, forestry and fishing with 3.9% of the GDP, agriculture contributes the remaining 40% of the sector with 2.6% of the GDP. In the industrial sector, local manufacturing represents 16% of the GDP, while the free zone sector (4.5%) has shown negative performance for the third year in a row. This category continues to decrease in large part due to the termination of the Textile and Garment Agreement (ATV) of the World Trade Organization (WTO) in 2004, which established import quotas to the North American market. Within the service sector, the sub-sector contributing most to the GDP is hotels, bars and restaurants (11.6%). This is followed by housing rental (8.8%), commerce (8.8%), transportation and storage (7.6%) and health (7.2%).

According to data provided by the Central Bank, the economy presented a growth of 8% in 2007 and an average growth rate of 9.3% during the past three years. During this period, the agriculture sector

grew by an average of 6.6%, industries by 9.3% and services by 38.6%. The country also received extraordinary revenue as a result of increased exports (4.4%).

As a result of the major economic crisis suffered during the period from 2003-2004, the country signed a Stand-by Agreement with the International Monetary Fund (IMF) in 2005. A Free Trade Agreement was signed with the United States and Central America (DR-CAFTA Agreement), which entered into effect in the first quarter of 2007.

## **Economic Indicators**

### ***Fiscal sector.-***

According to data from the Ministry of Finance, at the close of 2007, the total public debt component was 22.17% of the GDP. The total public debt has doubled in absolute terms from 2000 to 2007. However, since 2005, economic growth reduced the ratio between total public debt and the GDP. The expenditures for interest payments on the debt increased the current expense items of the Central Government from 66% of the total expenses in 2000 to close to 80% in 2007. The fiscal revenue of the Central Government comes mainly from current income (84%). The portion received as fiscal revenue contributions total 15%. The current income is supported by tax revenue that represents 79% of the total State revenue and non-fiscal income is around 5%.

### ***Labor market.-***

According to data from the Central Bank, the absorption of labor by economic sector has varied considerably since 1998 in the Dominican Republic. In that year, the agriculture sector employed 17% of local labor, manufacturing 18% and all services combined made up 58%. In 2006, the agriculture sector (15%) and manufacturing (14%) decreased their contributions to labor, while the service sector increased to 66%. In this same year, it was estimated that for every 100 working persons, remunerated or not, 56.2% were occupied in the informal labor sector. Expanded unemployment increased to 18.4% in 2004; in 2006 this level was estimated at 16%, while the open unemployment level decreased to 4.6% from 6.5% in 2004.

### ***Price indexes.-***

As a result of the economic crisis of 2003, the monthly consumer price variation index increased to 42.7% in 2004. Since then, the price variation levels have decreased to below double digits. The items with the greatest influence on annual price indexes are food, beverages and tobacco, along with housing, transportation and education, which represent approximately 70% of the total variations. The annual inflation rate has remained at an average of 7.11% between 2005 and 2007, after descending from 28.7% in 2004. Thirty per cent of this inflation rate is comprised of variations local fuel prices.

### ***External sector.-***

Within the balance of payments, the current account balance (2.5% of the GDP in 2006) maintains a constant deficit, except for 2003 and 2004. This deficit is financed by the country via the transfer of external capital, especially from the tourism sector (11.6% of the GDP), the main generator of foreign currency. Additional to this entry of capital is the growth in the transfer balance supported by the entry of remittances, which according to data from the World Bank, increased its flow to approximately US\$3,200 million in 2007.

The trade balance, the major component of the current account, maintains a negative balance. According to figures from the Central Bank, total exports increased by 31.67% from 1998 to 2006,

while total imports have increased by 47.30% during the same period. The capital and financial account presents positive balances, as a result of the total amount of direct foreign investments (2.7% of the GDP up to 2006) received by the country. This surplus consolidated the increase in the net international reserves (NIR) of the Central Bank, which totaled US\$1,787.8 million through December 2007.

## **Human development index**

According to the estimates of the Human Development Index published in the World Report on Human Development for 2007-2008, the Dominican Republic occupied the 79<sup>th</sup> position among 177 countries in the world (UNDP 2008). According to this report, close to 42% of the population is below the poverty line and approximately 16.2% of the population received an income of less than 2 dollars per day. The report also cites the low investment in education, 1.8% of the GDP, and 1.9% for the health sector. The net primary school attendance rate is 92 % of the population. The life expectancy at birth was 73.07 years in 2007; the infant mortality rate is 28 deaths per 1000 live births. Five per cent of the children are considered to be undernourished, according to the weight/age ratio. According to data from the Strategic Plan of the National Housing Institute (INVI), the housing deficit in the country was approximately 800 thousand dwellings in 2006. On the other hand, access to improved water sources reaches 75% of the population.

### **2.1.4. Environmental profile**

The Dominican Republic has a subtropical climate, modified by trade winds from the northeast and the topography of the country. The climate variations are marked, oscillating between semiarid and very humid. The average year-round temperature at sea level is 25°C, with seasonal variations. The average yearly precipitation varies drastically from 455 mm in the Hoya de Enriquillo to 2,743 mm along the entire northeast coast. There are normally two rainy seasons: April – June, and September – November. The December to March period is generally less rainy. The country is located in a tropical cyclone and storm region, a season that begins in June. The extreme effects of these weather events can be experienced between August and November.

The country has a diversity of bio-climatic and topographic zones that vary from dry (450 mm/year) to humid (>2,500 mm/year), depending on the altitudinal slope. This great diversity of conditions has given way to a broad range of eco-systems and habitats, from the coast to mountains, with varying types of vegetation: forests (conifers, broadleaf, dry and wetlands), scrublands (broadleaf, dry and saltwater wetlands), savannas, (saltwater, fresh water and in the form of haystacks), freshwater vegetation and areas with scarce vegetation. In the coastal region, mangroves grow with savannas of associated halophiles, coastal lagoons, beaches, low rocky coasts or cliffs, bays and estuaries. The submarine shelf has a variety of sea beds with abundant seaweed and coral formations of various types, which are well developed toward the ocean region.

#### ***Air.-***

There is little information available with respect to air quality, but isolated studies and day to day evidence indicate that the country is facing some problems in zones where industrialization and urbanization converge. The main sources of emissions are the energy, transportation and industrial sectors. According to the First National Communication on Climate Change, between 1990 and 1994, the energy sector represented 65 to 70% of the total emissions of Greenhouse Gases (GHG) in the Dominican Republic, with more than 15 Mt (millions of tons) of CO<sub>2</sub> emissions, which represented a

significant increase in comparison to the estimated 5.7 Mt in 1980. By 2002, these emissions had already increased to 18.68 Mt (data from the United States Energy Information Administration) due to the consumption and burning of fossil fuels, on which almost all of the national electricity supply depends. The transportation sector is responsible for a significant deterioration in air quality- not quantified- especially in the most congested urban centers, such as the City of Santo Domingo, where more than 14,000 vehicles circulate daily. In the industrial sector, the most serious case is the industrial zone of Bajos de Haina, catalogued as one of the ten most polluted locations in the world. In this zone, more than one hundred manufacturing, chemical, pharmaceutical product, metallurgy, electricity generating and refinery industries converge, which generate emissions and noise that exceed national standards.

#### ***Water.-***

The renewable surface water resources of the country are estimated at 20,000 million m<sup>3</sup>/year and the underground water between 1,550 and 1,660 million m<sup>3</sup>/year. The industrial and household sectors, and more recently tourism, depend more on the underground aquifers, while the regulated surface streams are more important for electrical power generation and agricultural irrigation. The National Institute of Resources (INDRHI) reports that the highest percentage corresponds to irrigation that covers approximately 4,392,445 tares and involves some 83,876 users. Surface waters are subject to negative impacts from the spilling of various pollutants, the extraction of materials (gravel and sand) from the beds and edges of rivers, introduction of exotic species, damming, canals, diversions and deforestation of basins.

The main environmental problem of the underground waters lies in the overexploitation of the aquifers themselves, which has caused saltwater intrusion phenomena. Another process of concern is that of underground water pollution resulting from the infiltration of domestic sewage and irrigation water into the karstic limestone of the subsoil.

#### ***Soil.-***

The loss of vegetation cover, a result of the indiscriminate cutting of trees, fires, natural agents and expansion of the agro-urban border, with fundamental changes in drainage patterns and the loss of natural space, has precipitated soil problems and deterioration: obvious erosion processes, salinization, a decrease in the nutritive layer and degradation of the physical, chemical and biological characteristics. Soil erosion, a clear sign of deforestation, is estimated at between 200 and 1,400 ton/ha/year, moving at an interval of 1 to 10 cm of soil thickness.

The reduction of the productive potential of the soil in the past six decades has been estimated at 60%. Due to these high levels of erosion, premature sedimentation in the country's dams has been a serious environmental problem ever since the construction of the first dams.

#### ***Forest resources.-***

The assessment of the vegetation cover and land use for the years 1988, 1992 and 1996, conducted in 1998 by the Inventory Department of the Department of Natural Resources (DIRENA) of the Ministry of Agriculture (SEA), estimated the forest surface at 13,266 km<sup>2</sup> or 27.5%. The country suffered a significant deforestation process caused by slash and burn agriculture, the production of charcoal, commercial exploitation of lumber and forest fires.

Deforestation has been estimated at 351 km<sup>2</sup>/year, with an annual rate of 2.8% between 1981 and 1990 (FAO, 1995), 264 km<sup>2</sup>/year with an annual rate of 1.6% (FAO, 1997) and 256 km<sup>2</sup>/year in the past 15 years. Therefore, it is considered to be the major cause of alteration of the country's natural habitats.

### ***Biodiversity.-***

The country ranks second with respect to its wealth of land and water biodiversity within the geographical framework of the Caribbean islands, with a high level of endemism. The flora includes some 5,400 species, with approximately 296 known species of birds and some 226 reptiles and amphibians.

The coastal region is 1,288 km long, where mangroves, coastal lagoons, beaches, low rocky coasts and cliffs, bays and estuaries alternate; close to the coast, throughout the entire surface of the Dominican shelf, there are sea bottoms, usually containing abundant sea weed, which lead to coral reefs that are more highly developed toward the ocean region.

Within this mosaic of environmental conditions, an exuberant and diverse fauna and flora grow, represented, according to the latest inventory of the EcoMar Program, by at least 2,307 species of algae, invertebrates and fish, distributed from the coast to a depth of some 3,000 m.

This biological wealth is under severe pressure, mostly caused by human activity. On land and internal waters the impact on biodiversity is caused by changes in the use of soil, demographic and infrastructure growth, overexploitation of natural resources or the introduction of invasive species, while on the coast and the sea population, growth, marine pollution, inappropriate use of beach and coral reef resources by tourism and inadequate fishing practices are the most significant causes.

### ***Protected areas.-***

Pursuant to Law 202-04, the country's National System of Protected Areas (SINAP) is composed of 86 Protected Areas distributed in six main categories: Strictly Protected Areas (8), National Parks (19), Natural Monuments (17), Habitat/Species Management Areas (15), Natural Reserves (15) and Protected Landscapes (12). This group of protected land spaces covers some 9,600 km<sup>2</sup>, equivalent to close to 20% of the country's surface area, together with some 504,000 km<sup>2</sup> of protected marine spaces, all aimed at complying with the conservation objectives established in the aforementioned law.

### ***Solid wastes.-***

It has been estimated that the city of Santo Domingo alone produces approximately 3,500 tons of municipal solid waste that is deposited in La Duquesa Landfill, one third of which comes from the National District and two thirds from the Province of Santo Domingo.

Considering that in the rest of the country it is estimated that there are some 365 known landfills and an unknown number of spontaneous landfills, it has been estimated that the amount of garbage produced daily in the country is 7,000 tons. The situation is even more complex in light of the fact that the landfills can receive all types of waste-hazardous and non-hazardous- that is deposited in the open and, most of the time, is burned. According to the First National Communication on Climate Change, the total annual net emissions of methane from this item are estimated to be between 58.02 Gg and 110.79 Gg.

### ***Water pollution.-***

Human settlements generate the major part of the pollutant load. In recent times, the development of tourism infrastructure has become one of the main generators of pollutants in the water environment, mainly by sewage water and solid waste. With respect to land-originated sources that discharge directly to the coast, some 84 of agro-livestock origin have been identified (28%). The impact of the industrial sector varies according to the type of industry, but among the most polluting are the chemical industry, sugar cane industry and food processing and to a lesser extent, mining. Other sources of pollution are port activities, there being some 22 sources at the twelve ports around the country, the main cause of this pollution being hydrocarbons.

### ***Biological safety.-***

With respect to this issue, the country is taking the first steps toward formulating a Draft Bill on Bio-safety in the Dominican Republic, the objectives of which are: a) guaranteeing the safe use of modern biotechnology, b) contributing to an adequate level of protection in the use of modified living organisms and their derivatives, c) preventing adverse effects for the conservation and sustainable use of biodiversity, human health and the environment, d) establishing general precepts to regulate research, releases into the environment and final disposal and elimination with respect to modified living organisms.

The Ministry of the Environment and Natural Resources (SEMARENA) is the authority entrusted with enforcing this law that creates the National Bio-safety Council (CONABIO), a decentralized agency charged with assessing enforcement of same.

### ***Public health.-***

The environmental aspects connected to public health are related basically to air, soil and water pollution as a result of emissions of noise and gases and the inadequate disposal of sewage water and solid waste, which expose the population to a degraded landscape and an unhealthy environment with the resulting risk of disease.

## **2.2. INSTITUTIONAL FRAMEWORK, POLICIES AND REGULATIONS**

### **2.2.1. General legislative framework, environmental policy and sustainable development policy**

The General Law on the Environment and Natural Resources (Law 64-00) is the legal framework that regulates the actions of the country's productive systems with respect to the environment and natural resources. Its regulatory instruments applicable to environmental management include environmental standards concerning protection against noise, air quality and control of air emissions, environmental management of solid non-hazardous waste, water quality and control of discharges and a standardized procedure for environmental assessments. All of these instruments are implemented via the Undersecretariat for Environmental Management (SGA) of the SEMARENA, in coordination with the various Undersecretariats and other institutions.

Dominican environmental policies are based on Law 64-00 and protected by the Constitution of the Republic, the reform of which seeks to explicitly incorporate the issue as a central theme for action in decision-making and national policies, including, among these, the environmental component as a guarantee of the sustainable economic and ecological development of the country.

To underscore the importance of environmental policies and guarantee a balance, not only in scientific terms, but also in the social and economic sphere, they must form a part of the *2003 Poverty Reduction Strategy*, point 4.1.2.1, which proposes the need for institutional reforms, including the water sector, an essential component of human life. Likewise, within the national strategy, point 4.1.2.2, subsection (i), establishes the importance of investing in the housing and sanitation sector, with significant interventions in the area of the Environment and Natural Resources, as these are considered part of the multidimensionality of poverty. Protection against natural disasters and environmental sustainability is considered to be an interdisciplinary issue of the ERP-RD (point 4.2).

On the other hand, the Millennium Development Goals, specifically Goal 7, include three main objectives to ensure environmental sustainability as an integral part of sustainable development, creating, via Decree 1215-04, the Presidential Commission on the Millennium Goals and Sustainable Development (COPDES), an entity that, among its functions, coordinates the contributions of the various Ministries, Departments and other government agencies to the Poverty Reduction Strategy (PRS), based on the Millennium Goals, including the cooperative identification of public investment strategies that the country needs in order to meet the Millennium Goals, among others.

Another reference framework for policies designed to achieve sustainable development is Chapter XVII of DR-CAFTA, because free trade can damage the environment if it is not framed within a comprehensive environmental policy. It is for this reason that the design, implementation and monitoring of environmental policies framed within sustainable development hinges on the participation of all sectors (government, business, civil society). In the case of support for the FTA, there is the Central American Commission on the Environment and Development, which seeks to facilitate the integration of business sector efforts that promote competition, but which include the environmental perspective.

### **2.2.2. Roles and responsibilities of the ministries, agencies and other government institutions involved in managing the POPs**

The institutional structure for environmental management in the Dominican Republic, including POPs, is comprised of the National System for the Management of the Environment and Natural Resources, the National Council on the Environment and Natural Resources and the Ministry of the Environment and Natural Resources (SEMARENA), with seven Undersecretariats (Environmental Management, Soil and Water, Forest Resources, Protected Areas and Biodiversity, Coastal and Marine Resources, Administrative, Financial and Education and Information). There is also a Sectoral Planning and Programming Office. The administrative agency responsible for managing chemical products and substances is the Undersecretariat for Environmental Management (SGA), via the Department of Hazardous Substance Management under the Department of Environmental Quality.

Other institutions related to chemical substances and products include: National Department of Quality Standards and Systems (DIGENOR), National Customs Department (DGA), the Ministry of Agriculture (SEA), the Dominican Corporation of State Electric Companies (CDEEE), the Superintendence of Electricity and Distribution Companies (SEED), the Ministry of Health and Social Assistance (SESPAS), the Dominican Municipal League (LMD), Municipal Governments, the National Energy Commission (CNE) and the National Department of Internal Taxes (DGII).

### **2.2.3. International obligations and commitments of the country**

The Dominican Republic has been active in signing and ratifying multilateral treaties and conventions related to environmental protection. Of all of the agreements in which the country has participated, more than 50% have been signed and/or ratified in the past decade, which demonstrates its commitment and effort to achieve sustainable development goals.

The international agreements to which the Dominican Republic is a party are:

- Conventions on the Territorial Sea and Contiguous Zone, High Seas, Fishing and Conservation of Living Resources of the High Seas and the Continental Shelf. Convention on the Territorial Sea and Contiguous Zone, Resolution 300 of 1964.
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. Resolution 542-73, dated 27 August 1973.
- International Convention on Civil Liability for Damages Caused by Pollution of Sea Waters by Hydrocarbons and its annex. Resolution 108-74, dated 20 December 1974.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Resolution 550-82, dated 17 June 1982.
- Protocol Related to Specially Protected Areas and Wildlife of the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean. Date of adoption of the Protocol: 18 January 1990. On 11 June 1991 its annexes were adopted.
- Vienna Convention for the Protection of the Ozone Layer and its Protocol from Montreal. Resolution 59-92, dated 8 December 1992.
- United Nations Convention on Biological Diversity. Resolution 25-96, dated 2 October 1996.
- United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought or Desertification, particularly in Africa. Resolution 99-97, dated 10 June 1997.
- Central American Alliance for Sustainable Development (ALIDES). Declaration of the Dominican Republic, dated 6 November 1997/Not binding.
- United Nations Framework Convention on Climate Change. Resolution 182-98, dated 18 June 1998.
- Cartagena Convention for the Protection and Development of the Marine Environment in the Wider Caribbean. Resolution 359-98, dated 15 July 1998.
- International Convention for the Prevention of Waste Discharges from Ships (MARPOL 73/78). Resolution 247-98 of 1998.
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Resolution 10-03, dated 10 June 2000.
- 1990 London and 1992 Copenhagen Amendments to the Vienna Convention for the Protection of the Ozone Layer. Resolution 125-00 (GO NO. 10067 d/f 15-12-2000).



- Convention related to Wetlands of International Importance (RAMSAR). Resolution 177-01, dated 8 November 2001.
- Kyoto Protocol/United Nations Framework Convention on Climate Change signed in Kyoto. Ratified by Resolution 141-01 of 2001.
- Central American Commission on the Environment and Development. Tegucigalpa Protocol dated 13 December 1991, which creates SICA. Association Agreement between SICA and the Dominican Republic, dated 10 December 2003, which entered into force on 27 September 2004.
- Beijing Amendments to the Vienna Convention for the Protection of the Ozone Layer adopted at the Fifth Meeting of the Conference of the Parties, held in Beijing, from 29 November to 3 December 1999. Ratified on 13 October 2004.
- Stockholm Convention on Persistent Organic Pollutants (POPs). Resolution 445-06, dated 6 December 2006.
- Rotterdam Convention for the Application of the Prior Informed Consent Procedure for Certain Hazardous Pesticides and Chemicals in International Trade. Resolution 106-06 of 2006.
- Cartagena Protocol on Biosafety of the United Nations Convention on Biological Diversity. Resolution 10-06, dated 3 February 2006.
- Free Trade Agreement between the Dominican Republic, Central America and the United States of America. Resolution 357-05, dated 6 September 2005/ Law 424-06, dated 20 November 2006.
- Convention on Environmental Cooperation between the Dominican Republic, Central America and the United States of America. Signed on 18 February 2006, at the OAS Headquarters in Washington.

#### **2.2.4. Description of current legislation related to POPs**

Table 1. Summarizes the legislation related directly or indirectly to POPs in the Dominican Republic. Indicates its date of issue, the POPs involved in the regulation, as well as the responsible institutions. Of approximately 20 regulations, only seven refer directly to these components, while thirteen deal with them indirectly.

<b>Year</b>	<b>Regulation</b>	<b>Content</b>	<b>POPs involved</b>	<b>Institution Responsible</b>
2001	Resolution 08-01	Prohibits the sale and/or distribution of oils containing PCBs and/or equipment or materials contaminated with same; the import of products, equipment, new or discarded, that contain PCBs or that could be contaminated by same, the import of transformers and other equipment manufactured using PCBs; incineration of oils that contain or are presumably contaminated with PCBs and the dumping of oils or other substances that contain or are contaminated with PCBs, as well as disposing of equipment or materials in landfills that contain them or are contaminated.	PCBs	SEMARENA CDE, SEED

**Table 1. Legal provisions in force and responsible institutions related directly or indirectly (\*) to POPs.**

Year	Regulation	Content	POPs involved	Institution Responsible
2005	Resolution 09-05	Promulgates environmental regulations for the use, management, transport and disposal of PCBs.	PCBs	SEMARENA
2004	Resolution 09-04	Establishes the environmental standard for the quality of underground waters and discharges into the subsoil, which dictates the maximum values of some POPs present in underground waters.	P/ PCBs	SEMARENA
2003	Resolution 09-03	Approves and issues the environmental Standard for water quality and discharge control. Dictates the maximum values of some POPs in surface waters and coastal waters. Dictates the maximum permissible values for industrial discharges into surface waters and into the subsoil in the case of manufacturing and formulation of pesticides and wood preservation. Provides the reference for discharges into surface, coastal waters, subsoil and sewers for organochlorides in general.	P/ PCBs/DF	SEMARENA
1988	Regulation 322-88	Enforces Law 311-68 and deals with the registration and commercialization of pesticides in the country	P	SEA,
1968	Law 311-68	Regulates the manufacturing, production, packaging, storage, import, sale and trade in any form of insecticides, zoocides, phytocides, pesticides, herbicides and similar products.	P*	SEA, SEMARENA
1968	Regulation 1390-68	Regulates complements and expands the enforcement of Law 311-68.	P*	SEA, SEMARENA
1985	Resolution 31-85	Establishes guidelines for planting, use and management of pesticides in all agricultural areas of the country to guarantee the quality of exports.	P*	SEA
1992	Law 11-92	Approves tax exemption for pesticides.	P*	DGII
1997	Resolution 10-97	Chapter III. On soil pollution. Art. 90. Prohibits the use of waters polluted with organic waste, chemicals, pesticide, and mineral fertilizers for irrigation, the use of chemical products for agricultural and other purposes without prior authorization from the competent state agencies or use of any product prohibited in its country of origin.	P*	SEA
1991	Decree 217-91	Prohibits the import, production, formulation, commercialization and use of various agro-chemical products, among them several POPs, because their hazard to human health and the environment has been proven.	P	SEA, SEMARENA
1991	Resolution 391-91	Dominican Emergency Standard No. 436, NORDOM 436 promulgated, which creates standards for industrial discharges into bodies of water.	P	DIGENOR
2003	Resolution 10-2003	Environmental management standard for solid non-hazardous waste. Prohibits open burning of solid waste and dictates standards for the adequate incineration of waste.	DF*	SEMARENA

**Table 1. Legal provisions in force and responsible institutions related directly or indirectly (\*) to POPs (continuation).**

Year	Regulation	Content	POPs involved	Institution Responsible
2007	Law 57-07	Incentive Law on Renewable Energies and their Special Regimens.	DF*	CNE
2003	Resolution 10-2003	Environmental standard on air quality and air emissions control. Provides the air emissions standards for pollutants into the air for fixed sources, both existing and new, with values of 0.1 ng/m <sup>3</sup> for dioxins and furans in the activity of incinerating hazardous waste.	DF	SEMARENA
1952	Law 3455-52	Establishes the authorities and attributions of the Municipal Governments, among which is the collection and disposal of solid wastes.	AG*	LMD/AM
2001	General Health Law 42-01	Declares in chapter V and Article 122, the control of pesticides, fertilizers and toxic substances to be of great importance, given their repercussions on the health of the population.	AG*	SESPAS
2003	Resolution 12-2003	Approves the standard for the Environmental Management of Solid Municipal Wastes.	AG*	SEMARENA
2006	Resolution No. 02-2006	Promulgates the regulations for the management of hazardous chemical wastes and substances; the labeling and information on the risk and security of hazardous materials, the list of hazardous waste and substances and their transportation.	AG*	SEMARENA

DIGENOR. National Department of Quality Systems and Standards, SEA. Ministry of Agriculture, SEMARENA. Ministry of the Environment and Natural Resources, CDE. Dominican Electricity Corporation, SEED. Superintendence of Electricity and Distribution Companies, SESPAS. Ministry of Health and Social Assistance. LMD. Dominican Municipal League. AM. Municipal Governments. CNE National Energy Commission. DGII. National Internal Tax Department. AG. General application. P. Pesticides (Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor and Hexachlorobenzene) PCBs. Polychlorinated ed Biphenyls DF. Dioxins and furans.

### **2.2.5. Key procedures and approaches for the handling of POPs, including requirements for execution and monitoring of same**

The approaches and procedures for the handling of POPs have been presented with a description of the institutional responsibilities and regulatory framework.

## **2.3. ASSESSMENT OF POPs AND CURRENT INFRASTRUCTURE IN THE COUNTRY FOR MANAGEMENT OF SAME**

### **2.3.1. Assessment of the POPs listed in Annex A, Part I of the Convention (history, current and projected production, use, import and export, summary of available data (environment, food, humans) and impacts on health.**

Within the category of POPs pesticides, the Stockholm Convention groups several chemical compounds listed in Annex A, whose hazard level demands the adoption of legal and administrative measures to eliminate the production, use, import and export of same. These are Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex and Toxaphene. The Dominican Republic does not produce, nor has it ever produced any of these compounds, whose massive introduction into the country was via imports, which ended as of Decree 217-91, although latter does not include Mirex and Toxaphene. This legislative and normative framework has contributed to the total elimination of POPs pesticides.

The legislation that directly regulates the management of pesticides in the country includes a decree, three laws and a regulation, as we have already mentioned. Consultation with experts, as well as analysis of the regulation during the recent pesticide inventory conducted in 2007, allowed weaknesses and gaps to be identified, especially obvious in Regulation 322-88, the support document for the safe management of pesticides in the country. Considering that there is a law that establishes the prohibition of POPs pesticides in the country, the management of these is not contemplated in the current environmental policy. The Ministry of Agriculture (SEA), as the lead institution in this process, provides operations centers for these purposes. Among its responsibilities are: to control the import of pesticides, certify the representative companies, distributors, fumigators and vendors. Through its Pesticide Registration Division, it has the legal authority to control the entry of these products, via the inspection of involved establishments.

#### ***Inventory methodology.-***

To collect information on POPs pesticides in the country, an analysis was conducted of 22,064 pesticide registrations for the years 2000 to 2006, from the National Customs Department and the Pesticide Registration Division of the Department of Plant Health, an agency of the SEA. A review was carried out of literature at the documentation centers of the Panamerican Health Office [sic] (PAHO) and the SEA, and all of the relevant websites were researched.

#### ***Use of POPs pesticides in the Dominican Republic.-***

There are few references concerning use in the country of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex and Toxaphene. In 1956 there were reports of campaigns to apply Dieldrin in household sprayings (Alvarado, 1956), a use that intensified when the *Aedes aegypti* mosquito became resistant to DDT. Later on, this resistance was extended also to Dieldrin (Pal, 1964).

From 1970 to 1980, judging from the manual for the treatment of pesticide poisoning, symptoms and treatment, which includes Aldrin, Chlordane, Dieldrin, Endrin and Heptachlor, the use of POPs continued (Blanco de Fermín, 1981). During that decade, the data would even seem to indicate that the use of pesticides increased, both in quantity and variety, because in addition to the use of Dieldrin for public health purposes, which began in the 1950's, other compounds were added for agricultural purposes.

In 1975, the International Chemical Safety Committee confirmed the use of Aldrin and Dieldrin in plantain crops in the Dominican Republic (IPCS, 1975) and in 1979, the Interamerican Institute of Agricultural Sciences (IICA) found very high concentrations of Aldrin in cabbage from the Constanza Valley, with values between 130300 ppb and 211000 ppb and an average of 186000 ppb (Friestadt *et al.*, 1979). This situation created great alarm and temporarily cost the vegetable farmers of Constanza the loss of the United States market (AHORA, 2002).

From 1978 to 1981, the import and use of Aldrin and Heptachlor continued (Alfonseca, 1985). Before being prohibited, the use of Dieldrin to fight plagues of mosquitoes carrying malaria (*Anopheles albimanus* and *A. crucians*) and dengue (*Aedes aegypti*) seemed to have intensified; because NEHC (2003) mentions that the three species of vectors developed a resistance to the compound.

The 1990's summarizes 40 years so far of continuous abuse and use of these compounds, the presence of which was detected in several foods during this period.

The reality of POPs pesticides in the country has consisted in the gradual reduction since they were prohibited in 1991, up to their complete elimination in the present. The inventory conducted in 2007 did not find stockpiles of obsolete products. Most of these compounds have not been identified in the environments analyzed during research and, when they have been registered, the concentration are below the limits of the Codex Alimentarius (FAO/WHO, 2006), the water quality standards for the protection of marine life and human health (EPA, 2008) and the Japanese standards for residual pesticides in vegetables.

The prohibition of the entry into the country of POPs pesticides is certified by the Pesticide Records Division of the Department of Plant Health of the SEA, which confirms that since 4 June 1991, no imports of Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene and Toxaphene have been authorized.

Registration of the pesticide Mirex has never been requested in the country. The results of the review of 22,064 records of agro-chemical products (2000-2006) are shown in Table 2. In this table it is observed that Lindane (Hexachlor Gamma Benzene), imported by a laboratory to make medicine linked to the area of health, and Aldicarb, used as an insecticide, were two products introduced into the country in 2004 and shown as prohibited by Regulation 217-91. Both were detected in the records of imported chemical products at the National Customs Department.

The scarce available data indicates that for the period 1975-1983 (including POPs), the cost of import was between 7 and 21 million dollars, indicating a strong dependence on agro-chemicals. More recent figures, which no longer include any POPs, indicate imports of pesticides with figures of between 22 and 32 million for the period 2002-2004, where the main role is now being played by other compounds (chlorpyrifos, dimethoate, diquat, diuron, glyphosate, metamidophos, monocrotophos and paraquat). In light of the fact that the country has never produced nor does it produce POPs pesticides, there is no export of these products.

**Table 2. Records of pesticide imports 2000-2006 (according to Item 3808 of the National Customs Department and the Pesticides Records Department of the Ministry of Agriculture).**

Year	No. of agro-chemical records	Observations
2000	1,568	No POPs were found
2001	2,286	No POPs were found
2002	3,242	No POPs were found
2003	3,052	No POPs were found
2004	3,091	The import of 99% Lindane was found, 25 kg. bags from the Company ASAVIM, C X A. Decree 217-91 prohibits the import of this product, although it is not included in the POPs.
2005	4,524	No POPs were found
2006	4,301	This year there was also the import of Lindane, similar to 2004.
<b>Total</b>	<b>22,064</b>	<b>In the records of the DGA for this item, 3,808 products are registered generically: "products for insect control".</b>

***Denouncements of illegal entry of POPs pesticides.-***

Despite the above and the lack of evidence of POPs pesticides in the country according to the 2007 inventory, during field visits some of those interviewed affirmed the use in the country of compounds with characteristics and effects very similar to the products prohibited by the Convention. According to these sources, POPs pesticides enter the country illegally and are commercialized using other brand names. According to their theory, the possible point of entry is across the border with the Republic of Haiti. Given the lack of success in confirming these denouncements, verification of same has been contemplated via one of the activities being considered for implementation of the Convention.

**2.3.2. Evaluation of the POPs (PCBs) listed in Annex A Part II**

The Stockholm Convention, in Annex A Part II, lists polychlorinated biphenyls or PCBs (the acronym in English), chemical compounds with a hazard level that requires prohibition and/or adoption of legal and administrative measures to eliminate the production, use, import and export of same.

The Dominican Republic has never produced PCBs; hence the introduction of these compounds into the country is entirely through imports.

The major concentration of equipment containing PCBs in the country is found in electricity capacitors and transformers used in public grids. Nationally, there are twelve power generation stations, distributed in various power plants throughout the country, and three distribution companies, which provide power to the northern, southern and eastern regions of the country. It is estimated that there are approximately 85,000 utility pole transformers in operation, of which 90% supply power to residential, commercial and industrial sectors. The remaining 10% is owned by large companies that consume medium and high voltage power.

The Electricity Generator of the East (EDEESTE), of which the State owns 50%, reports that it has no records of the PCB contents present in the utility pole transformers it inherited from the Dominican Electric Company (CDE) in 1999, the year in which it started operations. Aware of the environmental damage caused by the use of PCBs and in compliance with the Regulation on the Handling of Hazardous Wastes, two of the power distribution companies have established the procedure for qualitatively detecting the content of PCBs in the pole transformers that are withdrawn from service

due to a breakdown or maintenance. In the event that the qualitative test should reveal a PCB content greater than 50 ppm, the equipment is replaced by others that do not contain them, the contaminated equipment is then confined in secure sites so that they do not pose a risk to the health of personnel or the environment. Currently, the companies do not have records indicating the number of damaged, repaired or reused transformers that are mounted on poles, or those that have been replaced.

The electricity distributors reported the stockpiles of equipment and containers containing PCBs. Some EDENORTE and EDESUR substations have sites called Green Points, where they safely confine the transformers that contain PCBs and are no longer used. However, all of the Green Points visited were too small for the current number of contaminated transformers, which forces the surplus to be placed outdoors, turning the site into a potential contamination site and leading persons ignorant of the risks, to violate the equipment in order to extract the contents. It is obvious that the personnel guarding these sites is not instructed on safety measures, nor on the risks posed to their own health.

In 2004, the EDENORTE and EDESUR power distributors disposed of 24,064 kg of oil contaminated with biphenyls extracted from the transformers, which was sent to the Tredi Company, located in France, to be eliminated. The mining company Falconbridge Dominicana stated that since the end of the 1980's it had eliminated transformers containing PCBs by taking advantage of its own infrastructure. The process consisted of decreasing the concentration of PCBs to non-polluting levels and then incinerating the remaining oil. Given the fact that the country does not have the national capability to adequately treat and eliminate electrical equipment and fluids contaminated with PCBs, efforts are directed at confining these applications.

According to information provided by owners of transformer repair shops, the practice of eliminating contaminated oil consists of gradually diluting the concentrations of PCBs by emptying them and filling them with mineral oil, so that with subsequent refills the concentrations of PCBs are decreased. These oils are accumulated in 55-gallon tanks that are later sold for RD\$2,000.00. Their final destination is foundry shops or informal foundries, which use a mixture of used vehicle oil, diesel fuel and the so-called "electric oil" (PCBs) as a comburent, given its advantages in terms of consumption, calorific properties and money savings. It was difficult to locate these foundries because they work clandestinely and the few that were contacted confirmed the exclusive use of burnt vehicle oil.

Given that the country has regulations concerning the use, handling, transport and disposal of PCBs, which prohibit their import and export (Resolutions 08-01, 09-05), and environmental standards that prescribe the maximum permissible values of PCBs in surface waters (Resolution 09-03) and underground waters (Resolution 09-04), companies that have arisen subsequent to the promulgation of same do not have transformers containing PCBs. These companies use dry, mineral oil or silicone transformers. However, many companies, particularly those created in the early and mid-twentieth century, still have transformers containing PCBs. The use of so-called "electric oil" is popular in the country for treating arthritis. It is also used to clean firearms, move forklifts, mixed with other fuel, and as a comburent in informal foundries, among other uses.

The lack of enforcement of current regulations, particularly with respect to the obligatory nature of registering and declaring equipment containing PCBs to the SEMARENA and labeling transformers whose contaminated oils were replaced with other types of oil, along with the lack of accredited laboratories to conduct analyses and the general lack of knowledge concerning the risks that PCBs pose to health and the environment, are significant gaps that must be corrected.

### ***Inventory methodology.-***

The inventory began with the identification of the owners of equipment and materials containing PCBs, creating a data base by sector and making the first contacts in order to obtain general data from the institutions involved. Emphasis was placed on companies that were founded before 1979, under the premise that they might still be in possession of the transformers with which they began operations. Likewise, control of electricity transformer imports from 2001 to 2007 was verified using records from the data base of the National Customs Department (DGA).

Once the requested data was obtained, *in situ* inspections were conducted in order to collect information and determine the existence of sites or equipment contaminated with PCBs, through the collection and analysis of samples. Although the assessment focused on transformers, it also included capacitors, switches, oil containers and scrap materials. The information related to each piece of equipment was obtained firstly from the attached number plate that specifies: the name of the manufacturer, country of origin, type of use, capacity, year of manufacture, commercial name of the oil, among other information. If this information was not available, it was requested from the owner of the equipment. If no information was obtained, the equipment was considered to be potentially positive for the presence of PCBs, thus requiring the qualitative test to detect the chlorides stripped from PCBs. This test was also applied to transformers and capacitors that did not explicitly indicate that they contained PCBs on the affixed metal plate or the vendor's information sheet. All transformers and capacitors manufactured in North America before 1979 and in Western Europe before 1984 were considered to have PCB contents. For cases testing positive with the qualitative test, a second quantitative test was applied, using a DEXIL L2999Dx Analyzer.

At the electricity generators, the inventory only covered transformers that were out of service and transformers containing PCBs confined at the Green Points. The compiling of information and sampling from pole transformers was very limited, due to the fact that it was not practicable to take them out of operation to obtain information about them. Out-of-service transformers were all those that were temporarily or definitively withdrawn from service. Transformers placed at the Green Points are included in this category.

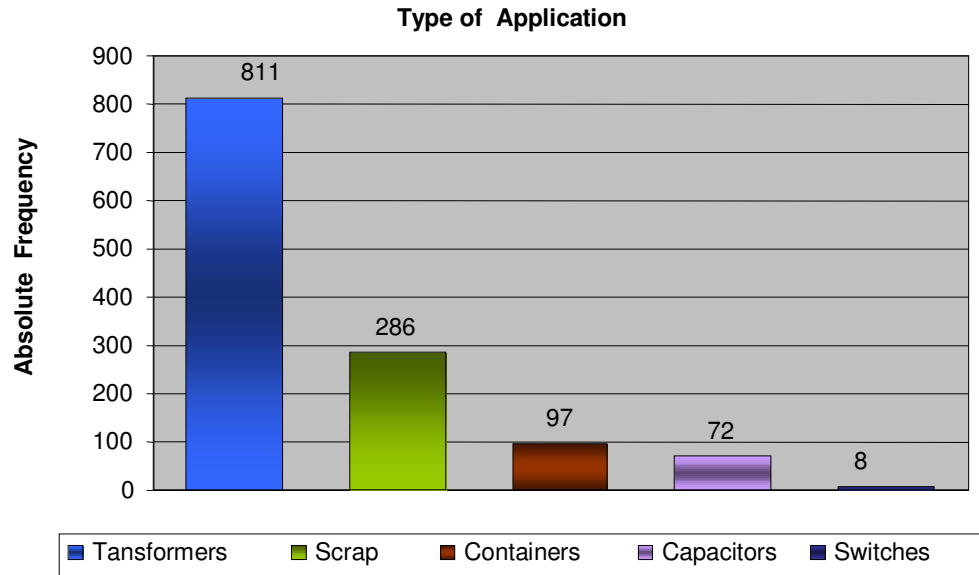
Equipment and applications can be classified as: closed, partially closed and open. For the inventory, only closed and partially closed equipment and applications were considered. The inventoried organizations included a sampling of electricity generators and distributors, repair shops, oil refineries, mining companies, foundry companies, cement factories, food and beverage processing plants, the sugar cane industry, construction materials industry, research and analysis laboratories, healthcare centers, commercial centers, military bases and hotels.

### ***Status of PCBs in the Dominican Republic.***

#### ***Closed and partially closed applications.-***

The compiling of data was carried out at 68 institutions of a total of 543 with a potential for having equipment containing PCBs. The inventory was conducted on 1,274 pieces of equipment distributed in the following manner: 811 transformers, 286 pieces of scrap material, 72 capacitors and 8 switches and 97 55-gallon containers (Figure 2), the distribution of which is summarized by company in Table 3. Of these, an analysis of the PCB content was conducted on 164 transformers and 97 containers. Fifty-eight per cent of the evaluated transformers and 17% of the containers had a PCB content greater than 50 ppm.





**Figure 2.** Distribution of the inventoried applications.

The majority of inventoried transformers, as indicated in Figure 3, contained mineral oil (69%), followed by those containing PCBs (18%) and then those that were dry (13%). It is assumed that the high proportion of transformers found with mineral oil is due to the prohibition of transformers containing PCBs that has existed in the country since 2001, which has caused many companies to replace their transformers. The inventory also brought to light the fact that 82% of transformers with PCB contents higher than 50 ppm are out of service (Table 4). Table 5 shows the distribution of the inventoried installations, according to type of company.

**Table 3. Inventory by company**

No.	Company	Total	T<50	T>50	TAM	TS	CA	IN	C<50	C>50
1	UERS/CDEEE Warehouse	481	11	17	260	-	-	-	10	1
2	Distribution Company of the East	57	5	3	-				38	11
3	Substation El Cruce	49	-	1	-		48			
4	Substation Mao	38	19		-		10			
5	Substation 10 ½ EDESUR	37	7	5	-					
6	Substation La Vega Per	34	8	1	-					
7	Substation Quinigua	34	9	2	-			6	9	2
8	27 de Febrero Naval Base	33	-		32			1		-
9	Ministry of the Armed Forces	32	-		32					-
10	Dominican Oil Refinery	30	-		25		5			-
11	Substation El Chivo	30	4	6						-
12	Comercial Fuertes	26	-	1					25	-
13	Molinos del Ozama	24	-		21		3			-
14	Almacén Las Charcas	23	5	4			-	-	-	-
15	CEMEX Dominicana	21	-	6	15		-	-	-	-
16	Hotel Santo Domingo	21	-	2	19		-	-	-	-
17	Torre Acrópolis	21	-		4	17	-	-	-	-
18	Megacentro	20	-		3	17	-	-	-	-
19	Substation Sabaneta de Yásica EDENORTE	19	-	8	11		-	-	-	-
20	Hotel Jaragua	16	-		3	13	-	-	-	-
21	Ingenio Cristóbal Colon	14	-		14		-	-	-	-
22	Substation Bani - EDESUR	14	5	9			-	-	-	-
23	Hotel Meliá	13	-	3	1	9	-	-	-	-
24	METALDOM	13	-		7	6	-	-	-	-
25	Industrias Banilejas CxA	12	-		6		6			-
26	Seaboard Transcontinental Ltd.	12	-		11				1	-
27	Hospital Robert Read Cabral	11	-		11					-
28	Plaza Central	11	-		2	9				-
29	Policía Nacional	11	-		11					-
30	Ingenio Central Romana	10	-	10						-
31	Hospital Darío Contreras	9	-	1	8		-	-	-	-
32	Substation Nagua	8	4				-	-	-	-
33	Unicentro Plaza	8	-			8	-	-	-	-
34	Ambev Dominicana	6	-		6		-	-	-	-
35	Bella Vista Mall	6	-			6	-	-	-	-
36	CEDIMAT	6	-		1	5	-	-	-	-
37	Complejo Santo Domingo TIMBEQUE	6	-	6			-	-	-	-
38	Empresa Generadora de Haina	6		6			-	-	-	-
39	Hospital Padre Billini	6	-		6		-	-	-	-
40	Hospital San Lorenzo de Los Mina	6	-		6		-	-	-	-
41	Pasteurizadora Rica	6	-		6		-	-	-	-
42	Hospital de Gastroenterología	4	-		1	3	-	-	-	-
43	Substation Navarrete	4	2	2			-	-	-	-
44	Centro de Educación Médica Dominico-Japonés	3	-			3	-	-	-	-
45	Hospital Moscoso Puello	3	-		3		-	-	-	-
46	Hospital Unidad de Quemados	3	-		3		-	-	-	-

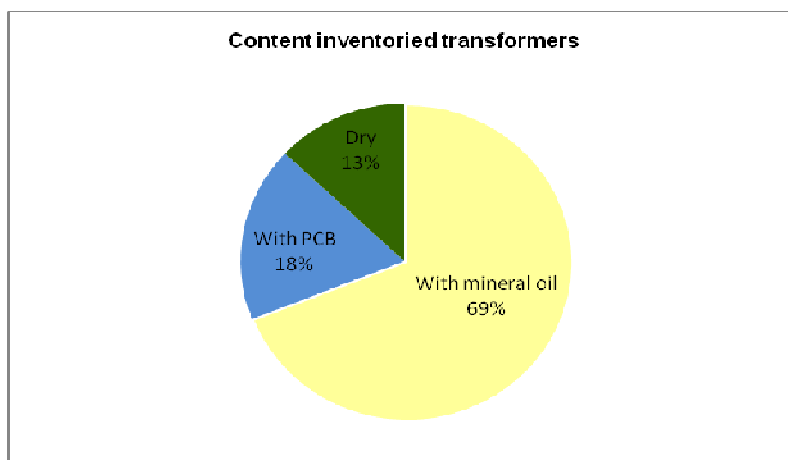
**Table 3. Inventory by company (continuation)**

No.	Empresa	Total	T<50	T>50	TAM	TS	CA	IN	C<50	C>50	CH
47	Planta Mitsubishi San Pedro de Macorís	3	-	-	3	-	-	-	-	-	-
48	Almacén CAOR- EDESUR	2	1	1	-	-	-	-	-	-	-
49	ALTEC, C. x A.	2	-	-	2	-	-	-	-	-	-
50	Cortes Hermanos, C x A	2	-	-	-	2	-	-	-	-	-
51	Hotel Dominican Fiesta	2	-	-	-	2	-	-	-	-	-
52	Subestación El Abanico / Sánchez	2	-	1	-	-	-	-	-	-	1
53	Subestación La Vega Pueblo	2	1	1	-	-	-	-	-	-	-
54	Parmalat	1	-	-	1	-	-	-	-	-	-
55	Subestación Mao-Santiago Rodríguez	1	-	-	-	-	-	1	-	-	-
56	Cementos Colón	-	-	-	-	*	-	-	-	-	-
57	Cerámica del Caribe	-	-	-	-	*	-	-	-	-	-
58	EMMTECA	-	-	-	*	-	-	-	-	-	-
59	Empresa Generadora Palamara La Vega	-	-	-	*	-	-	-	-	-	-
60	Falconbridge Dominicana	-	-	-	*	-	-	-	-	-	-
61	Planta Barahona Carbón	-	-	-	*	-	-	-	-	-	-
62	Planta Puerto Plata	-	-	-	*	-	-	-	-	-	-
63	R & G Electromecánica	-	-	-	*	-	-	-	-	-	-
64	Fundición Villa Duarte	-	-	-	-	-	-	-	-	-	-
65	Industria Aguayo	-	-	-	-	-	-	-	-	-	-
66	Constructora Tactuk	-	-	-	-	-	-	-	-	-	-
	<b>Total</b>	<b>1274</b>	<b>81</b>	<b>96</b>	<b>534</b>	<b>100</b>	<b>72</b>	<b>8</b>	<b>83</b>	<b>14</b>	<b>286</b>

\* Reported that they only had transformers with mineral oil, but did not indicate the quantity.

The letters indicate: T<50. Transformers with less than 50 ppm of PCBs, T>50. Transformers with more than 50 ppm of PCBs, TAM. Transformers with mineral oil or silicone, TS. Dry Transformers, CA. Capacitors, IN. Switches, C<50. Containers of oil with less than 50 ppm of PCBs, C>50. Containers of oil with more than 50 ppm of PCBs and CH. Scrap.

(\*) Reported that they only have transformers with oil and capacitors, but did not indicate the quantity. The companies have been ordered according to the total amount of inventoried equipment.



**Figure 3.** Percentage of transformers according to content.

**Table 4. Distribution of transformers, capacitors, containers and switches according to use.**

Type of Application	In use		Out of service	
	Number	Percentage	Number	Percentage
Capacitors	14	19	58	81
Containers	83	86	14	14
Switches	1	12	7	88
Transformers > 50 ppm PCB's	17	18	79	82

**Table 5. Ratio of closed and partially closed operations/type of company.**

No.	Type of company	Total	T<50	T>50	TAM	TS	CA	IN	C<50	C>50	CH
1	Electricity generators	32	-	12	19	-	-	-	1	-	-
2	Electricity distributors	824	81	61	260	-	58	7	57	14	286
3	Transformer repair shops	28	-	1	2	-	-	-	25	-	-
4	Oil refinery	30	-	-	25	-	5	-	-	-	-
5	Mining company	-	-	-	(*)	-	(*)	-	-	-	-
6	Foundries	13	-	-	7	6	-	-	-	-	-
7	Cement company	21	-	6	15	-	-	-	-	-	-
8	Food and beverage processing plants	51	-	-	40	2	9	-	-	-	-
9	Sugar cane industry	24	-	10	14	-	-	-	-	-	-
10	Construction materials industry	-	-	-	-	-	-	-	-	-	-
11	Research and analysis laboratories	-	-	-	-	-	-	-	-	-	-
12	Health centers	57	-	1	45	11	-	-	-	-	-
13	Commercial centers	66	-	-	9	57	-	-	-	-	-
14	Military bases	76	-	-	75	-	-	1	-	-	-
15	Hotels	52	-	5	23	24	-	-	-	-	-
	<b>Total</b>	<b>1274</b>	<b>81</b>	<b>96</b>	<b>534</b>	<b>100</b>	<b>72</b>	<b>8</b>	<b>83</b>	<b>14</b>	<b>286</b>

The letters indicate: T<50. Transformers with less than 50 ppm of PCBs, T>50. Transformers with more than 50 ppm of PCBs, TAM. Transformers with mineral oil or silicone, TS. Dry Transformers, CA. Capacitors, IN. Switches, C<50. Containers of oil with less than 50 ppm of PCBs, C>50. Containers with more than 50 ppm of PCBs and CH. Scrap. (\*) Only contained transformers with oil and capacitors, but did not indicate quantity.

The total quantity of PCBs found in the inventoried applications was 113,858.80 kg, equivalent to 114 tons. Table 6 provides details about the inventoried companies.

**Table 6. Distribution of the bulk of PCBs (en Kg)/company.**

Type of company	Company	PCB 's
<b>Distributor</b>	EDESTE	3,850
	EDESUR Km10 1/2 Duarte	2,390
	EDENORTE Mao Vieja	2,143
	EDESUR Baní	925
	EDENORTE Quinigua	649
	EDENORTE El Chivo	427
	EDENORTE La Charca	328
	EDESUR Caor	265
	EDENORTE Mao	208
	EDENORTE La Vega Per	167
	EDENORTE Sabaneta de Yásica	156
	EDENORTE Navarrete	100
	EDENORTE La Vega Pueblo	47
	CDEEE warehouse	37,167
<b>Generators</b>	Timbeque	11,180
	EGE Haina	3,573
<b>Cement plants</b>	CEMEX Dominicana	24,627
<b>Hotels</b>	Hotel Meliá	3,100
	Hotel Santo Domingo	3,089
<b>Health centers</b>	Hospital Darío Contreras	103
<b>Sugar mills</b>	Ingenio Central Romana	19,325
<b>Military bases</b>	Base Naval 27 de Febrero	40
<b>Total</b>		<b>113,858.80</b>

***Open applications.-***

An inventory was not conducted of open applications containing PCBs (dyes, lubricants, flame retarders, plastics, adhesives, surface coverings, insulation, paint, among others).

**2.3.3. Assessment of POPs (DDT) listed in Annex B**

In Annex B, the Stockholm Convention includes the compound 1,1,1-trichloride-2,2-bis (4-chlorophenyl) ethane Dichloro-Diphenyl-Trichloroethane, better known as DDT. The Dominican Republic does not produce nor has it ever produced this compound, whose only route for massive entry into the country was by importation, which was ended via Decree 217-91 in 1991

***Inventory methodology.-***

The methodology used to conduct the corresponding inventory was the same as used to inventory the compounds listed in Annex A Part 1 (See Section 2.3.1).

***Current status of DDT in the Dominican Republic.-***

Because the country has never produced nor does it currently produce DDT, there is no exportation, only importation, which until 1991 was its source of entry into the country. Import records available from the Center for the Control of Tropical Diseases (CENCET) indicate that the last load, from Indonesia, was introduced into the country by the Ministry of Public Health and Social Assistance (SESPAS), which took place in 1989, prior to when the executive power issued the Decree that prohibited the introduction of this insecticide into Dominican territory.

At present, DDT is not used to control disease vectors and other substitutes are used, such as Sumition, Temephos and other pyrethroids, such as Deltamethrin. The obligation contained in Article

3 of the Stockholm Convention to prevent production and use is currently observed effectively in the country. The inventory identified a reserve of 20,490 kg of DDT at the CENCET, an agency of the SESPAS, for which an action plan will be implemented to facilitate definitive elimination of same.

**2.3.4. Assessment of unintentional releases of POPs listed in Annex C (PCDD/PCDF, HCB)**

Annex C of the Stockholm Convention applies to POPs that are subject to the requirements of Article 5 and include dioxins and furans, chemically known as polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF), PCBs and Hexachlorobenzene. These compounds are formed and released unintentionally from anthropogenic sources. In the Dominican Republic there is no specific regulation to control dioxins and furans.

***Inventory methodology.-***

To conduct the inventory of dioxin and furan emissions, the Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases prepared by the United Nations Environment Programme (UNEP, 2005) was applied. This toolkit groups emission sources into ten categories and 54 subcategories. In the Dominican Republic, nine categories and 36 subcategories were identified and inventoried, which are specified in Table 7. To collect and analyze the data, the year 2005 was used as the baseline, because it provided more complete statistical information.

**Table 7. List of inventoried categories and subcategories identified in the country**

Category	Subcategory
<b>1. Waste incineration</b>	Incineration of hazardous wastes
	Incineration of medical wastes
	Incineration of animal corpses
<b>2. Production of ferrous and non-ferrous metals</b>	Production and smelting of iron and steel
	Production of copper
	Production of aluminum
	Production of bronze and tin
	Thermal recovery of cable
<b>3. Power and heat generation</b>	Fossil fuel power station
	Generation of biomass energy
	Generation of gas from landfills (biogas)
	Household cooking and heating and biomass
	Household cooking and heating with fossil fuels
<b>4. Mine products</b>	Production of cement
	Production of lime
	Production of bricks
	Production of glass
	Production of ceramic
	Asphalt mixing
<b>5. Transportation</b>	Four-stroke engines
	Two-stroke engines
	Diesel engines
	Fuel oil engines

Category	Subcategory
6. Open combustion process	Biomass burning
	Burning of waste and accidental fires
7. Production and uses of substances	Chemical industry
	Petroleum industry
8. Miscellaneous	Biomass drying
	Crematorium
	Dry cleaning
	Tobacco consumption
9. Final disposal/Sanitation landfills	Open air sanitation landfills and dumps
	Sewage drainage and treatment
	Dumping in open waters/surface waters
	Composting
	Treatment of used oil

***Dioxin and furan emissions in the Dominican Republic by category and subcategory***  
***Category 1. Waste incineration.-***

This category includes seven subcategories, only three of which were considered: incineration of hazardous wastes, of medical wastes and combustion of animal carcasses.

**Table 8. Summary by subcategory of emissions of dioxins and furans under the category of waste incineration, based on data from 2005.**

Subcategories	Source	Incinerated waste(Ton/year)	Emission factor		Annual emissions	
			µg EQT/t DSM		(g EQT/a)	
			AT	RE	AT	RE
Incineration of hazardous wastes	Alianza Incineradora Dominicana (AID)	9,805.71	10	450	0.098	4.413
Incineration of medical wastes	Nine hospitals plus the AID	18,478.06	525	920	9.701	16.999
Combustion of animal corpses	Two plants	104.2	50-500	-	0.007	-
<b>Total</b>			-	-	<b>9,806</b>	<b>21.411</b>

AT: Atmosphere, RE: Residues.

***Hazardous waste incineration.-*** The handling of hazardous wastes has been regulated since 2006 by the Regulation for Management of Hazardous Residues, Products, Materials and Substances. Decree 47-06 authorizes the International Regional Agro-livestock Health Agency (OIRSA), via the SEA, to handle, store, collect and provide final disposal of international waste that enters the country through ports and airports. There are currently eight international airports in operation. The incineration of hazardous wastes began in 2000; since then the only incinerator plant in operation is the Alianza Incineradora Dominicana, S. A. (AIDSA), which is also charged with incinerating port wastes. For its operation, the company has three double chamber combustion incinerators and an Air Pollution Control System (APCS). In 2005, the AIDSA incinerated 9,805.71 tons of hazardous solid wastes, of which 9,678.73 came from ports and the remaining 125.9 tons from other sources (textiles, chemicals, pharmaceuticals and paint, power generators, etc.). The country does not have comprehensive statistical data on the incineration and burning of international garbage that enters airports, which,

according to the MARPOL agreement and the Basel Convention, is hazardous waste. Garbage that enters the country via airports is partially inspected.

***Incineration of medical waste.***- There are 341 healthcare centers in the country, 150 of which belong to the private sector. None has effective hospital waste management. At present, the Standard for the Comprehensive Management of Infectious Wastes is being developed, as well as a Draft Bill for the Management of Hospital Waste. In 1998, SESPAS acquired 19 incinerators; but in the inventory it was found that only ten are in operation; seven in hospitals in the National District and the Province of Santo Domingo (Dr. Dario Contreras, Dr. Luis E. Aybar, Dr. Robert Reid Cabral, Dr. Marcelino Vélez Hospitals, the Plaza de la Salud and the Maternidad Nuestra Señora de La Altagracia Hospital) and three in various cities in the interior: Barahona (Hospital Dr. Jaime Mota), Santiago de los Caballeros (Hospital Infantil Regional Arturo Grullón) and San Francisco de Macorís (Hospital San Vicente de Paúl). Information could only be obtained from nine of these hospitals. Furthermore, two hospitals were identified that send their waste to the Alianza Incineradora. The compiled data indicates that 18,478.06 tons of medical waste was incinerated in 2005.

***Combustion of animal carcasses.***- This activity is only carried out to burn animal corpses used for research. According to information from the Central Veterinary Laboratory (LAVECEN) of the SEA, the most widely used species for experiments are: birds, dogs, pigs, sheep, goats, cows and horses. These animals, after being used, are collected and incinerated. This same treatment is received by corpses that come from the central biotery. In 2005, the number of incinerated specimens at both inventoried plants was 104.2 tons/year. The incinerators have a minimal APCS and the emission factor was determined based on this information.

***Category 2. Production of ferrous and non-ferrous metals.***

This category encompasses a large number of different processes and a considerable variety of release points, characteristics that make it difficult to classify and quantify the emissions. Scrap, a recycled material that carries with it numerous polluting products (paint, PVC, chlorinated organic substances), and which enters the smelting process without any prior treatment, is used in the country for these processes; hence, emissions from same are increased. The smelting of aluminum, bronze and copper scrap is currently carried out in homemade furnaces lacking pollution control systems. Used oil (74,412 gallons/year) and charcoal (9.20 tons/year) are used as fuel. In order to smelt the iron scrap, cold bucket furnaces are used, some homemade. One induction furnace was found that uses coke as fuel. While conducting the inventory, 105 foundry shops were visited, 84 of which are located in sectors of the National District and in the Province of Santo Domingo East and 21 in the interior of the country.

This category includes twelve subcategories, each one referring to a specific process. Five of these are carried out in the Dominican Republic,: the production of aluminum, production of bronze and tin, production and smelting of iron and steel and the production of copper, with 76, 16, 9 and 3 companies devoted to these activities, respectively. Thermal recovery of cable is also carried out. Not all foundry shops were inventoried, because these processes are not registered. Because the burning of cables is informal, neither was it possible to obtain complete information. Table 9 summarizes the emissions data by inventoried subcategory. Details concerning the elements used to calculate the emissions are presented in the following chapters.



**Table 9. Summary of dioxin and furan emissions in the Category of Production of ferrous and non-ferrous metals, as of 2005.**

Subcategory	Source	Smelted scrap (Ton/year)	Emission factor (µg EQT/tDSM)		Yearly emission (g EQT/a)	
			AT	RE	AT	RE
			Production of iron and steel	9 Companies devoted to smelting iron scrap	5,047.00	10
Production of copper	3 companies devoted to smelting copper scrap	63.5	800	630	0.051	0.04
Production of aluminum	76 facilities that smelt aluminum scrap	965.38	150	400	0.145	0.386
Production of bronze and tin	16 facilities that smelt bronze scrap	91.37	1	-	0	-
Thermal recovery of cable	515.15 Ton/year of cable	103.030*	5000	-	0.515	-
<b>Total</b>			-	-	<b>0.761</b>	<b>0.501</b>

\* In this Subcategory the scrap refers to burnt covering.  
AT. Atmosphere, RE. Residues.

**Production of iron and steel by means of scrap smelting.-** Nine companies were identified that are dedicated to gray iron scrap smelting, eight of which use homemade cold bucket furnaces and one an induction furnace. None of these furnaces has an APCS, a criteria that was taken into account when determining the emission factor. The nine companies reported 5,047 tons of smelted iron scrap. The export of scrap and steel in 2005 was 483 tons, according to data provided by the Center for Export and Investment of the Dominican Republic (CEI-RD). Imported iron and steel (billets) are used to manufacture steel rods, a process carried out by the Complejo Metalúrgico Dominicano, C. x A. (METALDOM), which sells its production on national and international markets. However, in 2000, the company suspended iron and steel scrap smelting, hence; it is not included in the 2007 inventory.

**Production of copper.-** According to the Center for Export and Investment of the Dominican Republic (CEI-RD), in 2005 the country exported 2,707.9 tons of copper scrap. In that same year, the quantity of smelted scrap was 63.5 tons, data that was confirmed by the 2007 inventory. Three companies with copper smelting shops using homemade furnaces without APCS were identified.

**Production of aluminum.-** Although the country has bauxite mines, a mineral from which aluminum is extracted, it produces a significant amount of this material from scrap smelting. The aluminum thus obtained is used mainly in the manufacturing of household items for local trade. However, not all of the scrap production generated in the country is processed, because the CEI recorded that in 2005, 2,539 tons were exported. The aluminum scrap smelting shops operate using homemade furnaces that use used oil and lack APCS. The production is in batch, because it depends on the collection of scrap, which is carried out informally. This scrap enters the smelting process without receiving any prior cleaning treatment. The inventory identified 76 companies with scrap smelting shops, which in 2005 smelted 965.38 tons.

**Production of bronze and tin.-** No tin scrap smelting shops were identified; however, 26 companies with bronze scrap smelting shops were found. Not all of the bronze scrap is smelted, because the records of the CEI-RD indicate that in 2005, 482.7 tons were exported. For the smelting process, the shops use homemade furnaces without APCS. In all cases, the scrap is smelted without receiving treatment to eliminate pollutants. In 2005, 91.37 tons of bronze scrap was smelted.

**Thermal recovery of cable.-** One of the activities that generates PCDD/PCDF emissions is the thermal recovery of copper and aluminium from transmission cables. In recent years, the theft of electricity and telephone cables has increased in order to extract the aforementioned metals and commercialize them. To extract the metals, the cables are burned in the open, eliminating the outer sheathing. It was not possible to identify the sites where this activity is carried out. Data used to calculate emissions were obtained from a widely circulated national newspaper (Diario Libre, 12 April 2007). According to published information, in 2006 the amount of cable stolen from telephone companies was equivalent to 515.15 tons. This article reported earnings of RD\$200 million for those responsible, at a price of 60 pesos/pound. To calculate the emissions, it was assumed that the plastic sheathing was approximately 20%, equivalent to 103.03 tons of plastic sheathing.

**Category 3. Power and heat generation.-**

This category covers combustion processes that use fossil fuels and other materials and includes five subcategories: power generation plants that use fossil fuels, power generation plants that use biomass, gas combustion from sanitation landfills (biogas), kitchen and household heating (biomass) and household heating (fossil fuels). Table 10 shows the summary of released emissions in 2005.

**Table 10. Summary of the emission values of dioxin and furans released in 2005 from activities included in the category related to power and heat generation using various types of fuel.**

Subcategory	Type	Fuel Consumption (Ton/year)	FEG (MJ/kg)	EE (TJ)	Emission Factor (µg TEQ/t DSM)		Annual Emissions (g TEQ/a)	
					AT	RE	AT	RE
					Power generation plants using fossil fuels	Coal	494,847.00	30.5
	Fuel oil	443,415.00	41.5	18401.72	2.5	-	0.046	-
	Light oils	148,827.00	44.5	6622.8	0.5	-	0.003	-
Power generation plants using biomass	Sugar cane bagasse	14,389,651	9	12950.69	500	-	6.475	-
Landfills, dumps, biogas combustion	Biogas from vinasse	2,977.00	18.9	0.056	8	-	0	-
Kitchen and household heating (biomass)	Biomass (wood)	19,452,603.00	13	252,883.84	100	20	25.288	5.1
Household heating (fossil fuels)	LPG	168,769,921.00	46	28465.34	10	-	0.285	-
<b>Total</b>					-	-	<b>32.248</b>	<b>5.3</b>

AT. Atmosphere, RE. Residues. Energy factor EF, EE. Energy equivalent. GLP. Liquefied petroleum gas.

<sup>1</sup>Burnt biomass, <sup>2</sup>Quantity of biogas(m<sup>3</sup>/year), <sup>3</sup>Quantity of burnt biomass, <sup>4</sup>Consumption(Gallons).

**Fossil fuel power stations.-** Almost all power generated In the Dominican Republic comes from fossil fuels. According to data provided by the Superintendence of Electricity (SIE), in the year 2005, 81% of the power generated came from these fuels. The Dominican State administers ten power generation plants, which provided information concerning consumption according to the type of fuel (coal, fuel oil and light oils) converted into Equivalent Energy in Terajoules (TJ) for the calculations. It was not possible to quantify the private plants where there must be, however, significant emissions.

**Generation of biomass energy.-** The generation of biomass energy as fuel is increasing in the country. In fact, on 7 March 2007, the Executive Power promulgated Law 57-07 on Incentives for Renewable Energy and Special Regimes. Research has been conducted concerning the use of rice and

coffee husks as fuel, although production data has not been provided to the public. Traditionally, sugar cane bagasse has been an energy generation fuel at sugar mills. The production of sugar cane bagasse used for energy generation was 1,483,964 tons during the 2005-2006 sugar cane harvest season, according to information provided by the Department of Non-Conventional Energy of the Ministry of Industry and Commerce (SEIC). Data on burnt biomass converted to Equivalent Energy in Terajoules (TJ) was used for the calculations.

**Combustion of gas from sanitation landfills (BIOGAS).-** There are no sanitation landfills in the Dominican Republic; hence, biogas is still not produced in this manner. However, there is a power plant that uses this fuel via the anaerobic decomposition of vinasse (by-product of rum production), which serves to generate steam. In 2005, the production of biogas from this source was 12 ft<sup>3</sup>/hour, equivalent to 2,976,998 m<sup>3</sup>/year and to 0.056 Terajoule (TJ).

**Heating household cooking and biomass.-** The inventory did not include biomass as fuel for household heating, because this activity is not carried out in the country. The biomass used for energy generation to cook food is virgin wood. In 2003, the Fundacion Bariloche and the National Energy Commission determined that a total of 35.8% of Dominican homes uses wood, 31% are rural and 4.8% urban (see CNE/FB, 2003). The Central Bank of the Dominican Republic reports that the consumption of wood in the country was 19,452,603 tons (Central Bank, 2005), the figure used as burnt biomass to determine the emissions of PCDD/PCDF produced.

**Heating household cooking with fossil fuels.-** Liquefied petroleum gas (LPG) is the most widely used fuel for cooking food. In 2005, the consumption of LPG in the country was 168,769,921 gallons, according to data from the Ministry of Industry and Commerce.

**Category 4. Production of mineral products.-**

This category covers high temperature processes for smelting (glass, asphalt), firing (bricks, ceramic), or thermal-induced chemical transformation (lime, cement). In all of these cases, combustion generates PCDD/PCDF. Six subcategories are included here, five of which are considered in the 2007 inventory, which are the production of cement, lime, bricks, glass and ceramic. Although the country has some 30 machines used for mixing asphalt, this subcategory is not included, because the Ministry of Public Works and Communications (SEOPC) does not have annual records of the quantities mixed. The emissions produced by these subcategories are shown in Table 11.

**Table 11. Summary of emissions of dioxins and furans based on data from 2005 for the category related to mine products.**

Subcategories	Source	Production	Emission factor		Annual Emission	
			(µg TEQ/t DSM)		(g TEQ/a)	
		(Ton/year)	AT	RE	AT	RE
Production of cement	Three cement factories	1,021,754.19	0.6	0.1	0.613	0.102
Production of lime	One lime factory	17,280.00	0.07	-	0.001	-
Production of bricks	One brick factory	9,600.00	0.02	-	0	-
Production of glass	One glass industry	102,200.00	0.015	-	0.002	-
Production of ceramic	Three ceramic factories	64,839.30	0.02	-	0.001	-
<b>Total</b>		-	-	-	<b>0.617</b>	<b>0.102</b>

AT. Atmosphere, RE. Residues.

**Production of cement.-** The production of cement is carried out using four processes: wet, semi-wet, dry and semi-dry, all of which generate PCDD/PCDF, but only when clinker is produced. In the country, there are five operating cement factories, but only three of these (Cementos Cibao, CEMEX Dominicana and DOMICEN) use the clinker production process; hence these were taken into consideration to quantify emissions. Two of these factories use the dry process and one uses the wet process. All three cement factories use rotary kilns with electrostatic precipitators and a fabric filter with temperatures below 300°C. The operational temperature of the kilns ranges from 1500 to 1665°C. The fuels used in these kilns are PETCOKE, coal, bunker and used oils.

**Production of lime.-** The production of lime (calcium oxide) in the country is limited to the Empresa Dominicana de Cales, S.A. (DOCALSA). For the calcination process, it uses a vertical shaft kiln, the temperature of which ranges from 600° and 1,000°C and has a good APCS. The fuels used are fuel oil and diesel. There is unconfirmed information of an informal production plant.

**Production of bricks.-** Bricks are produced at one factory. The kiln is a Tuner type and operates with a temperature of 1,000°C. It has a good APCS and good dust retention. The fuels used are diesel, bunker-C, used oil and coconut shells.

**Production of glass.-** There is only one factory that manufactures and recycles glass. The furnaces used are endport and are operated at a temperature of 1,550°C. There is good dust retention and the fuels used are fuel oil, diesel and LPG.

**Production of ceramic.-** There are three industries that produce ceramic; one produces tile for floors and walls, and the other two produce slabs for toilets, sinks and latrines. The tile industry uses a propane gas roller kiln and the others use propane gas tuner-type kilns with an APCS. The emissions were calculated using production data from the three companies for 2005, which amount to 64,839.30 tons. The production of tiles was  $3 \times 10^6$  m<sup>2</sup> equivalent to 51,000 tons. There are two factories that manufacture ceramic for toilets, sinks and latrines, whose production totals 13,839.3 tons.

#### **Category 5. Transportation.-**

In 2005 the country's vehicle fleet was 2,244,466 units (data from the National Statistic Office – ONE- and the National Internal Tax Department –DGII). Motorcycles comprised 52.6% (1,179,621 units); automobiles, 25.2% (566,034 units) and other vehicles (cargo vehicles, jeeps, machines, heavy vehicles, dump trucks and others) made up 22.2%. According to the year of manufacture, 1.1% of the private vehicles were 2005; 22.2% from the period 1997-2004 and 76.7% from years prior to 1996. According to SEIC and ONE bulletins, in 2005, the most widely used fuels for land transportation were: gasoline (regular and premium) 304,031.281 gallons; diesel (regular and premium) 230,684,993 gallons and liquefied petroleum gas (LPG), with 121,083,451 gallons. In 1998, the country put into force the Dominican standard NORDOM 476 on lead-free gasoline; hence the inventory did not take into account the emission factors for this product. This category includes four sub-categories: two and four-stroke engines, diesel and heavy oil. The emissions are shown in Table 12.

**Table 12. Summary of emissions released into the atmosphere by components of category five, corresponding to transportation, based on data from 2005.**

Subcategory	Type of fuel	Consumption (Gal/Año)	Consumption (Ton/Año)	FEM	Emission
				(µg EQT/t) AT	(g EQT/año) AT
Four-stroke engines	SP/SC Gasoline	99,735,271.50	278,979.50	0	0
Four-stroke engines	SP/SC Gasoline	180,581,569.60	505,122.77	0.1	0.051
Four-stroke engines	Liquified Petroleum Gas	121,083,451.00	915.39	0	0
<b>Sub-total Four-stroke engines</b>		<b>401,400,292.10</b>	<b>785,017.66</b>	-	<b>0.051</b>
Two-stroke engines	SP/SC Gasoline	2,979,065.00	8,333.04	2.5	0.021
Diesel Engines	Diesel	230,684,799.00	741,190.19	0.1	0.037
Fuel oil engines	Fuel oil	82,550,962.00	302,681.36	4	1.211
<b>Total</b>		<b>717,615,118.10</b>	<b>1,837,222.25</b>		<b>1.31</b>

SP. Lead-free. SC. No catalytic converter. AT. Atmosphere.

**Four-stroke engines.-** In 2005, there were 1,064,845 four-stroke engines circulating in the country, equivalent to 47.6% of the vehicle fleet at the time. Two types of fuel are used for this type of vehicle: gasoline (premium and regular) and liquefied petroleum gas. According to information from the SEIC, in 2005 36.9% of private automobiles used liquefied petroleum gas (LPG) and 63.1% used other types of fuel. With respect to public transportation, 64% (urban and inter-urban cars, taxis, tourism transportation and small passenger buses) used this fuel (LPG). The total consumption of liquefied petroleum gas and gasoline for four-stroke vehicles in 2005 was 121,083,451 gallons and 280,316,841.1 gallons, respectively. The number of four-stroke vehicles with catalytic filters responsible for preventing pollutant emissions into the air was taken into account to calculate dioxin and furan emissions. In the Dominican Republic it is common in cars ten years old or older for the catalytic filter to be removed or not replaced when it becomes damaged. In light of the fact that vehicles with catalytic converters that use lead-free gasoline are not dioxin and furan emitters, the number of vehicles having catalytic filters in the country had to be determined, considering these to be vehicles with less than eight years of use. In addition to the consumption of gasoline by vehicles without catalytic filters (after tracking the consumption of vehicles with catalytic converters) the air emission factor determined by the toolkit was applied.

**Two-stroke engines.-** In 2005, 52.6% (1,179,621 units) of the vehicles in the country had two-stroke engines. Dioxin and furan emissions from two-stroke engines were calculated based on data found in the CNE/FB prospective study on national energy demand (2003). According to this report, this type of vehicle consumed 2,979,065 gallons of gasoline, equivalent to 9.8% of the total consumption of gasoline for the year. In order to calculate the emissions, all two-stroke vehicles lacking a catalytic filter were taken into account.

**Diesel engines.-** No records were found on the quantity and type of vehicles and equipment with diesel engines. However, the total consumption of diesel in 2005 was provided both by the SEIC and ONE. The consumption of diesel fuel was 230,684,799 gallons, which, converted into tons, is equivalent to 741,190.19 tons.

**Heavy oil/ fuel oil engines.-** According to data from the SEIC and ONE, the country consumed 82,550,962 gallons of fuel oil in 2005, a figure used to calculate the release of dioxins and furans for this subcategory.

**Category 6. Open air combustion process.-**

These are deficient combustion processes that can become considerable sources of PCDD/PCDF. The open air combustion process includes two subcategories: the burning of biomass and the burning of wastes and accidental fires, both considered in the 2007 inventory. The emissions resulting from this subcategory are shown in Table 13.

**Table 13. Summary of dioxin and furan emissions for the category of open air combustion process, using data from 2005.**

Subcategory	Type of agricultural waste burned	Biomass burned (Ton/Year)	Emission factors ( $\mu\text{g}$ EOT/t)			Emission (g EOT/t)		
			AT	TI	RE	AT	TI	RE
Burning of biomass	Burning of impacted agricultural waste under deficient conditions	2,145,816	30	10	-	64.374	21.458	-
	Burning of unimpacted agricultural waste	16	30	10	-	0	0	-
Burning of wastes and accidental fires	Dwellings/factories	773	400	400	400	0.305	0.305	0.305
	Commerce (CI 1,546)							
	Vehicles (CI 391)	391	94	18	18	0.037	0.007	0.007
<b>Total</b>						<b>64.834</b>	<b>21.809</b>	<b>0.312</b>

AT. Atmosphere. TI. Land, RE. Residues. CI. Quantity of fires.

**Burning of biomass.-** This subcategory covers forest fires, the burning of fields and scrubland and open burning of agricultural waste. In 2005, there were 116 forest fires in the country that affected 24,501.64 hectares (according to data from the National Forest Policy and Planning Department of the Undersecretariat for Forest Resources of the SEMARENA), but the total amount of burnt biomass could not be determined; hence there is no information to calculate the dioxin and furan emissions caused by these fires. Data was obtained concerning the burning of waste from sugar cane, rice and coffee crops. The calculations were made using the amount of burnt biomass calculated in tons and the emission factors in the toolkit.

In the case of sugar cane, the basis used was the 231,107.12 [sic] hectares the country has for planting. During the 2005-2006 period, 111,631.75 hectares were planted and 44,652.68 hectares were burned, which produced 1,983,507 metric tons of biomass. In the case of rice, the biomass was obtained from the burning of the husk and the burning of the planted land. In 2005, the rice husk production was 118,750 tons, of which it is assumed that 10% was burned biomass, equivalent to 11,875 tons. Of the amount of planted land, 30% was burned, in other words, 18,750 hectares.

With respect to rice, in 2005, the total production of burned biomass from the crop was 161,875 tons/year. This quantity is the result of the burning of post-harvest land and a proportion of the husks from the rice produced. According to information provided by the Rice Production Promotion Department of the SEA, in 2005 the country had 62,500 hectares available for planting rice. Thirty per cent of the 62,500 hectares of land dedicated to rice growing is burned, which is equivalent to 18,750 hectares burned, which implies some 150,000 tons/year of burnt biomass.

With respect to coffee, the quantity of burnt husks (biomass) from conventional (impacted) coffee and from organic (non-impacted) coffee, was 433.6 tons/year. The production of conventional coffee using state-of-the-art technology was 16,320 tons/year, of conventional coffee using traditional technology, 5,360 tons/year and of organic coffee a total of 800 tons/year was reported. When considering the sum of conventional types of coffee, it is equivalent to 21,680 tons/year, and assuming that 10% is husks (2168 tons/year), and that 20% of this is burned, then a total of 433.6 tons/year of burnt husks or biomass is obtained. Likewise, it was estimated that the burnt husks from organic coffee was 16 tons/year.

***Burning of wastes and accidental fires.-*** This subcategory encompasses the open burning of domestic waste and other waste accumulated in dumps or in sanitation landfills, fires in homes, factories, businesses and vehicles. The burning of domestic waste, among others, is a common practice at the 365 dumps that operate in the country. The objective is to reduce the volume of garbage. There is no information registered in the country about fires at dumps. Only the Fire Station of La Romana reported 17 fires that occurred at the dumps in that province in 2005. For this reason, it was not possible to estimate the quantity of waste burned or the dioxin and furan emissions. Although international waste is considered to be hazardous waste, it is burned in the open. The lack of records concerning the production of same made it impossible to quantify the dioxin and furan emissions caused by this type of burning.

The ONE reports indicate that in 2005 1,937 accidental fires occurred, 1,241 of which were in homes, 254 in businesses, 51 in industries and 391 in vehicles. To calculate the emissions, these fires were considered as a whole, which averaged out to a total of 1,546 fires. It was assumed that 0.5 tons of biomass was burned per fire. For the calculations, the burned vehicles were treated as a burnt unit.

***Category 7. Production and uses of chemical substances and consumer goods.-***

This category includes five subcategories, only one of which, related to the petroleum industry, was considered (Table 14). The subcategories of paste, pulp and paper, chemical industry (production/use) and PCBs were not considered. The textile industry category was not considered because the primary process where pentachlorophenol biocide is used, which causes dioxin and furan emissions, is not carried out in the country. Likewise, the leather industry subcategory was not considered, where dioxins and furans are produced from the use of the pentachlorophenol biocide, a product that is not used in the leather tanning process in any of the three tanneries in the country. However, and as a way to verify the information reported by same, the records for the past five years at the National Customs Department (DGA) and the Pesticide Records Department of the SEA were reviewed. Indeed, it was shown that during this period the product did not enter the country. In the countries that export leather products to the Dominican Republic, such as the European Community, Japan, Argentina, Paraguay and Uruguay, the use of pentachlorophenol is prohibited; hence it is assumed that the majority of leather products that enter the country are free of dioxins and furans.

***Petroleum industry.-*** Neither of the two refineries in the country - Refinería Dominicana de Petróleo (State-run) and Falcombridge Dominicana (Private) – use the catalytic thermo-fractionating process associated with the production of dioxins and furans. However, these pollutants are also produced in the gases that are burned in the venting or flaring of fuels that escape. Jointly, in both refineries, in 2005, 5,088.03 tons were burned during this process, a figure used to quantify the emission of dioxins and furans into the air.



**Table 14. Summary of dioxin and furan emissions produced by activities in the category of production and uses of chemical substances and consumer goods, using data from 2005.**

Subcategory	Fuel	Quantity (Ton/Year)	Energy factor (MJ/kg)	Energy equivalent	Emission factor	Emission
					(µg EQT/t)	(g EQT/a)
				(TJ)	AT	AT
Petroleum industries	Venting or flaring procedure	5088.03	45.6	233.014	8	0.002

AT. Atmosphere.

**Category 8. Miscellaneous.-**

This category encompasses five subcategories, four of which are detailed in the 2007 inventory: biomass drying, crematoriums, dry cleaning and tobacco consumption. The results of the emissions calculations are shown in Table 15.

**Table 15. Summary of dioxin and furan emissions produced by the activities in the miscellaneous category, based on data from 2005.**

Subcategories	Biomass (Ton/Año)	Emission factors (µg EQT/a)			Emissions of (g EQT/a)		
		AT	PR	RE	AT	PR	RE
		Biomass drying	116,226	0.1	0.1	-	0.012
Cremation of corpses	621	0.4	-	2.5	-	-	0
Dry cleaning	0.2682	-	-	3000	-	-	0.001
Tobacco consumption	35,395,260,002	0.1	-	-	0.0004	-	-
<b>Total</b>		-	-	-	<b>0.0124</b>	<b>0.012</b>	<b>0.001</b>

AT. Atmosphere, RE. Residues, PR. Products.

<sup>1</sup> Corpses cremated the emission factor at µg TEQ/crematoriums. <sup>2</sup> Units consumed.

**Biomass drying.-** The drying of green forage in the country is carried out in the open. The most widely used grass is transvala (*Digitaria eriantha*) and waste from rice crops. After drying, this biomass is called hay, it is packed and used as livestock feed. According to the Association of Paso Fino Horses of Santiago de los Caballeros, there are 4,687.5 hectares used for planting transvala in the country, distributed among 120 hay producers. The distribution is as follows: 90 hectares in the Cibao (75%), 20 hectares (16.7%) in the National District and the Eastern Region and 10 hectares (8.3%) in the Eastern region. The quantity of dried biomass from transvala was 112,500 tons, equivalent to 24 tons/hectares. The waste from rice crops was 3,726 to 4 tons/hectare. The total amount of dried biomass from transvala and rice waste was equivalent to 116,226 tons.

**Crematoriums.-** The process of cremation began in the country in 2003. This process is only carried out at the Blandino Funeral Home in the National District. In 2005, 62 corpses were cremated, in which an ALL2500 Elite model furnace was used, with optimum control of atmospheric pollution.

**Dry cleaning.-** The estimates of dioxin and furan emissions produced by dry cleaning are only relevant when the process employs a machine that uses perchloroethylene. The consumption of



perchloroethylene in the country in 2005 was used to calculate the emissions,. It was assumed that 95% of this amount, some 18.37 tons, was consumed by laundries that did dry cleaning.

The emission factor used was 3,000 µg TEQ/a, which is used when it is not possible to classify the textiles. Given that this product is imported, data was obtained from the DGA corresponding to 19.337 tons.

**Tobacco consumption.-** The consumption of cigarettes in 2005 was 176,976,300 20-unit packs, equivalent to 3,539,536,000 units, according to the National Tobacco Institute (see INTABACO, 2008). The data obtained on the consumption of cigars in the country was inexact, because this product is not highly consumed by domestic smokers. Therefore, the calculated emissions only correspond to cigarettes.

**Category 9. Final disposal solid wastes/sanitation landfill.-**

This category includes processes used to manage municipal solid wastes, domestic sewage water and sewer systems, dumping of sewage water into surface waters, composting and used oils. The manner in which wastes are handled and eliminated can have a significant impact on the production and release of PCDD/PCDF. The cause of the presence of these compounds is that dioxins and furans have been formed in other processes, but pollution is either concentrated or disperse depending on the various management options. This category includes five subcategories: landfills/dumps and open landfills/dumps, sewage/treatment of sewage effluents, dumping into surface waters, composting and treatment of waste oils, but emissions calculations could only be made for two of these (Table 16).

**Table 16. Summary of dioxin and furan emissions releases by the category of final disposal and sanitation landfill, in 2005.**

Subcategory	Type of domestic sewage water	Volume of sewage water (l/a)	Emission factors		Emission (g EQT/a)	
			(µg EQT/l)		AG	PR
			AG	PR		
Sewage drainage and treatment	Sewage or domestic water without evacuating sludge	1,708,841,674.80	5.000	-	0.064	-
Sewage drainage and treatment	Waters treated in treatment plant	421,058,588.50	0.500	-	0.000	-
Composting	-	12,795*	-	100	-	1.280
Treatment of used oils	-	-	0.064	-	-	-
<b>Total</b>	-	-	-	-	-	<b>1.280</b>

\* Biomass t/a Emission factors (µg TEQ/a).

AG. Water, PR. Products.

In the subcategory of sanitation landfills and open dumps, due to the fact that there are no sanitation landfills as such in the country, it was not possible to estimate the dioxin and furan emissions in these cases. According to the Dominican Municipal League (LMD), the country has 365 open dumps, located in 35 provinces, municipalities and municipal councils. The Duquesa landfill, located in the province of Santo Domingo East, and which also provides service to the National District, is the only one classified as a controlled landfill, and there is even a project to convert it to a sanitation landfill.

The total production of municipal solid wastes in 2005 was 1,182,960,895 tons, which implies a per capita production of 0.3485 tons/inhabitant.

In the subcategory of dumping into open waters/surface waters, if in fact a common practice in the country is to dump household or sewage waters into bodies of water (especially on the coasts), there are no statistics on the total volume of water evacuated into surface waters, according to information provided by the five aqueduct and sewer corporations (CAASD in Santo Domingo, CORAAMOCA in Moca, CORAPP in Puerto Plata, COAAROM in La Romana, CORAASAN in Santiago) and the National Institute of Potable Water and Sewers (INAPA).

***Sewage drainage and treatment.***- In 2005, only 25% of the population (2,109,792 inhabitants) had access to sewers. Currently, 30% of the inhabitants of the National District and the province of Santo Domingo East and their municipalities, are connected to the sewer network, according to statistical records of the Corporation of Aqueducts and Sewers of Santo Domingo (CAASD). In that same year, the production of domestic sewage water was 1,708,841,674.80 liters/day (equivalent to 80% of the consumed potable water, resulting in a loss of 20%). Of this quantity, 24.6% (421,058,588.5 liters/day) receives treatment and the remaining 75.4% (1,287,783,086 liters/day) does not. This water, for the most part, is evacuated to the subsoil via filtering wells and septic tanks or goes to bodies of surface water (SEA/SURENA, 1999). During that year, there were 93 domestic sewage water treatment plants in the country, 52 of which were in operation. There is no defined management process for sewage sludge; sludge generated by treatment plants is used as organic fertilizer on agricultural crops and in gardening. Sewage sludge from septic tanks and latrines is extracted by private companies involved in this activity. The final destination was not identified.

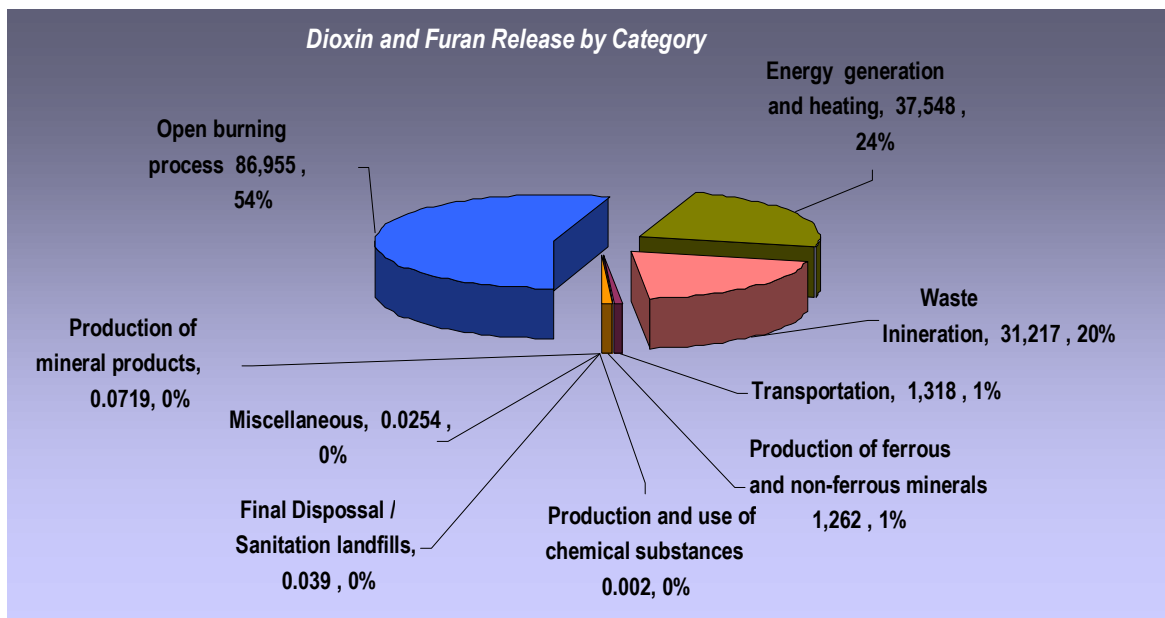
***Composting.***- The compost produced in the country comes from organic matter from the agricultural waste, mainly rice husks, coconut husks, coffee husks and the covering of the cacao fruit, among others. There are 24 organic fertilizer or compost factories operating in the country, 7 of which commercialize the product while the other 17 are private producers. Compost production is distributed throughout the country, but is mainly found in the Cibao region, where there are 22 factories. The other 2 are located in the Southern region and in the Eastern region, respectively. The total compost production is currently 12,795 tons/year, with an average production equivalent to 533.125 tons/year per factory.

***Treatment of used oil.***- Most of the lubricant greases and oils in the country are imported. According to ONE, in 2005 the country imported 276,297 barrels of lubricant oils, equivalent to 11,601,954 gallons, intended for use in industries and automobiles. In 2005, only 1,445,902 gallons of used oil were collected, equivalent to 12.5% of the imported oil. This clearly indicates that there is no effective process of collecting same. The sectors that generate the most used oil are electricity production plants, industries and the automobile sector. The companies accredited by SEMARENA to collect them are responsible for this process. Industry is the sector that uses the most used oil to produce energy, especially cement factories. Another application of used oils is recycling.

### Summary of the results of the inventory

Table 17 shows the results of dioxin and furan emissions for all of the categories and subcategories of sources contemplated in the 2007 inventory. The total dioxin and furan emissions in 2005 were 160.3904 gTEQ, distributed among the various sources according to the figures shown in Table 18, which provides the results by category. In analyzing the results by category and subcategory, it is observed that of the nine categories of inventoried sources, the most relevant, given the magnitude of the emissions, is the process of open burning, with 86.955 gTEQ/a, equivalent to 54.26% of all emissions, with an emphasis on the portion contributed by the subcategory of burning of biomass with 64.492 gTEQ/a. This is followed in order of importance by the category of power and heat generation with 37.548 gTEQ/a (23.43%), within which the subcategory of domestic heating and cooking with wood contributes 25.288 gTEQ/a. Continuing in this order is the category of waste incineration, with 31.216 gTEQ/a (19.48%), where the subcategory of medical waste incineration contributes 9.701 gTEQ/a. These three categories were responsible for 97.1% (154.72 g TEQ) of the dioxin and furan emissions in 2005.

The following table shows the release of dioxins and furans by category, highlighting the three major contributors, and those that must be addressed by management plans with respect to controls and mitigation measures.



Graph 4: Dioxin and Furan Release by Category

**Table 17. Results of the calculation of dioxin and furan emissions from all categories and subcategories of sources contemplated in this inventory.**

Category/Subcategory	Annual emissions (gEQT/a)				
	Air	Water	Land	Products	Residue
<b>INCINERATION OF HAZARDOUS WASTES</b>					
Incineration of medical wastes	9.701	NA	NA	NA	16.998
Incineration of hazardous waste	0.098	NA	NA	NA	4.413
Animal combustion	0.007	NA	NA	NA	-
<b>Total</b>	<b>9.806</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>21.411</b>
<b>PRODUCTION OF FERROUS AND NON-FERROUS METALS</b>					
Thermal recovery of cables	0.515	ND	ND	ND	ND
Production of aluminum	0.145	NA	NA	NA	0.386
Production of copper	0.051	NA	NA	NA	0.04
Production and smelting of iron and steel	0.05	ND	ND	NA	0.075
Production of tin and bronze	0	NA	NA	NA	ND
<b>Total</b>	<b>0.761</b>				<b>0.501</b>
<b>GENERATION OF POWER AND HEAT</b>					
Domestic heating and cooking (biomass) wood	25.288	NA	NA	NA	5.1
Power generation plants using biomass	6.475	NA	NA	NA	ND
Domestic heating (fossil fuels)	0.285	NA	NA	NA	ND
Power generation plants using fossil fuels	0.2	NA	NA	NA	0.2
Landfills/dumps, garbage, biogas combustion	0	NA	NA	NA	NA
<b>Total</b>	<b>32.248</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5.3</b>
<b>PRODUCTION OF MINE PRODUCTS</b>					
Production of cement	0.613	NA	ND	ND	0.102
Production of glass	0.002	NA	ND	ND	ND
Production of lime	0.001	ND	ND	ND	ND
Production of ceramic	0.001	NA	ND	ND	ND
Production of bricks	0	NA	ND	ND	ND
<b>Total</b>	<b>0.617</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.102</b>
<b>TRANSPORTATION</b>					
<b>Four-stroke engines</b>	0.049	NA	NA	NA	NA/ND
Two-stroke engines	0.021	NA	NA	NA	ND
Diesel engines	0.037	NA	NA	NA	ND
Engines with heavy oils (fuel oil)	1.211	NA	NA	NA	ND
<b>Total</b>	<b>1.318</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>OPEN COMBUSTION PROCESS</b>					
Burning of biomass	64.492	ND	21.497	NA	ND
Burning of waste, accidental fires	0.342	ND	0.312	NA	0.312
<b>Total</b>	<b>64.834</b>		<b>21.809</b>	<b>-</b>	<b>0.312</b>
<b>PRODUCTION AND USES OF CHEMICAL SUBSTANCES AND CONSUMER GOODS</b>					
Petroleum industry	0.002	NA	NA	NA	ND

**Table 17. Results of the calculation of dioxin and furan emissions from all categories and subcategories of sources contemplated in this inventory (continuation).**

Category/Subcategory	Annual emissions (gEQT/a)				
	Air	Water	Land	Products	Residue
<b>Total</b>	0.002	-	-	-	-
<b>MISCELLANEOUS</b>					
Drying of biomass	0.012	NA	ND	0.012	-
Tobacco consumption	0.0004	NA	NA	NA	-
Crematoriums	0	NA	ND	NA	0
Dry cleaning	NA	NA	NA	NA	0.001
<b>Total</b>	<b>0.0124</b>	-	-	<b>0.012</b>	<b>0.001</b>
<b>FINAL DISPOSAL/SANITATION LANDFILLS</b>					
Sewage drainage and treatment	-	0.064	NA	NA	-
Composting	NA	ND	NA	1.28	NA
Treatment of used oils	ND	ND	ND	ND	ND
<b>Total</b>	-	<b>0.064</b>	-	<b>1.28</b>	-
<b>TOTAL</b>	<b>109.598</b>	<b>0.064</b>	<b>21.809</b>	<b>1.292</b>	<b>27.625</b>

In analyzing the results obtained regarding release routes, it is found that emissions in general are directed to the atmosphere which receives 109.598 gTEQ/a, which constitutes 68.39% of all emissions, with a substantial contribution from the process of Open Combustion with 64.834 gTEQ/a, followed by energy and heat generation with 32.248 gTEQ/a. The contributions to residue and to the land have the lowest values with 27.627 (17.24%) and 21.809 gTEQ/a (13.61%), respectively. These three environments receive 99.24 of all emissions with 159.034 gTEQ/a.

**Table 18. Production by category of dioxin and furan emissions to the various environments, in 2005.**

Categories	Annual emissions (gEQT/a)						
	AT	RE	TI	PR	AG	Total	FR (%)
Open burning process	64.834	0.312	21.809	-	-	86.955	54.26
Power and heat generation	32.248	5.3	-	-	-	37.548	23.43
Waste incineration	9.806	21.411	-	-	-	31.216	19.48
Transportation	1.318	-	-	-	-	1.318	0.82
Production of ferrous and non-ferrous metals	0.761	0.501	-	-	-	1.216	0.76
Production of metal materials	0.617	0.102	-	-	-	0.719	0.45
Final disposal/sanitation landfill	-	-	-	1.28	-	0.064	0.04
Miscellaneous	0.0124	0.001	-	0.012	-	0.012	0.01
Production of chemical substances and goods	0.002	-	-	-	-	0.002	0
<b>Total</b>	<b>109.598</b>	<b>27.627</b>	<b>21.809</b>	<b>1.294</b>	<b>0.064</b>	<b>160.253</b>	<b>100</b>
<b>FR (%)</b>	<b>68.39</b>	<b>17.24</b>	<b>13.61</b>	<b>0.81</b>	<b>0.04</b>	<b>100</b>	

AT. Atmosphere, RE. Residues, TI, Land, PR. Products, AG. Water, FR. Frequency percentage. The order of the table is by order of significance of the total emissions by category and release routes.

### **2.3.5. Information on contaminated and waste storage sites, identification, quantity, regulation, remediation measures and releases.**

The procedures used to conduct this inventory were undertaken in five stages: identification of contaminated sites, compilation of historical information, and description of identified sites, classification and categorization of the sites. The classification was done on the basis of the need for a required remediation, identifying five classes: Class I (requires action); Class 2 (Probable action); Class 3 (may require action), Class N (does not require action); Class L (insufficient information). The sites were categorized according to the information obtained, the classification, characteristics of the pollutant, relative risks, exposure route and receivers.

During the inventory, 39 sites identified as contaminated or potentially contaminated were evaluated, 25 of which correspond to sites contaminated with dioxins and furans, 12 with PCBs and two with pesticides. One hundred per cent of the dumps evaluated were classified as Class 1, as were the hospital incinerators, forest fires and the open burning of solid wastes, and 58% of the generators and electricity substations (Green Points). The dredging of sediments and reconditioning of beaches, metal smelting shops, 25% of the electricity distributors and generators were considered Class 2.

No sites were found that stored Aldrin, Endrin, Dieldrin, Chlordane, Heptachlor, Hexachlorobenzene, Mirex and Toxaphene. The inventory identified a reserve of DDT at the Center for the Control of Tropical Diseases (CENCET), an agency of the SESPAS, comprised of 20,490 kg of DDT in white powder form.

### **2.3.6. Inventory of the future production, use and release of POPs. Requirements for exemptions.**

This inventory was not conducted, because there is no available data.

### **2.3.7. Current programs for the monitoring of releases and impacts on the environment and humans.**

#### ***Monitoring of impacts on the environment.-***

In the Dominican Republic there has never been nor is there a POPs Monitoring Program. In fact, the UNDP (2006), in its analysis of the monitoring programs in the region, points out this deficiency. Sampling, surveys, censuses, local studies and very limited research have been conducted in the country, always with very specific and short-term purposes. Most of these have been conducted within the framework of specific projects, but are not able to provide the true dimension of the national situation with respect to POPs. The lack of monitoring mechanisms is partially due to the lack of background information for studying this type of pollutant, the lack of trained personnel, of laboratories with the necessary standards, the limited awareness of interested parties and a shortage of research programs.

Within the framework of the project to enable the country to adhere to the Stockholm Convention, the first steps are being taken to consolidate a monitoring system. The Undersecretariat for Environmental Management (SGA) already has Dexsil equipment to detect PCBs. On the other hand, the Environmental Quality Department carries out isolated actions, such as requesting dioxin and furan analyses of certain industries (cement factories, among others) or inventories of products used by fumigators.

***Monitoring of impacts on human health.-***

The SESPAS, via the Environmental Health Department, is responsible for monitoring the impacts of POPs on the health of people. As part of its planning, it undertakes, in collaboration with the SEA, a training program at the hospitals, which trains staff to diagnose pesticide poisoning.

According to the National Epidemiology Department (DIGEPI) of the SESPAS, events that are considered a priority and that are under epidemiological monitoring are notified and investigated locally, via instruments designed for these purposes, and then remitted periodically to the Provincial Health Department (DPS), who forwards them to the DIGEPI. However, this program lacks systematization with respect to pesticides in general. The information registered at hospitals is not clear, because the origin of the poisonings is not always determined. Therefore, there is a shortage of reliable statistics. Brechelt (2006) points out that cases of poisoning are reported to the DIGEPI if there are more than three affected persons, indicating that for the 1997-2006 period, there were eight cases of pesticide poisoning, in which the causes and circumstances in which they occurred were not described.

**2.3.8. Current level of information, awareness and education among target groups. Current systems for communicating information.**

To date, there is no environmental education strategy provided by the environmental authorities or other national organizations or institutions to educate and inform the various risk groups (Table 19) or the general public about POPs. Education and awareness raising on the issue of POPs has been scarce, indirect and circumstantial, a result of the work of certain institutions (government, non-government, universities and private business), under the specific circumstances of projects or activities.

**Table 19. Preliminary characterization of risk groups extracted from the results of the POPs inventory and complemented by collateral information (continuation).**

POPs/ Categories	Risk groups	H	M	N
<b>Pesticides</b>	Farmers who use pesticides in general	X	X	
	CENCET staff who work nearby to the DDT warehouse	X	X	
<b>PCBs</b>	Personnel in the State Electricity Sector involved in the use, repair, storage and handling of equipment containing PCBs	X		
	Personnel in the private Electricity Sector involved in the use, repair, storage and handling of equipment containing PCBs	X		
	Persons working outside the Electricity Sector with installations where equipment containing PCBs is stored.	X	X	
	Persons not linked to any entity that uses, repairs or stores equipment containing PCBs, but who may have access to oils accidentally	X		
<b>Dioxins and furans/ Open combustion processes</b>	Communities settled in areas with high probability of forest fires	X	X	X
	Communities that practice the burning of agricultural residue	X	X	X
<b>Dioxins and furans / Power and heat generation</b>	Persons in homes that use wood for cooking	X	X	X
	Personnel that works in sugar mills	X	X	X
	Populations close to sugar mills	X	X	X
<b>Dioxins and furans / Waste incineration</b>	Personnel that operates or handles residue from hospital incinerators or at the Dominican Incinerator Alliance ( <i>Alianza Incineradora Dominicana</i> )	X	X	X
	Populations close to incinerators	X	X	X

**Table 19. Preliminary characterization of risk groups extracted from the results of the POPs inventory and complemented by collateral information.**

POPs/ Categories	Risk groups	H	M	N
Dioxins and furans/ Waste burning	Persons living close to landfills	X	X	X
	Persons using landfills as a source of food or materials for sale	X	X	X

H. Men, M. Women, N. Children and adolescents.

***Government institutions.-***

The SEMARENA agency called on to play a key role in the environmental education of the public with respect to POPs, is the Undersecretariat for Environmental Information and Education, via its Departments of Environmental Education and Environmental Information and Natural Resources. However, work agendas on the issue of POPs still remain to be developed. A similar situation exists with the SESPAS, which does not have the means to disseminate and educate about the health impacts of POPs. In the case of the Ministry of Education (SEE), the Organic Law on Education of the Dominican Republic (66-97) contains clear statements on including the environment as a priority issue in national educational programs, but does not specify the issue of POPs. For this reason, this issue does not explicitly appear in any of the materials at any level of Dominican education.

The SEA, given its close ties to the agricultural sector, has been more active, supporting educational campaigns as part of the implementation of its own projects and/or those sponsored by international organizations and agencies that promote organic agriculture and the elimination of agro-chemicals, but these have not focused on POPs either.

The CDEEE, within its functions, must coordinate the electric companies and implement State programs related to electrification; hence this institution is critical for the purposes of educating risk groups about PCBs. Neither on the Website of the CDEEE, nor in the basic documents of the national electricity sector (Integral Plan of the Electricity Sector, Action Plan and Expansion Plans) is any information included about PCBs, not even with respect to the environmental aspects of the electricity system. The company currently has no systematic training program, nor any educational materials.

***Non-governmental institutions.-***

The educational role of NGOs with respect to POPs has been aimed at the agricultural sector, with environmental education activities about pesticides within the framework of projects sponsored by international organizations and agencies. In particular, the Center for Agriculture and Forest Development (CEDAF) has had a great influence in this area. The institution has the CEDAF Newsletter, with regular publications, numerous published books, online educational materials, a program of courses and workshops, a fully equipped library and a Network of Documentation and Information in the Area of Agriculture and Forestry (REDIAF), where an important component is the fight against the overuse of pesticides (CEDAF, 2008).

The Agriculture and Environment Foundation (FAMA) is an organization linked to organic agriculture, health and environmental protection that has played a key role in disseminating information about POPs pesticides through projects, workshops and published and online educational materials (Brechelt *et al*, 2006).

Dominican Women in Development (MUDE) has the mission of improving the quality of life of people with limited resources, especially women, providing them with various services and products, among which is training on environmental issues, with a focus on pesticides. From 1997 to 1999, this



NGO implemented the UNDP/FMAM/PPS “Pesticide Contamination in Constanza and Jarabacoa” Project, which included workshops and materials to raise awareness of the need to protect the environment from pesticide contamination, with the promotion of sustainable production alternatives (see PPS, 2000).

The Center for Ecumenical Action and Planning (CEPAE) also undertakes agro-ecological work (CEPAE, 2008) and since 2004 has implemented a project to improve the health of the community of Palo de Caja (San José de Ocoa) and increase the autonomy of farmers with respect to the use of pesticides, via lectures, didactic materials and model parcels (CSI, 2004).

The National Confederation of Rural Women (CONAMUCA) has played an active role in training rural women on this issue.

The Institute for the Development of an Associative Economy (IDEAC) for the past five years has been implementing a project with organic coffee growers’ cooperatives from Polo and Paraíso in Barahona, where it certifies organic coffee growers (IDEAC, 2008).

#### ***Universities.-***

With respect to providing information, awareness and education on POPs, academic institutions must play a key role in research, generating outputs that can then serve as the basis for decision making and the creation of scientific materials for dissemination. There are results from research on POPs (excluding dioxins and furans) from the Chemistry Department of the Pedro Henríquez Ureña National University and the Institutes of Physics (see Sbriz et al, 1998) and Chemistry (see Rodriguez, et al., 2006) of the Autonomous University of Santo Domingo, to name a few. The results from these academic institutions constitute a means for dissemination at the academic level (theses, scientific reports, lectures at events), which to some extent become the basic data for education and dissemination to the risk groups when made available to the public.

#### ***Private business.-***

With respect to private electric companies, we have seen results from education regarding PCBs, as well as training on the environment and job safety with respect to these compounds. The Electricity Company of Bayahibe, S. A., the Luz y Fuerza Company of Las Terrenas and the Punta Cana – Macao Energy Consortium, provide periodic training for their staff through authorities and operators of the system. Latter incorporate the use of test kits in their training. We have not seen the same degree of concern in the private industrial sector with respect to dioxins and furans.

#### ***Levels and effectiveness of information.-***

The *Agriculture Sector* has received the most attention in terms of projects, with their associated workshops and educational materials, through the ongoing support of the SEA and several national NGOs. In the area of pesticides, the country has a noteworthy tradition of developing organic agriculture, a concept that in itself implies moving away not only from POPs, but agro-chemicals in general.

The level of information about POPs pesticides can be deemed acceptable, both for the general population, as well as risk groups. Isolated efforts have come together to create a national awareness of the need for sustainable agricultural practices, with the economic motivation of obtaining

commercializable products that are well received on the national and international markets because they are free of hazardous substances.

In the *State Electricity Sector*, information and training policies on the subject of PCBs have been practically nonexistent; hence the level of knowledge is nil. No projects on PCBs have been implemented, nor are there do educational materials or websites exist that deal with the issue. In the *Private Electricity Sector*, knowledge about PCBs is relatively higher, because operators receive periodic training. Therefore, the tools used to disseminate information on the subject of POPs seem to have been somewhat effective. On the other hand, in private shops that handle oils containing PCBs, there is some knowledge about these compounds, although they seem to respond more to the initiatives and prior training of their owners, rather than to any means of dissemination and education. Regarding people who may have accidental access to oils from transformers, the level of information is nil.

In the *Industrial Sector – state or private* –information and training policies on the subject of dioxins and furans are not developed through any of the means of dissemination mentioned above. The levels of information, awareness and education among the interest groups can be deemed as nil.

In terms of means of dissemination, the issue of POPs has been absent from Dominican radio and television as an element for dissemination and awareness raising, because environmental education has not been developed as a component of national programming. Occasionally, and as a part of various projects, we know that local radio stations have aired informational spots or radios spots with environmental topics; hence at the local level this may be a yet unexploited channel for dissemination. As is the case of the media mentioned above, POPs have been absent from the national press as an educational component. No branch of the press has dedicated a special space to the issue of POPs, although some have sections dedicated to the environment, discussing environmental issues and could become important channels for education.

### **2.3.9. Key activities of non-governmental organizations**

Article 7, Paragraph 2 of the Stockholm Convention states that the countries must establish systems for consulting with civil society, specifically with groups of women and institutions that work to ensure the health of children. The objective is that citizens participate in the processes of developing, implementing and updating plans for executing the provisions of the Convention, involving the general population in the promotion, appreciation, understanding and respect for the environment.

There are a large number of non-governmental organizations in the country with various missions and purposes; hence the decision was made to contact, in the beginning, one organization related to the environment in each province and in the National District, thus obtaining a representative sample of the entire national territory. It should be mentioned that, although this was the intent, the geographical distribution of the questionnaire answers was not sufficiently proportionate.

Forty-three Non-Governmental Organizations (NGOs) were contacted, 19 of which were rejected, some because they did not answer the questionnaire, either by telephone or by e-mail; others because the activities they carry out are not compatible with the requirements of the Convention. Seven organizations have worked or have carried out activities related to persistent organic compounds and 17 are organizations that carry out activities related to the environment in terms of education and

raising the awareness of communities. (See Inventory of Technical Infrastructure Required to Identify, Monitor and Mitigate POPs).

The 7 organizations that are familiar with and/or have implemented activities related to persistent organic compound pesticides are: Agriculture and Environment Foundation/Action Network on Pesticides and their Alternatives for Latin America and the Caribbean (*Fundación Agricultura y Medio Ambiente/Red de Acción en Plaguicidas y sus Alternativas para América Latina y el Caribe*) (FAMA/RAP-AL), BIOLIGA, Zonal Social Pastoral Center (*Centro Zonal Pastoral Social*) (CEZOPAS), Fondo Pro Naturaleza (PRONATURA), Ecological Society of Barahona (*Sociedad Ecológica de Barahona*) (SOEBA), Ecological Society of the Cibao (*Sociedad Ecológica del Cibao*) (SOECI) and the Center for Ecological Action and Education (*Centro para la Educación y Acción Ecológica*). No organizations were identified that work with the management of PCBs and dioxins and furans, although some educate the population on the final disposal of garbage or domestic solid waste.

### **2.3.10. Review of the technical infrastructure to evaluate POPs, analysis, management, research and development, connection with other projects.**

There are at least three laboratories in the country which, given the qualifications of their personnel, equipment and/or experience, have the basic analytical capability to analyze POPs in various environments, approaching, to a greater or lesser extent, Levels 2 and 3 of UNEP/WHO/IOMC (2004): the Laboratory of the Chemical Institute of the Autonomous University of Santo Domingo (UASD), the Laboratory of the Institute for Innovation in Biotechnology and Industry (IIBI) and the Altol Chemical Environmental Laboratory, Inc. (ALCHEM).

The Laboratory of the Chemical Institute of the UASD was adequately equipped to analyze POPs pesticides by the Japan International Cooperation Agency (JICA) and provides services to public and private institutions, focusing its work on student and teacher research. It has experience in the JICA/IQUASD Project “Measuring pesticide residue in fruits and vegetables from the Valley of Constanza” (see Rodriguez et al., 2006). Its main difficulty is the lack of standards to cover all of the POPs analyses.

The IIBI Laboratory has adequate equipment and personnel, but also lacks standards. It provides support for institutional work and provides services for testing pesticides in water, food, vegetation, soil, sediments and residue. It has the infrastructure to analyze dioxins and furans and PCBs, but requires training and better safety conditions. Among its results in the area of POPs is the identification of concentrations of DDT and its metabolites in vegetables (see Diaz and Estrada, 1976) and the only known impact study on human health with measurements of DDT concentrations in breast milk (see Abad and Diaz, 1984).

The Altol Chemical Environmental Laboratory, Inc. (ALCHEM) is private, provides national services and conducts analyses in Puerto Rico with the support of the United States Environmental Protection Agency (EPA). No results of its work were obtained, because being a private institution, its data is not publicly available. It conducts analyses of POPs, including dioxins and furans, and is accredited under international standards.

Other laboratories that are basically equipped for POPs but lack experience are: the laboratory of the Physics Institute (IFIS) of the UASD, the Technological Institute of Santo Domingo (INTEC), the

Work-related Risk Administrator of the Social Security Institute (*Administradora de Riesgos Laborales del IDSS*), the Dr. Defilló National Laboratory (LNSPDD) and the laboratory complex of the Dominican Agro-Business Council (JAD) (*Junta Agroempresarial Dominicana*). The Central Veterinary Laboratory (LAVECEN) of the SEA is an interesting case that has experience in measuring pesticide residue, with a network of laboratories in the interior of the country, but which at present is more focused on animal epidemiological monitoring. Also of special interest is the Plant Protection Laboratory of the Southern Center for Agricultural Development (CESDA), which participated in the 1980's in measuring pesticides in varieties of potatoes (Marte and Herrera, 1980), beets (Cruz et al., 1987) and chicken eggs (Matos and García, 1987). The SEA is currently implementing a project to rehabilitate this laboratory.

The country's capability for managing hazardous solid or liquid wastes is very limited. Thirteen private companies with the capability to do so were identified. Of these companies, two have incinerators, six manage oily waste with the capability to manage oils contaminated with PCBs from the electricity generation industry. Although they do not undertake the final disposal of the oily waste, they do transport it, apply water evaporation treatment and send it to other companies to be used in boilers and furnaces.

With respect to the capacity of the country's technical personnel in the area of environmental consultancy, the inventory identified that the number of consultants, be they individuals or companies, who are registered with the Ministry of the Environment and Natural Resources (SEMARENA) is considerable. However, few showed any interest in responding to our request for information; hence, only seven consulting companies and 15 individuals who provide environmental services appear in this report.

Equipment calibration activities are very limited. There is one equipment calibration laboratory (Phoenix Calibration, D. R., S. A.), located at the Boca Chica Free Zone. According to information collected on its website, it has provided calibration services since 2001 for all types of measurements, National Institute of Standards and Technology (NIST) traceable and is credited under ISO/IEC standard 17025:1999.

The country has very few scientific research centers and, of the inventoried centers, only the Chemical Institute of the Autonomous University of Santo Domingo (IQUASD) stated that it had conducted research on pesticides. Other research centers, although they have the installed capacity, do not focus their activities on any of the POPs.

With respect to the capacity for digital information management, it was evident that the contacted institutions manage their environmental data exclusively using the common Microsoft Office system. The Ministry of Higher Education, Science and Technology (SEESCyT) is implementing, via the Undersecretary for Research, a national and international communication system that facilitates contact among various institutions interested in research.

### **2.3.11. Research on the impacted environment and population, magnitude of the threat to public health and environmental quality, implications for workers and local communities.**

In general, POPs research in the Dominican Republic that can provide guidelines concerning impacts on the environment and human health is scarce, fragmented and out of date. There are some qualitative and/or quantitative results on pesticides and PCBs in various environments, but we did not find any research on dioxins and furans.

#### ***Presence of POPs in various biotic and abiotic settings and impacts on the environment.-***

Sbriz *et al.* (1998) conducted a quantitative study on concentrations of Aldrin, PCBs, Chlordane, DDT and its metabolites, Dieldrin, Endrin, Hexachlorobenzene, Heptachlor, and Mirex in marine sediments and various species of bivalve mollusks (*Crassostrea rizophorae*, *Codakia obicularis*, *Tellina fausta* e *Isognomon alatus*) in twelve localities (Montecristi, Puerto Plata, Río San Juan, Samaná, Sánchez, Sabana de la Mar, Miches, Isla Saona, San Pedro de Macorís, Santo Domingo, Barahona and Pedernales). The highest concentrations correspond to DDT residue and its metabolites DDE and DDD.

The total DDT concentrations in sediments had a high value of 7.80 ng/g in the vicinity of Santo Domingo, but the maximum of 12.5 ng/g was found in Puerto Plata. The coastal sediments in these localities also had very high values of Chlordane, with 1.41 and 1.71 ng/g, respectively. Dieldrin and Mirex were occasionally detected, but most of the sediment samples did not show traces of pesticides. The concentrations of PCBs were generally higher than pesticides. The highest concentrations were found in sediment collected in highly populated areas and/or those with significant industrial or port activities, such as Santo Domingo (41.9 ng/g) and Puerto Plata (25.3 ng/g).

In the tissue samples from bivalves, the highest concentrations of total DDT were found on the coast of Barahona (30.9 ng/g) and Miches (30.2 ng/g). Concentrations of Chlordane were highest close to Samaná (7.47 ng/g). Other pesticides found occasionally were Dieldrin, Aldrin, Endrin, Hexachlor and Mirex.

PCB concentrations were generally highest in bivalves collected close to industrialized or port areas (Barahona, San Pedro and Samaná) and lowest in isolated places, such as Isla Saona. Concentrations of chlorinated pesticides and PCBs were significantly higher in bivalves –revealers of accumulation phenomena- than in sediment from the same locality, even though geographically both concentrations were always related. The values found are similar or lower than those from other regions in the Caribbean and reveal only local contamination problems, which could be related to the direct contribution of agricultural areas close to the coast or contributions via streams. These findings at low concentrations some seven years following the prohibition are within the half-life of these compounds and indicate bioaccumulation phenomena.

SEA-SURENA (1999) conducted the first quantitative study of POPs in surface waters along the coast of Santo Domingo and the measurement of seven organochlorinated pesticides in samples of surface water from six stations located close to the mouths of the Ozama and Haina Rivers and in the coastal area between both rivers. No Aldrin or Edrin were detected, but Chlordane (1.7 ng/l), p-p' DDE (2.1 ng/l), Dieldrin (4.1 ng/l) and Heptachlor (1.7 ng/l) were. The concentrations found for these compounds are significantly lower than those recommended by the EPA (2008) as criteria for marine surface waters in order to protect marine life and human health.

### ***Presence of POPs in food and impacts on human health.-***

Díaz y Estrada (1976) analyzed concentrations of DDT and its metabolites in various types of vegetables (peppers, garlic, yams, onions, beans, lettuce, okra, potatoes, cucumbers, leeks, beets, tomatoes and carrots) from markets in Santo Domingo. The only concentrations found were between 106 and 732 ppb in onions (*Allium cepa*) and 348 ppb in okra (*Abelmoschus esculentus*). It is not known whether traces were present in the other samples, because the method used did not detect concentrations below 25 ppb. It was not possible to determine the origin of the DDT, because the samples were from warehouses and not directly from plantations.

Marte y Herrera (1980) measured concentrations of some chlorinated pesticides in two varieties (white Kennebec and red Pontiac) of potatoes (*Solanum tuberosum*) from San José de Ocoa, San Rafael del Yuma and Constanza. Endrin was found only in the variety of white potatoes (1.38 ppb) from San José de Ocoa and Heptachlor epoxide in the red potato (0.87 ppb) from San Rafael del Yuma.

Cruz *et al.* (1987) measured pesticide residue (Heptachlor, Dieldrin, Aldrin, Endrin, Chlordane and DDT and its metabolites) in beets (*Beta vulgaris*) from the Valley of Constanza, detecting only p-p' DDE in three samples with values of 0.53 and 15 ppb. More recently, Rodríguez *et al.* (2006) measured the presence of Aldrin, Heptachlor and DDT and its metabolites in vegetables from the Valley of Constanza. The concentrations found in celery (*Apium graveolens*) (0.35 - 1.35 ppb of DDT, 2.52 - 2.71 ppb of Aldrin and 1.25 - 11.55 ppb of Heptachlor), lettuce (*Lactuca sativa*) (2.19 - 63.09 ppb of Aldrin and 1.96 ppb of Heptachlor) and broccoli (*Brassica oleracea*) (1.03 - 1.76 ppb of Heptachlor), are below those established by the Japanese standards for residual pesticides in vegetables.

Matos y García (1987) measured pesticide residue (Heptachlor, Dieldrin, Aldrin, Endrin, Hexachlorobenzene and DDT and its metabolites) in chicken eggs from the major farms in Santo Domingo, but none were detected. To this panorama of POP presence in food, one must add the results of Sbriz *et al.* (1998) with respect to the presence of POP concentrations in the tissue of four species of bivalves (*Crassostrea rhizophorae*, *Codakia obicularis*, *Tellina fausta* e *Isognomon alatus*) that are fished, commercialized and consumed traditionally in the country (SERCM, 2004).

If we analyze the values from a historic perspective from the 1970's to the present, the concentrations reported in vegetables appear to have experienced a gradual reduction, a trend that must continue, because none of the detected products has been used for at least the past ten years. The recent findings of DDT, Heptachlor and Aldrin in low concentrations of vegetables from Constanza (Rodríguez *et al.*, 2006), some 15 years after being prohibited are within the half-life of these compounds.

The only known study on the influence of DDT on human health is the one by Abad and Díaz (1984), which measured the concentrations of this pesticide and/or its metabolites in the breast milk of 60 mothers between the ages of 15 and 34, who gave birth at the Nuestra Señora de la Altagracia Maternity Hospital, detecting 52 positive samples. The values reported for Dominican mothers in comparison to similar studies in Uruguay (Burger *et al.*, 1987), Guatemala, Salvador (Smith, 1999) and Mexico (Torres-Sánchez and López-Carrillo, 2007) reveal that our concentrations, with a maximum value of 286.25 ppm, were indeed high and far above the “practical residue limit” (LPR)

for total DDT of 0.05 ppm allowed by the FAO/WHO for whole cow's milk and is indicative of exposure.

### **2.3.12. Details of the system for evaluating and listing new chemicals**

All pesticides must be registered with the Ministry of Agriculture (SEA), pursuant to Regulation 322-88. Upon depositing the file for each product, information related to the active ingredients, testing methods of the physical properties and the residue in vegetable and animal products, soil and water must be included.

The registrant must provide quantities of the formulated product in the original and sealed containers for the tests that are deemed pertinent. Once the application is received, the SEA proceeds to review the documentation submitted, conducts the identification and quality tests it deems necessary at its laboratories and in cases where considered necessary, it conducts field tests to corroborate the efficiency of the product, evaluate the residue resulting from the application and its environmental impact and then assigns a toxicological classification. However, there are serious difficulties in effectively applying the current Regulations for the following reasons:

- The SEA does not have the equipment or laboratories that allow it to comply with the requirements of Annex D of the Convention, with respect to conducting the analyses needed to identify the active ingredients and formulated products.
- The SESPAS does not have a laboratory for these purposes.
- The country has deficiencies in terms of the human and technical resources needed to verify the information about product identification, persistence, bioaccumulation and potential in the environment during long-distance transportation. This situation leads to a reliance on information provided by the importer, the non-objection and free sale of the product in the country of origin.
- Law 311 and its regulation 322-88, established the obligatory nature of issuing a standard that regulates the manufacturing and formulation of pesticides, but this has still not been done.
- With respect to the use, sale and distribution of pesticides, EPA or European Community certification is trusted.
- The country is facing major problems with generic products. If a product has been manufactured and sold in the country for more than 20 years, when the patent expires, it can be produced and registered as generic, oftentimes without identifying its components and ignoring all regulations. Lacking the aforementioned laboratory tests, the information provided by the importer is accepted as good and valid. Thus generic products arrive from Brazil, India, China, Japan and other countries.
- The provision to periodically publish the list of products that have been denied registration because the manufacturing, import, sale and supply of same to the public are prohibited by the SEA is not being adhered to, thus violating the current legislation.

### **2.3.13. Details of the system to regulate chemicals currently on the market**

To renew the registration of a pesticide currently on the market that has already complied with all of the requirements for registration as a new product, the registrant must adhere to Article 35 of Regulation 322-88 and submit the corresponding application for registration or renewal to the Department of Plant Health, with the proof of registration issued by the SEIC and proof of product registration in the Industrial Property and Investment Patent Registry.

A measure that is required for chemical products and pesticides registered and controlled in the country is that the containers for sale and use in the country must have a legible and easily visible label written in Spanish, and which includes all of the specifications established in Article 41 of Chapter IV of the Regulation. Part of the control process is undertaken via Plant Quarantine Inspectors serving at the various ports throughout the country, who are trained to determine whether the product labels are the same as those deposited at the Pesticide Registration Division of the SEA. For products in the highly toxic and extremely hazardous category, the label must have the word “poison” written in red letters with its pharmaceutical symbol. Notwithstanding the above, there are no standards for manufacturing and formulation activities. The information provided by the SEA is that no pesticides are manufactured in the country and that there are only two product formulators, which are Fertilizantes Santo Domingo (FERSAN) and Fertilizantes Químicos Dominicanos (FERQUIDO).



### **3. STRATEGY AND ACTION PLANS OF THE NATIONAL IMPLEMENTATION PLAN**

#### **3.1 POLICY STATEMENT.**

The Dominican Republic, in accordance with the commitment contracted through the ratification of the Stockholm Convention on Persistent Organic Pollutants [sic] (POPs), which establishes in its article 7 the obligation to develop a National Implementation Plan (NIP) and to guarantee the execution of same, declares that:

The country has developed its National Implementation Plan, the inventories and measures of which have been examined, understood and approved. In this context, the Dominican Republic assumes and agrees, via the Ministry of the Environment and Natural Resources (SEMARENA), with the support of international cooperation, to implement said NIP on Persistent Organic Pollutants and incorporate same in the environmental policies and in the general framework of the national strategy to achieve sustainable development, via a unifying action that obtains the commitment of a group of state institutions responsible for execution of same, as are: the Ministry of Public Health and Social Assistance (SESPAS), the Ministry of Agriculture (SEA), the National Customs Department (DGA), the Dominican Corporation of State Electric Companies (CDEEE) and members of Civil Society, including companies, universities and Non-Governmental Organizations (NGOs) In order to guarantee the effective implementation of the NIP, the SEMARENA must allocate a portion of its annual budget to the required activities, until said Plan is concluded.

##### **3.1.1 Objectives and basis of the NIP implementation policy**

The general objective is to identify and design actions and modalities of same to ensure the adequate implementation of the NIP, designed to achieve national compliance with the Convention.

In order to implement the NIP, the SEMARENA shall draw up a resolution that puts said plan into execution, planned to start in 2009 and to end in 2015.

The efforts to implement the NIP must transcend the provision of resources and designation of responsible institutions, with an active political will to involve key stakeholders in the management of POPs and with the support of international cooperation, without which said plan would not be effectively executed.

##### **3.1.2 Principle of the implementation of the NIP**

The principles that will guide the implementation of the NIP are the following:

- Shared responsibility, with the involvement of government and non-government sectors in the management of POPs;
- Free access to environmental information on POP substances;
- Polluters pay. Under this principle, any contaminated site must be rehabilitated to its condition before the fact, by the person or entity that has caused the pollution;
- Right of access to truthful and timely information. Under this principle, information must be provided to citizens about POP substances in a transparent way, and the institutions responsible

- for executing the NIP have the obligation to inform the Focal Point, via annual reports.
- Articulation with the National Development Strategy, Environmental and Natural Resource Policies and with relevant sectoral programs and plans. The intent is to identify and build synergy between the NIP and national compliance with the United Nations (UN) Millennium Development Goals (MDG).
- The use of the most appropriate technologies and international parameters or standards on POPs.
- Education and public awareness about the dangers of using POP substances.

### **3.1.3 Priorities and conditions**

At the workshop held on 11 October 2007 on Evaluating Priorities and Establishing Objectives with the members of the National Coordinating Committee, after analyzing the national POPs profile, the following priorities were identified:

**Priority 1:** Assessment and updating of the legal framework and national regulations related to POPs.

**Objectives:**

- Harmonize national legislation in agreement with the provisions of the Stockholm Convention.
- Include POPs management in national environmental regulations.
- Include in job safety legislation **the protection** of workers and operators in POPs risk groups.
- Consolidate the regulatory and legislative criteria of the various sectors and institutions with respect to POPs.

**Priority 2:** Environmental management of PCBs and equipment containing PCBs

**Objectives:**

- Identify all of the elements in the chain of entry, mobilization and final destination of transformers containing PCB.
- Improve the national infrastructure for the efficient handling and storage of PCB
- Identify and label 30% of all equipment contaminated with PCB
- Include the issue of PCB in the Comprehensive Plan of the Dominican Electricity Sector
- Gradual elimination of all PCB contaminated equipment in disuse and safe disposal of 30% of same.
- Train members of the state and private sectors on the subject of PCBs.

**Priority 3:** Reduction of the immediate risks to the environment and to public health as a result of obsolete warehouses and/or contaminated sites;

**Objectives:**

- Total elimination of the DDT stored at the Center for the Control of Tropical Diseases (CENCET)
- Elimination of electrical parts and equipment containing PCB, identified in the inventory.

**Priority 4: Reduction of unintentional releases of POPs (dioxins and furans).**

**Objectives**

Strengthen the Solid Waste Units of the Undersecretary for Environmental Management and the City Governments as a foundation for a more adequate management of solid waste.

Strengthen management in solid waste handling at critical sites, such as landfills, hospitals (private and public), airports and docks.

Reduction of emissions from the major sources detected in the inventory (incinerators, forest fires and the formal and informal industrial sectors).

Initiate the process of documentation and registration of dioxin and furan emissions.

Train and raise the awareness of owners and administrators of identified dioxin and furan sources.

**Priority 5: Systematic development of education and public awareness-raising programs on the subject of POPs**

**Objectives**

Public education on POPs, with an emphasis on risk groups for POPs, via all available communication media (written press, radio, television, internet, etc.)

Establishment of a documentation center and data base accessible by the public with information about POPs

Train the personnel of the Ministry of Education on POPs and incorporate the topic at various levels of teaching (primary, secondary and university)

Offer educational programs \*Incorporate the educational topic\* related to POPs into civil society organizations (NGOs and grassroots associations) and into the industrial sector, \*in the aspect\* informally as provided in article 56 of Law No. 64-00.

**Priority 6: Development of a more efficient national infrastructure for handling and managing POPs**

**Objectives**

Strengthen national laboratories that analyze POPs (example: Reference Laboratory of the UASD)

Training of the technical staff and accreditation of laboratories in standard methods of analysis and monitoring of various environments (water, soil, air and biotic components)

Creation of systematic research programs to more efficiently monitor and control POPs

Improve the facilities of the country for collection and temporary storage of POPs and equipment containing POPs in a safe manner

Strengthening of inter-institution coordination

**Priority 7:** Know the effects of POPs on public health and the environment by means of appropriate research

**Objectives**

Identify the presence and concentrations of POPs in abiotic (air, water and soil) and biotic (ecosystems and biota) components of land, coastal and marine environments

Determine the current level of exposure of the Dominican population to POPs and their significance for national public health

Incorporate into the Dominican health system statistics systematic information about the effects of POPs on health, for example, pesticide poisonings.

**Priority 8:** Identification of potential transboundary entries of POPs

**Objectives**

Implement mechanisms to detect, control and eliminate the possible entry of POPs across any border, land, coast or sea.

Train the Specialized Border Corps (CESFRONT) and the DGA in aspects related to POPs

Coordinate these actions with other International Conventions on chemical products, for example, the Basel and Rotterdam Conventions.

### **3.2 IMPLEMENTATION OF THE STRATEGY**

The NIP was designed with the broad participation of the various sectors related to the protection of human health and the environment, coordinated by SEMARENA, in seeking to join wills, efforts and resources to reduce or eliminate POPs.

#### **3.2.1 Designation of the dates for complying with the Stockholm Convention**

The start of execution of the National Implementation Plan will be the year 2009 with the start of activities scheduled by Action Plans Nos. 3.3.3 - 3.3.4 - 3.3.5 - 3.3.7 and 3.3.15; however, due to exceptional circumstances, Action Plan No. 3.3.1 on Regulatory and Institutional Framework is scheduled to begin execution at the end of 2008, with the introduction of the environmental component in the Political Constitution of the Nation, which forms a part of the proposed constitutional reform and which will be submitted by the Executive Power to the National Congress.

Other Action Plans, such as Nos. 3.3.11 – 3.3.13 and 3.3.17 will begin execution in 2010, all of the action plans finalizing in 2015.

#### **3.2.2 Assignment of institutional responsibilities**

The SEMARENA is the Focal Point of all conventions related to this issue, as established in article 18, numeral 21 of Law No. 64-00 and has delegated in the Undersecretariat for Environmental Management the Focal Point of the Stockholm Convention on POPs, the head of the Environmental Quality Department being the Designated National Authority for the aforementioned undersecretariat, as recorded in a communication addressed to the Convention Secretariat via the Ministry of Foreign Relations.

The SEMARENA, as Focal Point, must coordinate and supervise the implementation of the NIP, as well as be the contact point with the Convention Secretariat. A group of institutions with implementation responsibilities distributed according to the activities in which they are involved, will participate in the launch of said plan, such as SEA, SESPAS, CDEEE, SEE and the private sector.

Each of the institutions involved in the execution of the NIP has the obligation to submit a report each year on the level of execution of the NIP, as established in Action Plan 3.3.15. These institutions will be supervised and monitored by the Focal Point to determine their level of compliance. The timeframe stipulated for execution of the NIP is 5 to 6 years, starting in 2009, through 2015, with an average execution per year of between 15, 20 or 25%, depending on the activities scheduled for that year by the action plans.

### **3.2.3 Details of implementation**

Each of the Action Plans has a scheduled set of activities that will be developed over a period of 5 to 6 years, and each institution responsible for its execution, shall establish a timetable of activities and financing sources for said plans as described in points 3.5 and 3.6.

### **3.2.4 Mechanism for reviewing implementation**

The Environmental Quality Department of the SEMARENA will monitor and evaluate execution of the activities identified in the NIP and in the Strategy, under the coordination of a National Implementation Commission. This Commission will be the National Implementation Authority, will be consultative in nature before the SEMARENA, and will be composed of representatives from institutions related to POPs management.

The National Implementation Authority each year will evaluate, according to an established system of indicators, the level of execution of the action plans from the reports sent to the Focal Point by the institutions responsible for the execution of said plans, as an ongoing monitoring mechanism of the progress made in implementing the action plans, guaranteeing effective compliance with the NIP and reporting to the Secretariat of the Stockholm Convention after four (4) years have transpired, as established in Plan 3.3.15, on the information and exchange commitment between national and international stakeholders participating in each of the action plans.

Changes and adjustments will be made by assessing the progress of each particular plan and, depending on the progress made, SEMARENA will provide guidance to the responsible institutions for execution concerning the need to take measures that will ensure the efficiency and effectiveness of the Action Plans of the Stockholm Convention. To implement these changes, the progress made in the plans and achievements gained will be taken into account. For make the adjustments, the realities of each plan and the monitoring mechanisms that can be applied to the execution of the action plan will be considered.

### **3.2.5 Costs of implementing the NIP**

The effective application of the NIP requires administrative staff and financial resources to cover personnel, non-personnel, equipping and installation expenses that will permit results to be achieved and consequently, the proposed objectives of each action plan to be met.

The following table shows the costs required to organize and coordinate the NIP

**Table 20. Costs of implementing the NIP**

<b>COORDINATION AND ADMINISTRATIVE COSTS</b>	<b>MONTH</b>	<b>YEAR</b>
<b>OVERHEAD AND ADMINISTRATIVE EXPENSES</b>	<b>18,283.33</b>	<b>129,566.67</b>
<b>PERSONNEL SERVICES</b>	<b>16,333.33</b>	<b>106,166.67</b>
<b>Salaries fixed contracted personnel</b>	<b>8,166.67</b>	<b>98,000.00</b>
Coordinator	2,272.73	27,272.73
Admin. Assistant	848.48	10,181.82
Secretary	500.00	6,000.00
National experts in POP's management (3)	4,545.45	54,545.45
<b>Christmas bonus</b>	<b>8,166.67</b>	<b>8,166.67</b>
<b>NON-PERSONNEL SERVICES</b>	<b>1,505.00</b>	<b>18,060.00</b>
Communication services	100.00	1,200.00
Utilities	100.00	1,200.00
Advertising, printing, and binding	35.00	420.00
National travel expenses (4 persons)	400.00	4,800.00
Local rentals	310.00	3,720.00
Transportation and storage	30.00	360.00
Equipment and furniture maintenance and repair	100.00	1,200.00
Training (includes travel expenses)	400.00	4,800.00
Other non-personnel services	30.00	360.00
<b>MATERIALS AND SUPPLIES</b>	<b>445.00</b>	<b>5,340.00</b>
Office supplies	100.00	1,200.00
Fuel and lubricants	300.00	3,600.00
Food products	30.00	360.00
Others	15.00	180.00
<b>CAPITAL EXPENSES</b>	<b>11,500.00</b>	<b>11,500.00</b>
<b>MACHINERY AND EQUIPMENT</b>	<b>11,500.00</b>	<b>11,500.00</b>
Office equipment and furniture	3,000.00	3,000.00
Computer equipment and programs	7,000.00	7,000.00
Miscellaneous equipment	1,500.00	1,500.00
<b>GENERAL TOTAL</b>	<b>29,783.33</b>	<b>141,066.67</b>
<b>Recurring expenses 2009 to 2015</b>	<b>139,483.33</b>	<b>918,466.67</b>

Recurring expenses refer to overhead and administrative expenses.

### 3.3 ACTIVITIES OF THE NATIONAL IMPLEMENTATION PLAN

#### 3.3.1 INSTITUTIONAL AND REGULATORY STRENGTHENING MEASURES

##### 3.3.1.1 Summary of the current situation

In order to enforce the Stockholm Convention on Persistent Organic Pollutants, the Dominican Republic has legal instruments on the control of hazardous chemical substances (decrees, regulations, technical standards). These legal instruments lack the strictness and systematic nature needed for their effective enforcement. (see inventory on the 2007 regulatory and institutional framework).

As a way to guarantee maximum environmental protection from the legal standpoint, most Latin American countries, when they have modified their political constitutions, have introduced provisions and precepts on the protection and sustainable use of the environment. However, despite the fact that the country has reformed its Constitution on two occasions (1994 and 2002), it has not introduced the environmental component in same. Taking this fact as a basis, some twenty-five Dominican civil society institutions accompanied SEMARENA in formulating a proposal on environmental protection, which was submitted for inclusion in the Constitution during the next constitutional reform submitted by the President of the Republic (2008).

To complete the legal and institutional adaptation of the country to the demands of international conventions on the management of hazardous chemical products: Stockholm, Basel and Rotterdam, the country requires: a) a legal instrument that concentrates all regulations on hazardous chemical substances, among which are the POPs; b) identification of the institutions responsible for execution of same; and c) updating of current legal instruments to the requirements of international conventions.

### **3.3.1.2 Purpose of the Plan**

Within the capabilities of the country and in accordance with the needs detected by the POPs inventories conducted in 2007, to schedule actions to adapt the regulatory and institutional framework of the country to a situation where it is enabled to comply with the commitments assumed in the Stockholm Convention and adjust to the commitments assumed with the Basel and Rotterdam conventions.

### **3.3.1.3 Objectives, Outcomes and Activities.**

**Table 21. Description of outcomes, activities, indicators, means of verifying the objectives**

<b>Objective 1:</b> Raise awareness among congress members and members of the civil society concerning the need to introduce the environmental protection component into the National Constitution.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means for Verifying Output</b>
That the institutions have undertaken the work of promoting and defending the proposal because they had sufficient and timely logistical resources.	Providing logistical support for the institutions and organizations that drive the constitutional reform.	By November 2008, SEMARENA has allocated logistical and human resources to promote the Constitutional reform.	Purchase invoices, checks issued, minutes from meetings.
Dissemination materials prepared for key stakeholders and the general public.	Produce 100 thousand units of informational material with 10 reasons why this constitutional reform should be approved.	By December 2008, 5 universities and 8 high schools have received materials.	Print shop invoice, distribution list, photographs

### 3.3.1.3 Objectives, Outcomes and Activities.

**Table 21. Description of outcomes, activities, indicators, means of verifying the objectives (continuation).**

<b>Objective 1: Raise awareness among congress members and members of the civil society concerning the need to introduce the environmental protection component into the National Constitution.</b>			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means for Verifying Output</b>
Commission to distribute the developed proposal.	Form a commission to distribute and promote the proposal comprised of 10 people.	The commission has distributed by November 2008, more than 1,500 copies of the proposal and 80 thousand fliers at universities, public schools, private schools, congress members, NGOs, churches, etc.	Photographs, minutes, lists of participants, among others.
Support document for the constitutional proposal prepared and signed.	Develop and publish a support document for the constitutional proposal signed by key actors.	The publications have been completed by September 2008.	Document published, signed by stakeholders.
<b>Objective 2: Formulation and promotion of a draft bill on the adequate management of hazardous chemical substances, including POPs.</b>			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means for Verifying Output</b>
Inter-sectorial discussion forum formed.	Form an Inter-sectorial discussion Forum to develop the preliminary version of the draft bill for the Law on Hazardous Chemical Substances, including POPs.	By 2012, a Discussion Forum exists, comprised of 8 institutions and the preliminary version of the draft bill.	Minutes from meetings, preliminary version of the draft bill.
Dissemination of the draft bill.	Hold 5 regional workshops to communicate the draft bill to key stakeholders.	By 2013, all regions of the country have participated in the proposal and more than 150 key stakeholders are informed about it.	Distribution list, list of participants in workshops, invoices, photographs, among others.
	Reproduce 1,000 copies to be shared with key stakeholders.	By 2013, 750 copies of the proposal have been distributed.	
Law on Hazardous Chemical Substances approved by the National Congress.	Convene the Environmental Commissions of the Senate and Chamber of Representatives to explain the importance of the approval of the project.	80% of legislators adopt the Draft Bill on Chemical Substances for approval.	Photographs of meetings and distribution list of the draft bill.
Follow-up commission designated.	Designate a follow-up commission, which renders an annual report on the levels of enforceability of and compliance with the law.	By 2015, a first report containing the levels of compliance with the law has been issued.	Report document, minutes from meetings.



**Objective 3:** Updating and adaptation of the regulations and standards on hazardous chemical substances to the demands of international conventions (Stockholm, Basel and Rotterdam).

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
Interinstitutional commission designated	Designate an interinstitutional and inter-sectorial technical commission, under the coordination of the Department of Environmental Standards of the SEMARENA, to review, update, develop standards, regulations and operations manuals, in accordance with the requirements of the Convention.	By January 2011, the Commission has had 10 meetings.	Minutes and photographs from meetings.
Regulation 322-88 modified.	Modify Regulation 322-88, which regulates the use and management of pesticides in the country (see 2007 pesticide inventory)	By 2012, the regulation has been modified.	Regulations document.
Regulation 08-01 modified.	Modify Regulation 08-01, on the Control of polychlorinated Biphenyls and adjust it to the requirements of the Stockholm Convention and laws 64-00 and 42-01.	By 2013, the regulation has been modified and dictated for entry into force.	Regulation and copy of the resolution that puts same into force.
Regulation modified.	Modify the Regulation for the Management of Hazardous Wastes and Substances, put into force via Resolution No. 02/2006, to establish the mandatory nature of the registration and reporting of data and the permissible parameters.	By 2014, the regulation has been modified.	Regulation printed and published on the websites of the institutions responsible for enforcing same.
Standard modified and updated.	Modify the 2003 environmental standard on Air quality and emissions control, to introduce in same the maximum limits for dumping of hazardous chemical wastes, specially the POPs.	By 2015 the standard on air Quality and emissions control has been modified.	The standard is printed and Published on the SEMARENA website.
Standard modified and updated	Modify the July 2001 standard on water quality and discharge control AG-CC-01, to include the permissible limits of hazardous chemical substances, specially the POPs.	By 2015, the environmental standard regulating emissions of chemical products into bodies of water in the country has been updated.	Standard printed and published on the SEMARENA website and the resolution putting same into effect has been issued.
Chemical substances operations manual prepared.	Prepare an operations manual on chemical substances that includes POPs.	By 2015, the Dominican Republic has an operations manual on chemical substances that includes POPs.	Manual published on the SEMARENA website and at the Department of Standards.

### 3.3.1.4 Timetable and costs of the activities included in the plan

**Table 22. Timetable and costs of the activities included in the plan on the regulatory and institutional framework**

<b>Objective 1: Promote a Constitutional legal framework that serves as support for the adoption of effective standards on hazardous chemical substances by 2010.</b>											
ACTIVITIES / TASKS	TIMETABLE						EXECUTING INSTITUTION	COSTS IN US\$			ASSUMPTIONS
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2008	2009	2010	2011	2012	2013					
Provide logistical support for the institutions and organizations that promote the constitutional reform.							SEMARENA	5,000.00			Subject to SEMARENA assuming the proposal and providing the necessary resources on time.
Prepare 100 thousand units of informational material with 10 reasons why this constitutional reform should be approved.							SEMARENA and Consorcio Ambiental Dom.	5,000.00			Subject to SEMARENA providing funds for printing the proposals.
Print 2000 copies of the proposal to be distributed among key stakeholders.											
Form a 5-member commission to distribute and promote the proposal.								3,000.00			
Prepare and publish a support document for the constitutional proposal signed by key stakeholders.								800.00			Subject to key stakeholders accepting and signing same.
<b>Total cost objective 1</b>								<b>13,800.00</b>			

**Objective 2:** Prepare a draft bill on the proper management of hazardous chemical substances, especially POPs, and promote promulgation of same by 2015.

Activities / Tasks	TIMETABLE						Executing Institution	COSTS in US\$			Assumptions
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
Form an inter-sectorial discussion forum with the participation of Civil Society, to prepare the preliminary version of the draft bill on Hazardous Chemical Substances, including POPs.							SEMARENA, SEA, SESPAS	5,000.00		5,000.00	Subject to the availability of resources from the government, the level of priority and international cooperation.
Hold 5 regional workshops to discuss the draft Bill with interested parties.							SEMARENA	5,000.00		2,500.00	Availability of resources and the organizations of said activities by SEMARENA.
Reproduce 1000 copies of the draft bill to be discussed in workshops and other key stakeholders.								3,000.00			That the SEMARENA provide the funds.
Meet with the environmental commissions of the Senate and Chamber of Representatives to explain the importance of approving the bill.							SEMARENA, SEA, SESPAS, DGA	500.00			The interest of the legislators to discuss the proposal and insistence by promoters of the proposal.
Designate a commission to follow up on the Law on Hazardous Chemical Substances, which renders an annual report on the levels of enforceability and compliance with the law.							SEMARENA	7,500.00		7,500.00	Subject to the availability of funds from the government and international cooperation.
<b>Subtotal</b>								<b>21,000.00</b>	<b>-</b>	<b>15,000.00</b>	
<b>Total cost objective 2</b>								<b>36,000.00</b>			

**Objective 3:** Update and adopt regulations and standards related to hazardous chemical substances and to the requirements of the Stockholm Convention by 2015.

Activities / Tasks	TIMETABLE						Executing Institution	COSTS in US\$			Assumptions
	Year of Execution							Dom. Gov.	Party	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
Designate an interinstitutional and inter-sectorial technical commission, under the coordination of the Department of Standards of the SEMARENA, to review, update and develop Standards, Regulations and Operations Manuals to comply with the POPs.							SEMARENA (Department of Standards) SEA SESPAS	2,000.00		1,000.00	That those responsible for enforcing the Convention adopt the plan and provide instructions on forming the commission.
Modify Regulation 322-88, which regulates the use and management of pesticides in the country. (see pesticide inventory)							SEA SEMARENA	2,000.00		1,000.00	Availability of resources and the organization of said activities by SEMARENA
Modify Regulation 08-01 on the control of polychlorinated biphenyls and adjust same to the requirements of the Stockholm Convention and Laws Nos. 64-00 and 42-01.							SEMARENA SESPAS	2,000.00		1,000.00	On the availability of resources and compliance by the commission with the mandate given.
Modify the Regulation on Management of Hazardous Wastes and Substances, put into effect via Regulation No. 02/2006 on 5 January 2006.							SEMARENA	3,000.00		3,000.00	
Develop a regulation on procedures for handling spills and leakage into the air of substances considered to be POPs.								2,500.00		2,500.00	
Develop a regulation that regulates metal scrap smelting operations and all types of incinerators.								3,000.00		2,000.00	On the availability of resources from SEMARENA, International Cooperation and by the commission with the mandate given.
Prepare an operations manual on chemical substances containing POPs								2,000.00		1,000.00	
<b>Subtotal</b>								<b>16,500.00</b>		<b>11,500.00</b>	
<b>Total cost objective 3</b>								<b>28,000.00</b>			

### **3.3.1.5 Implementation of the action plan**

The proposed activities are scheduled to be implemented over a period of seven years, from 2008 – 2015, according to with the capabilities of the country and the technical and financial cooperation that can be obtained from other signatory countries of the Convention and from international agencies.

The implementation of this action plan will begin with awareness raising among key stakeholders on the need to incorporate environmental protection into the National Constitution. Raising the awareness of key stakeholders will be achieved through participatory local and regional meetings, dissemination materials, introduction in the mass media.

To write the Law on Hazardous Chemical Substances, the same procedure used in preparing the Draft Bill on Forest Resources (2008) will be used, in which the legal consultant will prepare the preliminary version of the Draft Bill, which will then be discussed by an inter-sectorial discussion forum comprised of government, civil society and international cooperation agencies. Subsequently, this document will be discussed at the national level in regional workshops, and lastly, in a national workshop.

In order to adapt and prepare the standards and regulations contemplated in objective 3, the formation of a commission is recommended, comprised of the institutions responsible for enforcing the Stockholm Convention: SEA, SESPAS and SEMARENA, coordinated by the Department of Environmental Standards of the SEMARENA. This Commission would receive the advisory assistance of a legal consultant, who will prepare the preliminary versions that will be discussed by the commission and will subsequently be approved by the competent authority.

### **3.3.1.6 Cost and total financing**

The total cost of the plan is US\$77,800.00 (seventy-seven thousand eighth hundred dollars) distributed as follows:

Investment Dominican government: US\$51,300.00 (fifty-one thousand three hundred dollars)

International cooperation capital: US \$26,500.00 (twenty-six thousand five hundred dollars)

**Table 23. Costs of the plan on regulatory and institutional framework**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
<b>3.3.1 Plan for institutional and regulatory strengthening measures</b>	<b>77,800.00</b>	51,300.00	66%	26,500.00	34%
Note 1: Internal financing refers to contributions from the Dominican government					
Note 2: External financing refers to contributions from international agencies					

### **3.3.2 MEASURES TO REDUCE OR ELIMINATE THE PRODUCTION AND USE OF INTENTIONAL RELEASES**

This action plan was not developed because its activities are contemplated in 3.3.3

### **3.3.3 PRODUCTION, IMPORT AND USE, STORAGE AND WASTES FROM POPS PESTICIDES**

#### **3.3.3.1 Summary of the current situation**

In the Dominican Republic, the sale and use of the nine persistent organic pollutants listed in Annexes A and B of the Stockholm Convention have not been detected.

Via the Pesticide Inventory conducted in 2007, information was obtained about the past seven years, by means of reviewing a total of 22,064 records of imports of chemical products, and thus establishing that POPs pesticides did not appear. This was due to Decree 217-91, which prohibits the import, use, commercialization of a group of toxic pesticides, which includes those vetoed by the Convention. As a baseline for the inventory, the following aspects were considered:

- a) Absence of the official use, production, import and export of POPs pesticides in the country.
- b) Strengthening of POPs pesticides legislation.
- c) Potential entry of POPs pesticides across the border.
- d) Inability to analyze residue from POPs pesticides in the country, due to the lack of equipment and standards in the existing laboratories.
- e) Lack of control, training and monitoring of the use of pesticides.

While conducting the aforementioned inventory, there were denouncements of sites where the use and handling of POPs pesticides is suspected, but these could not be visited. Likewise, no studies have been conducted based on soil, water, flora-fauna and food samples in order to detect traces of POPs pesticides.

#### **3.3.3.2 Purpose of the Plan**

To bolster the surveillance system in order to prevent the import, use, storage and wastes from POP's pesticides in the country.

### 3.3.3.3 Objectives, Outcomes and Activities

**Table 24. Description of outcomes, activities, indicators and verification means of the objective**

<b>Objective 1.</b> To confirm the import, use, storage and wastes from POPs pesticides in the zones denounced as sources of illegal importing			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of verifying output</b>
Interinstitutional coordination for the management of POPs pesticides is developed, based on the exchange of information, conducting of joint research projects on traces of POPs pesticides in water, soil and biota and through periodic planning and evaluation meetings		In 2014, 90% of the records of the DGA and SEA are compatible with respect to pesticide products officially registered by the SEA, and coordination meetings are held annually between SEA, SEMARENA, SESPAS, BAGRICOLA, DGA and IAD starting in 2009.	Report on the compared statistics of DGA and SEA, prepared by the SEA in June of each year.  Minutes from the annual meetings of the involved parties and joint action plan of SEA, SEMARENA, SESPAS, BAGRICOLA, DGA and IAD, under the coordination of the SEA.  Annual reports of the governing institutions (SEA, FFAA, SESPAS)
	Involve the Specialized Border Security Corps (CESFRONT), the Center for Research on Irrigation Water Technology (CITAR) and the Department of Food Safety (DIA).	CESFRONT, CITAR and DIA and the COTERE have formed a network for the surveillance, monitoring and inspection of POPs pesticides in 2010.	
	Set up the SEA and INDRHI laboratories to conduct the analyses of POPs pesticides.	By 2011, the laboratories of the SEA and INDRHI have conducted analytical tests of POPs pesticides from Tiro, Constanza, San Juan de la Maguana, La Vega, Santiago, Samaná, etc. (2008 Base line, zero tests).	Bi-monthly reports and records from the INDRHI and SEA laboratories.  Signing of an interinstitutional agreement.
	Investigate in the various environments (water, land, biota) the national level POPs pesticide presence.	At least one study is conducted every two years on the situation of POPs pesticides in the various environments until 2014, once the plan is initiated.	Evaluation report on the situation of POPs pesticides by the SEA, every two years.
	Design and implement a geographic information system on POPs pesticides.	A geo-referenced information system is available and accessible on line by the involved authorities, in 2014.	SEA web portal and survey on access to the GIS by the key parties involved (SEA, SEMARENA, DGA, CESFRONT, BAGRICOLA).
	Interinstitutional collaboration agreements are signed for the management of POPs pesticides.	By 2010, the involved institutions (SEA, SEMARENA, CESFRONT/FFAA, SESPAS, BAGRICOLA, DGA and IAD) have agreed to share information and resources to establish a POPs pesticides warning network.	Minutes from meetings and agreement documents signed by the involved institutions, compiled by the SEA.

### 3.3.3.4 Timetable and cost of activities included in the plan

**Table 25. Timetable and cost of activities included in the POPs pesticides plan**

Objective 1. To confirm the import, use, storage and wastes from POPs pesticides in zones denounced as sources of illegal importing.											
Activities / Tasks	TIMETABLE						Executing Institution	COSTS in US\$			Assumptions
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2008	2009	2010	2011	2012	2013					
R.1. Confirm the existence of POPs pesticides at the denounced sources, via research on the soil, water and biota, supported by analyses from specialized laboratories.							DIA/SEA, SEMARENA, CESFRONT, CITAR, INDRHI, CAASD				
Involve the Specialized Border Security Corps (CESFRONT), the Center for Research on Irrigation Water Technology (CITAR) and the Department of Food Safety (DIA).							CESFRONT, CITAR, DIA/SEA, COTERE				
Set up the laboratories of the SEA and INDRHI to conduct the analysis of POPs pesticides.							SEA, INDRHI	20,000.00			Subject to budget review of the SEA (more than an assumption, this could be a restriction).
Conduct research of the environments (water, soil, biota) nationally on the presence of POPs pesticides.							SEA	20,000.00			
Design and implement a geographic information system for POPs pesticides.							SEA	5,000.00			
Interinstitutional collaboration agreements are signed concerning the management of POPs pesticides.							SEA, SEMARENA, CESFRONT/FFAA, SESPAS, BAGRICOLA, DGA, IAD	500.00			
<b>Subtotal</b>								<b>45,500.00</b>	-	-	
<i>These amounts will be invested during the period 2009 – 2013.</i>							<b>TOTAL</b>	<b>45,500.00</b>			



### **3.3.3.5 Implementation of the Action Plan**

The start of this action plan is proposed for 2009, with a duration of five (5) years, until 2014. The proposed activities will depend on the capabilities of the country and the technical and financial collaboration of international agencies and/or member countries of the Stockholm Convention.

The institution charged with enforcing the objectives and executing the activities is the *Ministry of Agriculture (SEA)*. The initial activity of the NAP, is to confirm the presence of POPs pesticides and denouncing sources, in addition to taking samples and creating a data base of visited localities. To achieve this, first, the Specialized Border Security Corps (CESFRONT) must be contacted and involved, due to comments made concerning the possible entry of unacceptable pesticides over the border. Likewise, the Center for Research on Irrigation Water Technology (CITAR), the Department of Food Safety (DIA) of the SEA (created via Decree 52-08) and the Division of Pesticide Registration, will be involved in order to undertake detection, via chemical analyses, of POPs pesticides in the country.

Simultaneously, visits will be made to the denounced zones to conduct interviews of the technical personnel and farmers at the site. Samples will be taken of water, soil and biota to be analyzed in specialized laboratories, and the results documented.

To achieve the objective of this plan, the regulatory framework for the elimination of POPs pesticides (see NAP 3.3.1) must be prepared. To this effect, the National Pesticide Residue Plan of the SEA, which is in the preparation phase, must form a part of the International Pesticide Action Network, the organization responsible for overseeing international trade in Pesticides; and the SEMARENA must complete the preparation of technical standards on this issue, with the aim of conducting an effective management of pesticides in the country (see NAP 3.3.1).

### **3.3.3.6 Cost and total financing**

The cost of the plan is estimated at US\$45,500.00 (forty-five thousand five hundred dollars), distributed in the following manner:

Capital Dominican government	US\$45,500.00 (forty-five thousand five hundred dollars)
Capital private national	According to the needs of the country, a source may be identified for these purposes.
Capital international organizations	No source has been identified.
Capital international private	No source has been identified.

**Table 26. Cost POPs pesticide plan**

Estimated cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.3 Production, import and export, use, storage and wastes pesticides	<b>45,500.00</b>	45,500.00	100%	-	0%
Note 1: Internal financing refers to the contributions from the Dominican government					

### **3.3.4 PRODUCTION, IMPORT AND EXPORT, USE, IDENTIFICATION, LABELING, REMOVAL, STORAGE AND DISPOSAL OF PCBs AND EQUIPMENT CONTAINING PCBs**

#### **3.3.4.1 Summary of the current situation**

Articles 3 and 6 of Annex A part II of the Stockholm Convention establish that each Party must adopt legal and administrative measures to eliminate the production, import and export, as well as develop strategies to guarantee that stockpiles of PCBs and wastes are managed, collected, transported and stored in a safe, efficient and sound manner. With respect to eliminating the use of polychlorinated biphenyls in equipment, measures for compliance must be adopted in accordance with the priorities established in the Convention (Annex A, Part II) no later than 2025.

According to data from the Preliminary National Inventory of Polychlorinated Biphenyls (Jiménez, R., 2007), it is estimated that in the Dominican Republic there are 350 tons of oil from transformers, capacitors and other equipment contaminated with PCBs. Open systems containing PCBs are not included in this inventory, nor are transformers mounted on transmission lines, nor low tension distribution transformers in operation; hence, a more complete inventory must be conducted, which will constitute the base line for the exchange of information regarding PCBs in use and the storage of wastes until they are eliminated.

The report mentions that PCB management practices and storage are not administered adequately and the level of knowledge concerning the risk posed to health and the environment is low, mainly among security guards at the storage sites, and civil society tends to use the contaminated oils inappropriately for medical purposes. On the other hand, storage sites owned by the state electric company, are few and too small for the amount of transformers containing PCBs that are not in use, which forces contaminated waste and transformers to be left in the open; hence, many of these places can become contaminated sites.

The State has not contemplated an internal regulation for approving PCB disposal and treatment facilities; therefore, the practices adopted for eliminating PCBs consist of exporting them to a company accredited for this purpose.

There is no code of practice that establishes guidelines for handling PCB residues, so as to ensure a high degree of protection for health and the environment.

Information on the level of compliance and enforcement of the Environmental Regulation on the Use, Handling, Transport and Disposal of Polychlorinated Biphenyls, contemplated under Resolution 09-05, dated 22 August 2005, is not generalized. With respect to PCB imports, the country has signed other international agreements where a framework for a sound environmental approach to transboundary shipments of PCB waste is considered, so as to ensure the safe and well-managed transport of same. However, there is no provision for a registry that specifically deals with the control of PCB imports and exports. In August 2007, the National Customs Department initiated a pilot plan to identify and control the import and export of substances that pose a risk to health and the environment.

Using this situation as a foundation, a series of activities must be planned that will result in compliance with the Stockholm Convention on the production, import and export, use, identification, marking, removal, storage and disposal of PCBs and equipment containing PCBs, as contemplated in Annex A, Part II.

### **3.3.4.2 Purpose of the plan**

To organize and execute individual and joint actions among state and private institutions to promote the sound management of PCBs present in the country until same have been eliminated.

### **3.3.4.3 Objectives, outcomes and activities**

**Table 27. Description of outcomes, activities, indicators, objective verification means**

<b>Objective 1: Completion of the national inventory of PCB stockpiles</b>			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means for Verifying Output</b>
R1. Reagents and protective equipment are available for the detection and/or analysis of PCBs.	1.1 Acquisition of materials for detection and analysis testing of PCBs	In May 2009 and 2010, the SEMARENA and the CDEEE have purchased detection test kits and reagents for PCB analysis.	Purchase invoices
R2. Tests to detect and analyze PCBs are conducted by validated technical personnel.	1.2 Provide training for technical personnel on PCB sampling and analysis techniques.	By August 2009, the SEMARENA and CDEEE have 30 trained technicians for conducting sampling and detection tests during the inventory.	Attendance list. Evaluation satisfactorily completed course given by the instructors.
R3. A plan developed to inventory the distribution and transmission transformers in use and out of service and the products and equipment containing PCBs on open and semi-closed systems.	1.3 Design a plan to identify and quantify the PCBs in open, semi-closed and closed systems.	By October 2009, the SEMARENA has a general plan to conducting the inventory of PCBs.	Reports from the undersecretariat for environmental management, the CDEEE and EDEEeste.
R4. 100% of the equipment, products and wastes containing PCBs present in the country has been identified.	1.4 Compile information on PCBs in open, semi-closed and closed systems.	By the first quarter of 2012, the SEMARENA has a report on the inventory conducted nationally.	Report with the results of the PCB inventory.

**Objective 2:** Promotion of the environmentally sound management and handling of equipment and wastes containing PCBs.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verification
	Develop training and information dissemination programs on appropriate practices for managing PCBs and their risks to health and the environment (contemplated in the Action Plan 3.3.13).		
	Strengthen compliance and enforcement of the current regulatory framework related to PCBs (contemplated in Action Plan 3.3.1)		
	Develop an information base that serves as a platform for the control and traceability of stockpiles in use, storage and disposal of PCBs (Contemplated in Action Plan 3.3.12)		
1. A code of practices exists that describes the recommended actions for handling, transporting and storing PCB equipment and wastes for those involved in managing PCBs.	1.2 Prepare a Manual on the Sound Management of equipment and wastes containing PCBs	By November 2009, the SEMARENA has written and printed the Manual "Sound Management of PCBs"	Manual on the Sound Management of PCBs is printed.
	1.3 Disseminate Manual on the Sound Management of equipment and wastes containing PCBs	By June 2010 the SEMARENA has delivered the manual to those that have PCBs and those related to PCB management.	Proof of delivery signed by the user and delivered by the undersecretariat for environmental management.
2. The involved stakeholders participate in the project activities in a sustainable manner.	2.1 Establish an agreement between the owners of PCBs and the SEMARENA on the commitment to manage PCBs in a sound manner and to exchange relevant information.	By August 2010, the SEMARENA has an agreement signed by the owners of PCBs	Minutes from meetings, agreement signed by the involved stakeholders.
3. All equipment and containers with $\geq 50$ ppm of PCBs is identified and labeled.	3.1 Promote the standardization of labeling requirements for equipment and containers containing PCBs.	By August 2009, the SEMARENA has published the labeling requirements in three (3) media.	Publications in the media.

**Objective 2:** Promotion of the environmentally sound handling and management of equipment and wastes containing PCBs.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verification
4. Transformers with $\geq 50$ ppm of PCBs, located close to hospitals, schools and food industries have been removed	4.1 Prepare a plan for eliminating the use of transformers with $\geq 50$ ppm of PCBs located close to hospitals, schools and food industries	By March 2012, the SEMARENA has a report from the electricity distributors with a description of a two-year program to remove the identified transformers.	Plan for withdrawing the transformers according to priorities.
	4.2 Remove transformers in use with $\geq 50$ ppm of PCBs according to the identified priorities	At the end of 2014, the SEMARENA has a report indicating the number and location of the transformers that have been removed	Report on withdrawn transformers and the location
5. The environmentally sound management of PCB waste storage sites is in place, via standards, requirements for selecting sites, safety requirements, maintenance of records up to disposal.	5.1 Establish normative requirements for storage facilities		
	5.2 Establish time limits for storage of PCBs.	By July 2009, the SEMARENA has created a regulation that establishes the storage time for PCB waste	Publication of the resolution
	5.3 Define and identify strategic zones for storage facilities.	By November 2009, the CDEEE has located and completed the acquisition of two lots	Map of the identified site, legal procedures for acquisition
	5.4 Build or rent sites for storing PCB wastes	During the first quarter of 2011, two (2) storage sites have been built or leased	Report of compliance with requirements.

**Objective 3.** Gradual elimination of 40% of equipment and wastes containing PCBs among state and private companies throughout the country by 2015.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verification
R1. 140 tons of PCBs of the quantity estimated in the preliminary inventory have been eliminated by 2015	Develop strategies for the gradual elimination of equipment containing PCBs	Starting in 2009, the SEMARENA has available an annual report on the elimination plans of PCBs owners	Timetable of the elimination plan and a budget provided by PCB owners
	Implement the gradual elimination plan for equipment containing PCBs	By March 2015, the SEMARENA has available a report indicating the elimination of at least 140 tons of PCBs, starting in 2009.	Support documents

### 3.3.4.4 Timetable and costs of the activities included in the plan

Table 28 contains details of Action Plan 3.3.5, with respect to the time, responsible executors, cost and financing, as well as key external factors for the success of the project that is proposed for the identification, labeling, removal, storage and gradual elimination of all PCB systems existing in the Dominican Republic.

**Table 28. Timetable and cost of the PCB plan**

Objective 1. Completion of the national inventory of PCB stockpiles												
Outcomes	Timetable							Executing Institutions	Costs (US\$)			Assumptions
	Year of implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R1. The materials, reagents and protective equipment are available for the detection and/or analysis of PCBs								Undersecretariat for Environmental Management/ SEMARENA Environmental Management Unit of the CDEEE, Occupational Health and Safety of EDEEeste	130,000.00			
R2. A certified technical personnel to conduct detection tests and analysis of PCBs								Undersec. For environmental management /SEMARENA Environmental Management Unit of the CDEEE	500.00			
R3. A plan developed to inventory the distribution and transmission transformers in use and out of service and equipment containing PCBs in open and semi-closed systems.								Undersecretariat for Environmental Management/ SEMARENA Environmental Management Unit of the CDEEE, Occupational Health and Safety of EDEEeste	1,000.00			
R4. Stockpiles of PCBs, in use and out of service in open, semi-closed and closed systems are identified and quantified								Undersecretariat for Environmental Management/ SEMARENA Environmental Management Unit of the CDEEE, Occupational Health and Safety of EDEEeste			70,000.00	The International Cooperation Fund provides technical and financial support to member countries of the Convention
<b>Subtotal</b>									<b>31,500.00</b>		<b>70,000.00</b>	
<b>Total objective 1</b>									<b>201,500.00</b>			

<b>Objective 2. Promotion of environmentally sound management and handling of equipment and wastes containing PCBs.</b>												
Outcomes	Timetable							Executing Institution	Costs (US\$)			Assumptions
	Year of Implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R1. A code of practices exists that describes the recommended actions for handling, transporting and eliminating equipment and wastes containing PCBs for training those involved in handling PCBs								Undersecretary for Environmental Management /SEMARENA			5,000.00	
R2. The involved stakeholders participate in the project activities in a sustainable way									10,000.00			
R3. All equipment and containers with $\geq 50$ ppm of PCBs are identified and labeled.								Undersecretariat for Environmental Management/ SEMARENA Environmental Management Unit of the CDEEE, Occupational Health and Safety of EDEEeste	3,000.00		27,000.00	The International Cooperation Fund provides technical and financial support to member countries of the Convention
R4. 25% of transformers with $\geq 50$ ppm of PCBs, located close to hospitals, schools and food industries have been removed									10,000.00			
R5. Environmentally sound management is practiced at PCB waste storage sites, via standards, registry of stockpiles, requirements for selecting sites, safety requirements, up to disposal								Undersecretariat for Environmental Management/ SEMARENA	350,000.00			
<b>Subtotal</b>									<b>373,000.00</b>		<b>32,000.00</b>	
<b>Total objective 2</b>									<b>405,000.00</b>			

(\*) Does not contemplate the cost of replacing the transformer, as this depends on the capacity and type of transformer.

**Objective 3.** Gradual elimination of 40% of the equipment and wastes containing PCBs among state and private companies throughout the country by 2015.

Outcomes	Timetable							Executing Institution	Costs (US\$)			Assumptions
	Year of implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R1. 140 tons of PCBs of the quantity estimated in the preliminary inventory have been eliminated								Undersecretariat for Environmental Management/ SEMARENA Environmental Management Unit of the CDEEE, Occupational Health and Safety of EDEEeste Owners of PCBs	833,000.00			Allocation in the General Budget of the State for the elimination of equipment containing PCBs. Private owners are provided with measures to eliminate equipment containing PCBs.
<b>Subtotal</b>									<b>833,000.00</b>	<b>-</b>	<b>-</b>	
<b>Total objective 3</b>									<b>833,000.00</b>			

### **3.3.4.5 Implementation of the plan**

Implementation of the activities included in this plan has been contemplated for the period 2009 – 2015 and is subject to approval by the relevant agencies and the availability of technical and financial support. The project coordination is charged to the SEMARENA, specifically to the Undersecretariat for Environmental Management, as established in Article 18, Numeral 21 of Law 64-00 on the Environment and Natural Resources, dated 18 July 2000.

It is designed with three (3) objectives and ten (10) outcomes, under which the activities and corresponding indicators are described. As a first objective, it is proposed that after two years, a more complete inventory will be available, comprised of open, semi-closed and closed systems. The results of these inventories will be deposited at the SEMARENA via a detailed report, which will endeavor to create a data base that will serve as a platform for the continuous updating of information and facilitate the traceability of stockpiles up to their final disposal. The data obtained will constitute: a) the base line for subsequent assessment of the level of compliance with the purpose of the project, b) monitoring of the activities that support decision-making and control and c) the source for implementing activities relevant to other objectives of this plan.

One of the key factors in promoting the development of environmentally sound management is the involvement of the owners of equipment and wastes containing PCBs, which constitute a source of effective information by declaring the equipment and wastes containing PCBs that they have in their possession. This encourages efforts to reinforce the regulatory framework, creating a mechanism that forces compliance with the provisions to declare their possessions containing PCBs, as well as their plans for elimination.

Due to the lack of knowledge about the risks that the inappropriate handling of PCBs pose to the work force, a training program will be developed on the management of PCBs intended for technical and security staff, as well as persons working in the repair of transformers. Simultaneously, a



dissemination and awareness raising program for civil society will be implemented, with the objective of informing citizens about the risks to health and the environment associated with the inadequate use of PCBs.

The SEMARENA will prepare a Manual or Guidebook for the Environmentally Sound Management of PCBs, so that owners of PCBs, users and those responsible for decision-making will have a tool that will train, guide and inform them about the appropriate handling of PCBs. The Manual will be promoted in the offices of the Undersecretariat for Environmental Management of the SEMARENA.

In order to promote coherence among involved public and private stakeholders concerning the sound management of PCBs, and to fulfill the commitment and participation in same, an agreement will be signed by the parties involved.

Identification of equipment containing PCBs via a uniquely designed label will contribute to better information about the level of risk involved and the appropriate handling of same. Therefore, the standardization of all labels related to PCBs is considered to be of importance; hence the Coordination must ensure that the aforementioned design is made known publicly. Using the data from the inventory as an instrument, a plan will be prepared and executed to label all equipment in use containing PCBs and wastes containing PCBs.

As a preventive measure, the removal from use of transformers containing  $\geq 50$  ppm of PCBs will begin with those that are located in the proximity of hospitals, schools and food industries.

The sound environmental management of storage facilities will be ensured via structural standards, requirements for selecting the installation sites, maintenance of stockpile registries, fire protection, emergency response, access restrictions, signs and labeling. Furthermore, a time limit will be established for the storage of PCBs.

On the side of owners of equipment containing PCBs, the process of gradual elimination of all transformers and equipment containing PCBs will continue. It is expected that by 2015, 40% of existing stockpiles will have been eliminated.

#### **3.3.4.6 Cost and total financing**

To complete the national inventory of PCBs, the cooperation of International Agencies and/or Parties to the Stockholm Convention is expected, with the objective of receiving the financial resources required for this activity, which are US\$71,000.00.

The cost of acquiring the materials needed for PCB detection and analysis tests is estimated at US\$64,680/year and will be contributed by the Dominican government; hence it is expected that in 2009 and 2010, the corresponding allocation in the Dominican Corporation of State Electric Companies (CDEEE) budget will be approved for tests on distribution transformers (US\$ 60,480/year), and in the Ministry of the Environment and Natural Resources (SEMARENA) for analysis of the equipment and wastes pending inventory (US\$4,200/year).

The size of the local storage sites currently provided by the CDEEE is considered inadequate to store all of the out-of-service transformers, containers and wastes containing PCBs awaiting elimination;

hence, expansion of the infrastructure of such sites is required, or lacking this, the leasing of sites that can be adapted to the requirements for storing equipment and waste containing PCBs. It is estimated that the construction of each site has a cost of US\$ 171,430, including all of the safety requirements. In the beginning, it is suggested that two storage sites be provided in the Northern and Southern zones. The resources allocated to this activity correspond to the Dominican State; hence, approval of the corresponding budget allocation for the Dominican Corporation of State Electric Companies (CDEEE) is expected.

The costs associated with packaging, transporting and eliminating the wastes by a company accredited for this purpose is approximately US\$5,950.00 per Ton of total mass (weight of the liquid, plus contaminated parts). The total costs for eliminating the equipment containing PCBs estimated for the 2009-2015 period is US\$833,000.00 and will be assumed by all of the owners of PCBs; in other words, state agencies and private companies. The cost of replacing the transformers has not been contemplated in the plan due to the fact that this will depend on the type and capacity, among other factors.

It is estimated that by 2015 investment in the plan will be US\$1,439,500, excluding the cost of replacing the transformers containing PCBs for other types of transformers that do not pose risks to health and the environment.

**Table 29. Costs of the PCB plan**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.4 Production, import and export, use, identification, marking, removal, storage and disposal of PCBs and equipment containing PCBs	<b>1,439,500.00</b>	1,337,500.00	93%	102,000.00	7%
Note 1: Internal financing refers to the contributions from national institutions					
Note2: External financing refers to the contributions from international agencies					

### **3.3.4.6.1 Available capability**

#### **3.3.4.6.1.1 Economic resources**

The economic resources required to implement the plan come from:

- a.- The annual budget allocations of the State. The estimated amount is US\$ 116,000 dollars /year. This does not include the cost of replacing the transformers.
- b.- Funds received from international cooperation. A contribution of approximately US\$ 102,000.00 is estimated.
- c.- Resources from the private sector. These are estimated at US\$ 165,000 by 2015.
- d.- Any other resource not foreseen in the preceding categories and that is legally applicable.

### 3.3.4.6.1.2 Human resources

The Undersecretariat for Environmental Management of the SEMARENA currently has limited personnel; hence this plan contemplates reinforcing the area through the hiring of temporary personnel to undertake the activities related to the inventory process and supervision of the installations.

**Table 30. Distribution costs of the PCB plan**

<b>DISTRIBUTION OF THE COSTS</b>	<b>US\$</b>
<b>2009 - 2015</b>	
Program coordinator	204,000.00
Operational costs	112,720.00
Investment costs	326,780.00
<b>Total cost for action plan</b>	<b>1,439,500.00</b>
Financial component by the Country	1,337,500.00
Additional costs	
International Cooperation Fund	102,000.00

### 3.3.5 PRODUCTION, IMPORT AND EXPORT, USE, STORAGE AND WASTES FROM DDT

#### 3.3.5.1 Summary of the current situation

In Article 3, section 1, subsection b, of the Stockholm Convention, member countries are required to restrict the production and use of Dichloride Diphenyl Trichloroethane (DDT). Should this product become waste for a Party, latter must adopt measures so that, in the event that the final disposal of same requires transport to a country with the appropriate technology to eliminate same, this will be undertaken pursuant to subsection d), paragraph 1 of Article 6 of the aforementioned Convention.

In the Dominican Republic there are 20 tons of DDT stored as waste at the facilities of the Center for the Control of Tropical Diseases (CENCET), an agency of the Ministry of Public Health and Social Assistance (SESPAS). This amount of DDT was imported in 1989 and stored at the center after the entry into effect of Decree 217-91, which prohibits the production, use, import and export of toxic organochlorinated pesticides in the country.

The CENCET is located in the highly populated sector of Villa María, Duarte Avenue in the city of Santo Domingo, very close to businesses and dwellings inhabited by the elderly, children and adults. Likewise, the Juan Pablo Duarte High School is close to its headquarters.

The storage area of the product has a perimeter of 192.90 m<sup>2</sup> (7.55 meters wide by 25.55 meters long), and the DDT occupies 20% of the area. According product identification, 95% corresponds to a water-soluble powder, manufactured by Montrose Indonesia, and the remaining 5% is the “100% DDT Technical Krisp Chips” type, manufactured by Montrose Chemical Corp., California, USA. The former is packaged in cardboard boxes weighing 38.6 kg and the latter in 105-pound boxes. The deterioration of some boxes, as well as the plastic bags inside them is obvious, which causes the chemical to be spread throughout the site, with risks of contamination and impacts on the health of the staff and surrounding community.

In the aforementioned storage area, along with the DDT, other products used for vector control (cypermethrins, deltamethrins, among others) are present, which causes cross-contamination and therefore, greater risks.

### **3.3.5.2. Purpose of the plan**

Final disposal in an environmentally sound manner of the DDT waste stored at the facilities of the Center for the Control of Tropical Diseases (CENCET).

### **3.3.5.3 Objectives, outcomes, activities**

**Table 31. Description of outcomes, activities, indicators, verification means of the objective**

<b>Objective 1: Package and store 20 tons of DDT deposited at the Center for the Control of Tropical Diseases (CENCET) in an environmentally sound manner, by 2015</b>			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means for Verifying Outputs</b>
R.1.- 20 tons of DDT packaged and stored in a sound manner.	1) Arrange for the necessary financial resources via OCI and/or member countries of the Stockholm Convention.	In November 2009, the CENCET, via the SESPAS, and with the technical support to SEMARENA, has obtained the necessary funds to package the DDT.	Documents requesting funds.
	2) Coordinate activities to confirm and execute the collaborative project.	During the period from June-October 2010, the CENCET has obtained the requested financial assistance	Documents referring to the approval of the collaborative project.
	3) Obtain quote and request services of hazardous waste management companies.	In December 2010, the SESPAS has obtained quotes and the corresponding contracts.	Quotes and requests for services to the Purchasing Dept.
	4) Evaluate the DDT storage area.	By May 2011, an evaluation report of the deposit and surrounding areas will be available.	Technical report completed.
	5) Prepare area assigned as the deposit for the DDT.	In December 2011, the CENCET has prepared the space where DDT will be stored.	Inspection report of area prepared for storage.
	6) Conduct workshop for CENCET personnel on the DDT storage activity.	By February 2012, the workshop will have been conducted for the CENCET personnel.	Participant attendance list/ Certificate of Participation
	7) Package DDT as well as organize it appropriately in the assigned area of the CENCET to be deposited in a sound manner.	By April 2012, the DDT will be appropriately packaged.	DDT placed in resistant plastic bags (big bags).
	8) Place the packaged DDT in a metallic container in the prepared area, so that it remains secure until its final disposal.	Until its final disposal in 2015, the packaged DDT will remain secured.	Storage area is environmentally safe and sound.

**Objective 2:** Undertake the final disposal of the DDT in a country with the capacity to dispose of same in an environmentally sound manner by 2015.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means for Verifying Outputs
R.2-20 tons of DDT transported to a country with the technology to undertake final disposal of same.	1) Arrange for financial and technical assistance with international agencies or with other Parties to the Convention, for final disposal of the DDT.	During the period from February 2013 and January 2014, the CENCET and SESPAS, along with the SEMARENA have arranged for the technical and financial assistance with international agencies or with other Parties to the Convention	Documents and letters requesting assistance.
	2) Obtain quotes and request services from hazardous waste management companies.	During the period from February – May 2014, the CENCET, via the SESPAS, has obtained the corresponding quotes and requests for the corresponding services.	Quotes and purchase requests.
	3) Process the request for services for transportation and final disposal of the DDT.	Between June and October 2014, the CENCET, via SESPAS, has requested transportation and final disposal services for the DDT, and SEMARENA has requested the transboundary movement permits.	Letters requesting transportation and disposal of the DDT.
	4) Request permits for transboundary movement from the countries through which the product will be moved.	Between Novemebr and Dcember 2014, the SEMARENA has processed and obtained authorization from the country of origin of the waste management company.	Permits for transboundary transport.
	5) Request authorization for disposal of the DDT from the environmental ministry of the country of origin of the selected waste management company.	During the period November 2014 - February 2015, the SEMARENA and the CENCET have undertaken the activities to transport and remove the DDT from the country.	Letter of request. Document authorizing disposal of the DDT.
	6) Undertake activities to transport and remove the DDT from the country.	From April to May 2015, the contracted hazardous waste management company has eliminated the dispatched DDT.	Certificate of transport of the DDT and departure authorization.
	7) Undertake the final disposal of the DDT.		Certificate of destruction of the DDT sent by the contracted hazardous waste management company to the CENCET.

### 3.3.5.4 Timetable and costs of the activities included in the plan

**Table 32. Timetable and cost of the DDT plan**

Objective 1: Package and store in an environmentally sound manner, 20 tons of DDT deposited at the CENCET by 2015.												
Expected Outcomes	TIMETABLE							Executing Institution	COST in US\$			Assumptions
	Year of implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R.1: 20 tons of DDT packaged and stored in a sound manner.								SESPAS, CENCET, SEMARENA, Contracted Hazardous Waste Management Company			45,000.00	Subject to the corresponding budgetary allocation in the SESPAS
1) Arrange for necessary financial resources, via international organizations and/or member countries of the Convention								CENCET, SESPAS, SEMARENA				
2) Coordinate activities to confirm and execute the collaborative project.								SESPAS/ SEMARENA				
3) Obtain quotes and request the services of hazardous waste management companies.								SESPAS / SEMARENA				
4) Evaluate the DDT storage area.								Contracted Hazardous Waste Management Company/ CENCET				
5) Prepare the area assigned for storage of the DDT.								CENCET			5,000.00	
6) Hold workshop for CENCET personnel on the DDT packaging activity.								Contracted Hazardous Waste Management Company / CENCET				
7) Package as well as organize the DDT appropriately in the area assigned for storage at CENCET in a sound manner.								Contracted Hazardous Waste Management Company / CENCET				
8) Place the packaged DDT in the metal container in the prepared area, so that it remains secure until its final disposal.								CENCET				
<b>Subtotal</b>									0.00	0.00	50,000.00	
<b>Total</b>									<b>50,000.00</b>			

**Objective 2:** Undertake final disposal of the DDT, in a country with the capacity to dispose of same, in an environmentally sound manner, by 2015.

Expected Outcomes	TIMETABLE							Executing Institution	COSTS in US\$			Assumptions
	Year of Implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R.2.- 20 tons of DDT transported to a country with the technology needed to undertake final disposal of same.								SESPAS, CENCET, SEMARENA, Contracted Hazardous Waste Management Company			130,000.00	Subject to the technical and financial aid from international agencies and/or member countries of the Convention.
1) Arrange for the financial and technical assistance from international agencies or from other Parties to the Convention for the final disposal of the DDT.								CENCET/SESPAS/ SEMARENA				
2) Obtain quotes and request services from hazardous waste management companies								CENCET/SESPAS/ SEMARENA				
3) Make request for DDT transportation and final disposal services.								SEMARENA				
4) Request transboundary movement permits from the countries through which the product will be moved.												
5) Request authorization from the environmental ministry of the country of origin of the selected waste management company for elimination of the DDT.												
6) Undertake the activities of transporting and removing the DDT from the country.								SEMARENA, CENCET				
7) Execute final disposal of the DDT.								Contracted Hazardous Waste Management Company				
<b>Subtotal</b>									0.00	0.00	130,000.00	
<b>Total</b>									<b>130,000.00</b>			

### **3.3.5.5. Implementation of the action plan**

The activities proposed in this action plan are scheduled to be undertaken over a period of six (6) years, from 2009 to 2015, subject to the technical and financial collaboration of international agencies and/or country members of the Stockholm Convention.

The initial activity of the plan consists of the secure packaging of the DDT, for which the aforementioned product must be placed in three-ply polyethylene high resistance bag, latter being the so-called “Big bag”; the final packaging must be identified in accordance with the established criteria for hazardous substances and waste.

This process must be undertaken by specialized personnel from a Hazardous Waste Management Company, so as to safeguard health and the environment. The selection and contracting of said company must be undertaken by the Ministry of Public Health and Social Assistance (SESPAS) in coordination with the Center for the Control of Tropical Diseases (CENCET) and the Ministry of the Environment and Natural Resources (SEMARENA).

Parallel to the actions described above and with respect to Activities 6 and 7 of Objective 1 of the aforementioned plan, the area assigned at the CENCET for the exclusive storage of the packaged DDT must be equipped so that the product will remain secure in a metal container to be provided by the Hazardous Waste Management Company for placement of same until final disposal takes place outside the country. With respect to the custody of the stored DDT, this will continue to be the responsibility of the CENCET, so that it is not moved until the date of final disposal.

With respect to objective 2 of the action plan, which consists of the final disposal of the DDT, the SEMARENA will arrange the shipping of the DDT to a country having the appropriate technology to eliminate same in an environmentally sound manner, among which we can mention France, Brazil, Belgium, Canada, among others, bearing in mind compliance with the provisions established in the Basel Convention on the transboundary movement of hazardous waste.

### **3.3.5.6. Cost and financing**

As a result of the research done to obtain the services of international companies devoted to the handling and treatment of hazardous waste, the company “TREDI, Seche Global Solutions, Colombia” provided information on the costs of services to package, transport and eliminate the DDT present in the country, the details of which are described as follows:

- For packaging and storing the DDT, it estimated a cost of US\$50,000.00 (fifty thousand dollars) for the 20 tons in stock.
- For transportation and elimination of the DDT at the plant in Paris, France, it estimated the cost at US\$130,000.00 (one hundred thirty thousand) for the 20 tons in stock.

The total cost of implementing the action plan is US\$180,000.00.

The financial resources required to package and deposit the DDT, as well as to prepare the storage areas, transfer and final disposal of the DDT, foreseen in this action plan, will be arranged with International Agencies and/or Member Countries of the Stockholm Convention, for which the the



Ministry of Public Health and Social Assistance (SESPAS), in coordination with the Center for the Control of Tropical Diseases (CENCET) will carry out joint actions with the Ministry of the Environment and Natural Resources (SEMARENA) to channel said resources.

**Table 33. Costs DDT plan**

Estimated cost of the plan	Total Cost US\$	Financing			
		Internal	%	External	%
<b>3.3.5 Production, import and export, use, storage and wastes DDT</b>	<b>180,000.00</b>	0.00	0%	180,000.00	100%
Note 1: Internal financing refers to the contributions from national institutions					
Note2: External financing refers to the contributions from international agencies					

### **3.3.6 REGISTRATION OF SPECIFIC EXEMPTIONS AND THE ONGOING NEED FOR EXEMPTIONS.**

This activity was not carried out because the country does not have exemptions, and does not intend to file for any.

### **3.3.7 MEASURES TO REDUCE THE PRODUCTION OF UNINTENTIONAL POPS**

#### **3.3.7.1 Summary of the current situation**

There are three categories of sources in the country responsible in 2005 (base year) for 97.1% (154.72 gTEQ-I/a\*<sup>1</sup>) of the unintentional emissions of POPs (dioxins and furans). These categories are: Open burning, with 54.2% (86.96 gTEQ-I/a), Energy and heat generation with 23.4% (37.55 gTEQ-I/a) and Waste Incineration with 19.46% (31.22 gTEQ-I/a) (Preliminary Inventory of Dioxin and Furan Emissions, 2007).

A major contribution to these emissions, within the category of Open Burning, came from the subcategories of Burning of Agricultural Waste, with an estimated 85.989 gTEQ-I/a, the subcategories of Forest Fires and Burning of Fields and Scrubland; The lack of data in the country prevented the calculation of emissions from the latter category, although it was established that in 2005 116 forest fires occurred, affecting 24,501.64 hectares.

The second major contribution to emissions came from the subcategories of Energy Generation with Wood and Power Generation Plants using Biomass. Both categories reported 30,388 gTEQ-I/a and 6,475 gTEQ-I/a, respectively.

The inventory showed that the third major contribution to dioxin and furan emissions came from releases in the subcategories of Incineration of Medical/Hospital Wastes with 26,699 gTEQ-I/a and Incineration of Hazardous Waste with 4,511 gTEQ-I/a.

<sup>1</sup> gTEQ-I/a=Gram of Equivalents Quantitative Toxicity International per year

A large number of homemade metal scrap smelting shops were also identified, which, although they do not produce significant emissions of dioxins and furans, place the worker population as well as nearby residents at risk for contamination by the released emissions when compounds that accompany the scrap are smelted.

The inventory was not able to quantify the emissions from all sources of dioxins and furans existing in the country. In light of the fact that Article 5 of the Convention requires an assessment of current and projected releases, the first objective of this action plan is to continue the identification and quantification of emission sources.

### **3.3.7.2 Purpose of the plan**

Within the capabilities of the country, to reduce and/or eliminate releases of dioxins and furans from anthropogenic sources, specifically those sources identified by the 2007 inventory as the major generators of emissions into the atmosphere, so that starting in 2015, a reduction of these pollutants is observed.

### **3.3.7.3 Objectives, outcomes and activities**

The following tables present a logical description of the objectives of the plan (outcomes, activities, indicators, means of verification), as well as details of the implementation components per objective.

**Table 34. Description of objectives, outcomes, activities, indicators and means of verification of the objectives.**

<b>Objective 1. Identification and quantification of all sources of dioxin and furan emissions in the Dominican Republic by 2013.</b>			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
Outcome 1. The inventory of dioxin and furan sources is updated according to the categories listed in Annex C of the Convention, so as to obtain an estimate of total produced and projected releases.		By 2010, updated information is available on all sources producing dioxins and furans according to the categories listed in Annex C of the Convention.	Report document
	a) Contract national consultants.	By 2010, national Consultants have been contracted.	Signed contracts.
	b) Study the Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases (UNEP, 2005), available on the webpage of the Convention and adapt the questionnaires for compiling information on the realities of the country.	By the end of 2010, the forms for compiling information are prepared with questions that are in keeping with the reality of the country.	

**Objective 1.** Identification and quantification of all sources of dioxin and furan emissions in the Dominican Republic by 2013.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
Outcome 1. The inventory of dioxin and furan sources is updated according to the categories listed in Annex C of the Convention, so as to obtain an estimate of total produced and projected releases.	c) Collection of field information.	During the period 2010 to 2011, 100% of the dioxin and furan emission sources have been inventoried with their respective emissions quantified.	Forms prepared with questions from the inventory in keeping with the reality of the country.
	d) Identity and classify dioxin and furan emissions in the entire country and quantify dioxin and furan emissions.		
	e) Compilation of results and analyses.	By the end of 2011, a report has been delivered with the inventory results.	Report on the inventoried sources and quantified emissions. Report on the results of the analysis of dioxin and furan emissions, with the analytical methods used.
	f) Preparation of the technical report.		
	g) Confirm the presence of dioxins and furans at selected sources.	At the end of 2013, the report on the analytical results of dioxins and furans measured at selected sources.	The technical report.
	h) Establish the emission factors at pre-selected sources.	By the end of 2013, the emission factors have been established at selected sources.	The forms with the emission factors from selected sources.

**Objective 2.** Reduce the open burning of materials that produce dioxins and furans, as well as the burning of wood to generate domestic energy and the incineration of medical wastes by 2015.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
R. 1. Projects and activities are implemented to reduce open burning in municipal landfills.		By June 2015, open burning has been reduced by 10%.	Technical reports.
	a) Propose pilot projects for the classification of domestic garbage at the place of origin.	From 2010-2015, at least three projects are developed for the classification of garbage.	A preliminary report on each project.
	b) Increase value of garbage by promoting the production of organic fertilizer or compost in all municipalities.	From 2010-2015, at least three plants are installed and operating in various municipalities producing organic fertilizer.	Report of fertilizer production at the various installed plants.
	a) Promote the installation of small companies or cooperatives that recycle materials (plastics, glass, cardboard and metals).	By 2015, all major landfills are involved in the creation of recycling companies.	Incorporation documents of cooperatives and small companies.
	c) Initiate a pilot project to build nine (9) sanitation landfills.	By the end of 2015 nine (9) sanitation landfills are built and operating.	Report of the construction of nine (9) sanitation landfills and operation of same.
	d) Monitor and record open burning in landfills.	By 2015, records exist with data on the occurrence of open burning.	Report with records of the occurrence of open burning.

**Objective 2.** Reduce the open burning of materials that produce dioxins and furans, as well as the burning of wood to generate domestic energy and the incineration of medical wastes by 2015.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
R. 2. Emissions of dioxins and furans from forest fires are reduced by 20 %, after reinforcing the human, logistical and penal resources, as well as the forest fire prevention systems.	a) Equip forest fire brigades for the early detection of forest fires.	12 brigades are equipped in 2015.	Technical reports, accounting records.
R.3. Burning of agricultural waste is reduced.		By 2015 the burning of agricultural waste is reduced by 50%.	Technical reports
	a) Promote ECOJOLIO project for the production of synthesis gas and electrical energy using agricultural waste.	Project ECOJOLIO is in operation.	Surveys of rural producers. Report on the generation of synthesis gas using agricultural waste.
R.4. The use of wood and charcoal for cooking foods in the rural environment has been reduced.		By 2015, the use of wood and charcoal has decreased by 30%.	Focused household surveys
	a) Implement Lorena stove projects in poor communities in the arid regions.	By 2015, 10% of homes in the border region use Lorena stoves.	Surveys of homes.
	b) Implement a Rural Electrification and Biofuel Production from Alternative Energy Crops ( <i>higuereta</i> and <i>jatropa</i> ) community project.	By 2015, 30% of rural homes with stoves installed and operating with <i>higuereta</i> or <i>jatropa</i> oil.	Technical reports. Report on the volumes of oil produced and the quantity of stoves installed and operating.
R.5. The incineration of hospital waste generated in health centers and related entities has been reduced.		By 2015 there has been a 30% reduction in the burning of hospital waste.	Technical reports
	a) Enforce the “Regulation on Waste and Residue Generated by Health Centers and Related Entities”.	During the period 2010 to 2015, the Regulation on the Management of Medical Waste is 30% implemented by the country’s hospitals.	Report on the execution of implemented Standards and protocols.
	b) Conduct the corresponding environmental studies for the installation of medical waste incinerators in various regions of the country indicated in the regulation on the management of medical waste and residues.	By 2015, incinerators are in operation in the four regions of the country.	Daily report of the operability of the incinerators.
R.6. Open burning of international garbage at the country’s airports has been reduced.		During the period 2009-2015, 100% of the airports have installed their respective incinerators.	Report on the installation of incinerators at all of the country’s airports.
	a) Reinforce the classification program of international solid waste from air travel.	By 2015, a garbage classification program has been implemented at the eight (8) airports in the country.	Implementation reports.
	b) Install incinerators at each of the airports in the country, with optimum air pollution control systems.	In 2015 eight (8) incinerators have been installed, one per airport.	

### 3.3.7.4 Timetable and cost of activities included in the plan

**Table 35. Timetable of activities included in the D and F plan**

Objective 1: Identification and quantification of all emission sources of dioxins and furans in the Dominican Republic by 2013.											
Activities/Tasks	TIMELINE						Executing Institutions	COSTS (US\$)			Assumptions
	Year of implementation							Dom. Gov.	Party	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
R.1. The inventory of dioxin and furan sources has been updated according to the categories listed in Annex C of the Convention so as to obtain an estimate of total releases.							SEMARENA/ Undersecretariat for Environmental Management	6,000.00		50,000.00	Subject to the technical and financial assistance of international agencies and/or member countries of the Convention.
a) Contract National Consultants							Department of Environmental Quality				
b) Study the Standardized Toolkit for Identification and Quantification of of Dioxin and Furan Releases (UNEP, 2005), available on the webpage of the Convention and adapt the questionnaires for compiling information on the realities of the country.											
c) Collection of field information.											
d) Identify and classify emission sources of dioxins and furans in the entire country and quantify the dioxin and furan emissions.											
e) Compilation of results and analyses.											
f) Preparation of the technical report.											
g) Confirm the presence of dioxins and furans at selected sources							Autonomous University of Santo Domingo/ Chemical Institute	15,000.00		100,000.00	Subject to the technical and financial assistance of international agencies and/or member countries of the Convention.
h) Establish the emission factors at pre-selected sources.											
<b>Subtotal</b>								<b>21,000.00</b>		<b>150,000.00</b>	
<b>Total</b>								<b>171,000.00</b>			

**Objective 2:** Reduce the open burning of materials producing dioxins and furans, as well as wood for generating domestic energy and the incineration of medical wastes by 2015.

Activities/Tasks	TIMELINE							Executing Institutions	COSTS (US\$)			Assumptions
	Year of implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R.1. Projects and activities are implemented to reduce open burning in municipal landfills.								Dominican Municipal League				Subject to the technical and financial assistance of international agencies and/or member countries of the Convention.
a) Propose pilot projects to classify domestic garbage at place of									5,000.00		90000.00	
b) Value garbage by promoting production of organic fertilizer in all municipalities.									5,000.00		300,000.00	
c) Promote installation of small businesses or cooperatives to recycle materials (plastics, glass, cardboard and metal)									5,000.00		300,000.00	
d) Initiate pilot project to build nine (9) sanitation landfills.									10,000.00			
e) Monitor and register the burning of garbage at landfills.									10,000.00			
R.2. Dioxin and furan emissions from forest fires reduced by 20%, after strengthening human, logistical and penal resources, as well as forest fire prevention systems.								SEMARENA				
a) Equip forest fire brigades for early detection of forest fires.								Undersecretariat for Forest Resources / Forest Fire Prevention Dept. / Dominican Agricultural Institute / SEJC	30,000.00		300,000.00	Subject to the technical and financial assistance of international agencies and/or member countries of the Convention.
R.3. Burning of agricultural waste reduced.								Koar Energy Resources and ERSA / Dominican Agricultural Institute / SEIC	5,000,000.00		120,000,000.00	(Private capital)
<b>Subtotal</b>									<b>5,155,000.00</b>		<b>130,990,000.00</b>	
<b>Total</b>									<b>136,145,000.00</b>			

**Objective 2: Reduce the open burning of materials producing dioxins and furans, as well as the burning of wood for generating domestic energy and incineration of medical waste by 2015.**

Activities/Tasks	TIMETABLE							Executing Institutions	COSTS (US \$)			Assumptions
	Año de ejecución								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
R.4. The use of wood and charcoal for cooking has been reduced in the rural areas.												
a) Implement Lorena stove projects in the poor communities in the arid zones.								SEMARENA, with support of organizations that fight desertification	5,000.00		50,000.00	Subject to the technical and financial support of international agencies and/or country members of the
b) Undertake community rural electrification and biofuel production from alternative energy crops (higuereta and Jatropa) project								SEIC, Department of Non-conventional Energy	20,000.00		500,000.00	Financing agencies: PROFER, GTZ, IDDI.
R.5. Reduced incineration of hospital waste generated in health and related centers.												
a) Enforce the "Regulation on Waste and Residue Generated at Health Centers and Related Entities"								SESPAS / National Environmental Health Department	100,000.00		20,000,000.00	World Bank
b) Conduct corresponding environmental studies on the installation of medical waste incinerators in the various regions of the country, contemplated in the regulation for the management of medical wastes and residues												
R.6. Reduced open burning of international waste at the country's airports								OIRSA/				
a) Strengthen program to classify international solid waste resulting from air travel.								Airport concessionaires	50,000.00			If the airport concessionaires contribute funds (private capital)
b) Install incinerators at each of the country's airports, with optimum air pollution control systems.									8,000,000.00			(capital privado)
<b>Subtotal</b>									<b>8,175,000.00</b>		<b>20,550,000.00</b>	
<b>Total</b>									<b>28,725,000.00</b>			

### **3.3.7.5. Implementation of the action plan**

The proposed activities are designed for implementation over a six-year period, from 2009 to 2015, according to the capabilities of the country and the technical and financial assistance that may be received, whether from other Parties to the Convention, as well as international agencies. This plan is designed to reduce the emissions of the largest emission sources identified by the Preliminary Inventory of Dioxins and Furans (Comprés, Luisa, 2007).

The implementation of the plan will begin with the continuation of the inventory, in order to identify 100% of the dioxin and furan emission sources and quantify these emissions. The implementation of this part of the plan is proposed with one (1) objective, one (1) outcome and seven (7) activities. The confirmation of the presence of dioxins and furans via technical analysis is an activity related to objective one.

To undertake the inventory and quantify the emissions, the use of the Standardized Toolkit for the Identification and Quantification of Dioxin and Furan Releases (UNEP, 2005) is recommended, a methodology applied in 2007 and which groups sources into 10 categories and 54 subcategories, available on the Convention webpage. The SEMARENA, as the focal point of the Convention, could continue the inventory, the Chemical Institute of the UASD and other national laboratories would undertake the confirmation and quantification of dioxin and furan emissions.

The activities aimed at reducing emissions are varied and involve a number of institutions in the country. They will be implemented using the best available techniques (BAT) and the best environmental practices (BEP). They are contained in objective 2 of the plan, with six (6) outcomes and thirteen (13) activities and on being implemented, will enable the country to comply with subsections c), d) and e) of article 5 of the Convention.

A considerable reduction of emissions from the burning of agricultural waste could be achieved as a result of the implementation of the “ECOJOULE” project, set to begin in 2009, the objective of which is the production of synthesis gas from agricultural waste. This privately funded project, with an investment of 120 million dollars, in its first phase, will convert hay and rice husks into fuel gas that will be sold to the country’s power generators, which in turn will convert it to electricity.

On the other hand, the tasks designed to decrease emissions from forest fires will basically be aimed at reinforcing fire prevention systems and strengthening human, logistical and penalization resources.

The plan contemplates the gradual reduction in the open burning of municipal solid waste, via the implementation of pilot projects to classify waste at the place of origin and, subsequently, via the conversion of nine (9) of the open landfills into specifically designated sanitation landfills and provide for the recycling of waste via municipal cooperatives or small companies. Construction of one of these sanitation landfills is currently underway at the Rafey open landfill in Santiago de los Caballeros, the second largest city in the country. This project receives technical and financial assistance from the Japan International Cooperation Agency (JICA).

The emissions contributed by the burning of wood to generate energy in rural homes will be reduced by the implementation of the “Rural Electrification and Production of Biofuel from Alternative Energy



Crops Community Project”. This project, which receives financial assistance from several international institutions and the Dominican government, consists of extracting oil from *Jatropha curcas* and Castor (*ricinus comunis*) plants. It is managed by the Department of Non-conventional Energy of the Ministry of Industry and Commerce. The oil, extracted through pressing, will be used as fuel in homemade stoves by homes in the rural border zone. Another activity that seeks to reduce the use of wood is a continuation of the project implemented by the SEMARENA, with the support of organizations that address desertification, that consist of donating Lorena stoves to rural people.

With respect to the burning of international garbage at airports and ports, same will be reduced through reinforcement of the program to classify international solid waste from air and maritime travel, and the installation of incinerators with optimum air pollution control systems at airports. The International Regional Airport Health Agency (OIRSA) will be responsible for implementation, through a joint agreement with Aeropuertos Dominicanos Siglo XXI (AERODOM) and the concessionaires at the Punta Cana and Romana airports.

Enforcement of the “Regulation for Waste and Residue Generated by Health Centers and Related Entities”, currently awaiting promulgation, will, when implemented, have a positive impact on reducing medical/hospital waste incineration and, as a result, emissions will be reduced. The funds for implementation will be contributed by the World Bank.

The target group composed of scrap smelting workers will be educated on the danger to health and the environment of emissions resulting from the smelting process and on the use of the best environmental practices. This activity will be undertaken in Action Plan 3.3.13.

### **3.3.7.6 Costs and total financing**

The total cost of the plan is US\$165,041,000.00 (one hundred sixty-five million, forty-one thousand dollars), distributed as follows:

- Capital Dominican government: US\$5,301,000.00 (five million three hundred one thousand dollars)
- Capital national private: US\$8,050,000.00 (eight million fifty thousand dollars)
- Capital international organizations: US\$31,690,000.00 (thirty-one million six hundred ninety thousand dollars)
- Capital private international: US \$120,000,000.00 (one hundred twenty million dollars).

**Table 36. Costa D and F Plan**

Estimated cost of plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.7 Measures to reduce unintentional production of POP's	<b>165,041,000.00</b>	13,351,000.00	8%	151,690,000.00	92%
Note 1: International financing refers to the contributios of national public, private and mixed institutions.					
Note 2: External financing refers to the contributions of international agencies.					

### **3.3.8 MEASURES TO REDUCE RELEASES FROM STOCKPILES AND WASTES**

This activity was not carried out because its components were included in activities 3.3.1, 3.3.4 and 3.3.5

### **3.3.9 STRATEGY: IDENTIFICATION OF STOCKPILES, ARTICLES IN USE AND WASTES.**

This strategy was not undertaken because its components were included in activities 3.3.4, 3.3.5 and 3.3.11

### **3.3.10 STOCKPILE MANAGEMENT AND APPROPRIATE MEASURES FOR THE HANDLING AND DISPOSAL OF ARTICLES IN USE.**

This activity was included in 3.3.4, 3.3.5

### **3.3.11 IDENTIFICATION OF CONTAMINATED SITES AND REMEDIATION OF SAME IN AN ENVIRONMENTALLY SOUND MANNER.**

#### **3.3.11.1 Summary of the current situation**

Article 6, paragraph 1, subsection (a), of the Stockholm Convention, states that the Parties must develop appropriate strategies to identify stockpiles that consist of chemical products included in annex A or annex B, or that contain these chemical products and products and articles in use, as well as wastes that consist of a chemical product included in annex A, B or C, that contain said product or are contaminated with same. The Parties, pursuant to subsection (e), must endeavor to develop appropriate strategies to identify sites contaminated with chemical products included in annexes A, B or C and, in the event that the remediation of these sites is undertaken, same must be performed in an environmentally sound manner.

There are few sites in the Dominican Republic known to be contaminated with persistent organic compounds. At present, only the information compiled during the 2007 inventory is available. At none of the 39 identified, categorized and classified sites, was the presence of these pollutants confirmed through the use of analytical techniques. Nor is there a history in the country of remediation of sites contaminated with these compounds. Therefore, and because it is a requirement of the Convention, the priority of this plan is to continue the inventory in order to identify sites contaminated with POPs and, where applicable and where adequate resources are available, to carry out remediation of same.

#### **3.3.11.2 Purpose of the plan**

To promote the environmentally sound and safe management of sites contaminated with POPs in the Dominican Republic by 2015.

### 3.3.11.3 Objectives, outcomes and activities

Table 37 presents a logical description of the objectives of the plan (outcomes, activities, indicators, means of verification).

**Table 37. Description of objectives, outcomes, activities, indicators and means of verification of the objectives.**

Objective 1: Identify sites contaminated with POPs in the Dominican Republic by 2012.			
Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
The inventory of the identification, categorization and classification of sites contaminated and/or potentially contaminated with POPs has been updated.	a) Contract consultants to conduct the inventories of potentially contaminated sites.	During the period from January to March 2010, the SEMARENA has contracted the necessary consultants to conduct the inventory of contaminated sites.	Consultancy contracts
	b) Collection of field information.	In December 2010, the field inventory work will have been completed.	Technical reports.
	c) Analysis and compilation of information.	By February 2011 the technical report on the compilation of information for the inventory will be ready.	Inventory progress report
	d) Preparation and delivery of POPs report.	In September 2011, the final report on the presence of sites contaminated with POPs in the country has been delivered.	Final report document.
The presence of POPs is confirmed at pre-selected sites.	a) Contracting of laboratory service(s) to conduct the analysis.	In January 2012 the laboratories that will confirm the sites have been selected and contracted.	Contracts with laboratories.
	b) Collect and analyze tests.	In May 2012, a register is available of contaminated sites confirmed by laboratory tests.	Technical reports from laboratories.
	c) Preparation and delivery of report of results.	In June 2012, a report with the results will have been delivered.	Final report document.

<b>Objective 2:</b> Remediate sites in the Dominican Republic prioritized due to their level of POPs contamination in an environmentally sound manner by 2015.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
Feasibility (technical and economic viability) study on the measures to be applied for the decontamination and/or remediation of sites contaminated with POPs.	a) Contract consultant (s).	During the period between July and August 2012, the SEMARENA has contracted the consultants to conduct the technical and economic feasibility study.	Terms of reference. Consultants contracted.
	b) Prepare report on results.	By October 2012, the final reports on the feasibility study and its recommendations have been delivered.	Final report document.
Environmental remediation is undertaken at priority contaminated sites.	a) Contracting of environmental remediation company.	By January 2013, the SEMARENA has contracted the companies that will undertake the environmental remediation of the prioritized sites, based on the feasibility analysis.	Signed service contract.
	b) Undertake environmental remediation.	During the period from March 2013 to March 2015 the environmental remediation of selected sites is undertaken.	Progress report on work.
	c) Evaluate results of completed remediation(laboratory tests)	During the period from April to July 2015 the results of the completed remediation are evaluated.	Laboratory reports.

### **3.3.11.4 Timetable and costs of the activities included in the plan**

**Table 38. Timetable and costs of the activities included in the plan on contaminated sites**

<b>Objective 1:</b> Identify sites contaminated with POPs in the Dominican Republic, by 2012.											
<b>Activities / Tasks</b>	<b>TIMETABLE</b>						<b>Executing Institution</b>	<b>COSTS (US \$)</b>			<b>Assumptions</b>
	<b>Year of implementation</b>							<b>Dom. Gov.</b>	<b>Party</b>	<b>Inter. Org.</b>	
	2010	2011	2012	2013	2014	2015					
R.1.1. The Inventory of the Identification, Categorization and Classification of sites that are contaminated and/or potentially contaminated with POPs has been updated.							SEMARENA	70,000.00			If the work is done by external consultants, the cost increases.
a) Contract consultants to conduct the inventories of potentially contaminated sites.											
b) Gathering of field information.											
c) Analysis and compilation of information.											
d) Preparation and delivery of report on POPs.											

<b>Objective 1: Identify sites contaminated with POPs in the Dominican Republic, by 2012.</b>											
Activities / Tasks	TIMETABLE						Executing Institution	COSTS (US \$)			Assumptions
	Year of implementation							Dom. Gov.	Party	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
R.1.2. Presence is confirmed of POPs at pre-selected contaminated sites.							SEMARENA	30,000.00			If the country acquires adequate infrastructure, the cost will decrease.
a) Contract laboratory services to conduct the analyses.							Contracted Laboratory				
b) Undertake the collection and analysis of tests.											
c) Completion of report on results.											
Subtotal								100,000.00	0.00	0.00	
<b>Total</b>								<b>100,000.00</b>			
<b>Objective 2: Remediate the prioritized sites in the Dominican Republic according to their level of POPs contamination in an environmentally sound manner by 2015.</b>											
Activities / Tasks	TIMETABLE						Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
R.2.1. Feasibility (Technical and economic viability) study on the measures to be applied for the decontamination and/or remediation of sites contaminated with POPs.							SEMARENA	20,000.00			
a) Contract consultants to conduct this study.											
b) Prepare report on results obtained.											
R.2.2. Environmental remediation is undertaken at prioritized contaminated sites.							Contracted Company				
a) Contracting of environmental remediation company.											
b) Undertake environmental remediation.											
c) Evaluate results of completed remediation (laboratory tests)											
Subtotal								20,000.00	0.00	0.00	
<b>Total</b>								<b>20,000.00</b>			

### **3.3.11.5. Implementation of the action plan**

The implementation of this action plan is foreseen for the period 2010-2015 and is subject to the availability of funds from the State and/or the technical and financial collaboration of international agencies and of other signatory countries to the Stockholm Convention.

This plan is designed to promote the safe and sound management of sites contaminated with POPs identified in the inventory conducted in 2007 and consists of two objectives with two outcomes per year.

The first activity is to update the inventory of potentially contaminated sites, following the same methodology used in the previous inventory (see 2007 inventory of contaminated sites) which consists of implementing five phases: identification of contaminated sites, compilation of information and historical review, description, classification and categorization of contaminated sites.

Once evaluated, the sites are classified according to the following criteria:

- Class 1. Requires action.
- Class 2. Probability of action.
- Class 3. May require action.
- Class N. No action required.
- Class L. Insufficient information.

The SEMARENA, as the focal point of the Convention, will be the institution responsible for implementing the activities proposed in the plan, and if it has the necessary economic resources, will coordinate the continuation of the inventory, as well as the confirmation of the level of POPs contamination at the sites that have been identified, using national or international laboratories with the technical infrastructure required for this purpose.

With respect to the remediation or rectification of the sites confirmed as contaminated, the SEMARENA will contract beforehand the services of expert consultants, so that based on the results of the inventory, a feasibility study will be conducted which contemplates the technical and financial aspects of the measures to be applied to such sites. From the results of this evaluation, a hierarchical list will be created according to the priority with which the sites must be managed.

One of the sites that must be high priority for decontamination in future implementation plans is the pesticide warehouse of the CENCET, in light of the fact that it is located in an area of intense labor, commercial, educational and residential activities. Prior to decontamination, the presence and level of DDT contamination of the site must be confirmed through exhaustive sampling of the site. This action requires the taking of samples from walls, concrete, the external areas of the building, among others. The analytical results of these samples will be decisive in selecting the type of technology required.

Likewise, sites contaminated with PCBs, the so-called “green points”, must be considered in future decontamination plans, for which they must be located, categorized, a decontamination plan (the technology to be used must be suggested by experts) designed and applied, and subsequently verifying, via the appropriate analyses, that the remediation has been effective. The decontamination of these points is not contemplated as an objective for this period due to the fact that the priorities for PCBs are focused on continuing the inventory, promoting environmentally sound management and the gradual elimination of contaminated equipment.

If waste materials are generated as a result of the remediation and/or decontamination process of these or other sites, the elimination of which can not be undertaken in the country, the handling and transport of same will be carried out in accordance with the stipulations of the Basel Convention, pursuant to Article 6, paragraph 2 of the Stockholm Convention.

### **3.3.11.6 Costs and total financing**

The estimated costs of updating the inventory of contaminated and/or potentially contaminated sites, is approximately US\$ 70,000.00.

To confirm the presence of POPs at the selected sites and given the condition that the country does not currently have the appropriate infrastructure to measure same, quotes were requested from intermediary companies that provide these services locally, these being very high; hence, the decision was made to obtain a quote from the international laboratory Analytical Management Labs”,(AML) Kansas, USA, which is detailed below:

<b>Concept</b>	<b>Costs in US\$</b>
Shipment of sample	300.00 per shipment
Pesticide analyses	125.00 per sample
Analysis of PCBs	125.00 per sample
Analysis Dioxins and Furans	825.00 per sample plus 5% of the total cost of the analysis.

The cost of confirming the presence of POPs was estimated at US\$30,000.00, contemplating only the 39 sites that were already evaluated in the 2007 inventory.

To conduct the technical-economic feasibility study, experts in the field must be contracted, estimating the cost at approximately US\$20,000.00.

The total costs of implementing the Action Plan for the “Identification of Contaminated Sites (Chemicals listed in Annex A, B and C of the Stockholm Convention) and their remediation in an environmentally sound manner”, is approximately US\$120,000.00.

**Table 39. Costs of the plan on contaminated sites**

<b>Estimated Cost of the Plan</b>	<b>Total Cost US\$</b>	<b>Financing</b>			
		<b>Internal</b>	<b>%</b>	<b>External</b>	<b>%</b>
3.3.11 Identification of Contaminated Sites and their remediation in an environmentally sound manner.	<b>120,000.00</b>	120,000.00	100%	-	0%
Note 1: Internal financing refers to the government contributions of the SEMARENA and stakeholders.					
Note 2: External financing refers to the contributions of ICAs.					

### **3.3.12 FACILITATING AND UNDERTAKING THE EXCHANGE OF INFORMATION AND INVOLVEMENT OF KEY ACTORS**

#### **3.3.12.1 Summary of the current situation**

1 Article 9 of the Stockholm Convention on Persistent Organic Pollutants concretely deals with:

1. *The commitment to exchange information among the Parties related specifically to:*
  - a) *The reduction or elimination of the production, use and release of persistent organic pollutants; and*
  - b) *The alternatives to persistent organic pollutants, including information related to the dangers and economic and social costs of same.*
2. *The manner and mechanisms by which the aforementioned exchange of information will take place.*
3. *The commitment of the Parties with respect to the establishment of National Coordination Centers for the exchange of information.*
4. *The establishment of a non-confidentiality clause for information exchanged between Parties, with respect to health, human safety and the environment.*

In complying with the stipulations in Article 18 Numeral 21 of Law 64-00 on the Environment and Natural Resources, dated 18 July 2000<sup>2</sup>; the SEMARENA, within its internal structure, has designated, the Undersecretariat for Environmental Management as the Focal Point for the Stockholm Convention.

With the aim of fully complying with the Convention and, within the context of same, facilitating the exchange of information stipulated in Art. 9, as well as implementing coherent management policies that fulfill the spirit of this and other international conventions, the ministry has delegated in this same Undersecretariat, the Focal Points for the Rotterdam Convention on the prior informed consent procedure applicable to certain hazardous pesticides and chemical products in international trade and their final disposal, and the Basel Convention on the international control of transboundary movements of hazardous wastes and their final disposal, making the establishment of the National Coordination Center, which directs the basic aspects of the implementation of same, necessary for the full implementation of these conventions.

On the basis of information gathered in the “*Inventory of Levels of Information, Awareness and Education about Persistent Organic Pollutants (POPs) in the Dominican Republic*” (Betancourt, L. 2007), it is clear that in order to comply with Art. 9 of the Stockholm Convention with respect to the exchange of information with other related government institutions, the most relevant problems at present are the overlapping of efforts, the lack of adequate communication mechanisms and the lack of participatory planning among ministries.

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<sup>2</sup> “Propose national positions to the Executive Power with respect to international negotiations on environmental issues and on national participation in the conferences of the parties to international environmental conventions; propose signing and ratification; be the focal point for same; and represent the country at international environmental forums and agencies in coordination with the Ministry of Foreign Relations.”.



For the exchange of information among the Parties, there is no adequate system of oversight, registry and release controls for POPs, either at the level of environmental authorities or other national organizations or institutions; hence there is no database available to facilitate the exchange of accurate, reliable and updated information on the reduction or elimination of the production, use and release of same. The country does not have research institutions devoted to this issue, nor information and education mechanisms with the specific mission of evaluating the economic and social costs and dangers generated by same in the country. Added to this is the fact that supervision and control of the commercialization and use of chemical products is the competency of several ministries, but there is currently no adequate level of coordination to prevent the duplication of efforts and overlapping of competencies and gaps.

In the midst of this overall situation, a national advantage for the effective implementation of this article of the Convention is the existence of Law No. 20-04, on Free Access to Public Information, which establishes the obligations and procedures to guarantee the availability of relevant information provided by the various entities in the public and private sectors.

Within this context, it is the task of this Exchange of Information and Involvement of Key Actors activity, to propose adequate mechanisms so that the SEMARENA can facilitate the implementation of article 9 of the Stockholm Convention on Persistent Organic Pollutants in an efficient and participatory manner, promoting the synergetic institutionality of same with activities similar to those contemplated in the Basel and Rotterdam Conventions.

### **3.3.12.2 Purpose**

Subject to the technical and financial capabilities of the Dominican Republic, for the period 2009 to 2014, to exchange with the Parties and other key stakeholders, in a systematic and participatory manner, updated, accurate and reliable information on Persistent Organic Pollutants and other hazardous chemical substances, specifically with respect to the aspects of reduction, eliminating production, use and release of same, alternatives to use of same, dangers inherent in same and the related social and economic costs.

### **3.3.12.3 Objectives, outcomes and activities**

**Table 40. Description of objectives, outcomes, activities, indicators and means of verification of the objectives.**

<b>Objective 1.</b> Establish an official participatory and functional mechanism for the exchange of information intended for the Parties and other key stakeholders, on Persistent Organic Pollutants in the Dominican Republic.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
1. A National Information Center on POPs and Chemical substances, established at the Undersecretariat for Environmental Management / SEMARENA.	Contracting of one (1) General Coordinator, one (1) Database Expert, one (1) sociologist and one (1) Technician in Graphic Design and Information Management.	During the period from January to May 2009, the SEMARENA has contracted the technical and administrative personnel needed to start up the National Information Center (CNI)	a. Terms of reference and profile of the CNI positions. b. Personnel contracted and working.

**Objective 1.** Establish an official participatory and functional mechanism for the exchange of information intended for the Parties and other key stakeholders, on Persistent Organic Pollutants in the Dominican Republic.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
1. A National Information Center on POPs and Chemical substances, established at the Undersecretariat for Environmental Management / SEMARENA.	Acquisition of computing, network, graphic design and printing equipment and information servers.	By September 2009, the CNC has the necessary staff and equipment to function appropriately.	Equipment installed and functioning.
	Establishment of offices for the CNI.	By December 2009, the SEMARENA has one (1) National Information Center set up and running.	Work plan of the National Information Center and operations monitoring matrix.
2. Key national institutions participate formally and continuously in the exchange of information related to POPs with the SEMARENA.	The CNI serves as the receiver and transmitter of accurate and reliable information on POPs and other key chemical substances for the entire country.	By 2010, the SEMARENA has established inter-institutional agreements and technical protocols for the handling and exchange of information on POPs and other Chemical substances with at least five (5) key national institutions.	Inter-institutional agreements and technical protocols established between SEMARENA and the CDEEE, SEA, SESPAS, CDEEE, Industry and Commerce and City Governments, among others.
3. The SEMARENA regularly exchanges information related to POPs with the Parties to the Convention.	The CNI obtains and facilitates for other Parties to the Rotterdam, Basel and Stockholm Conventions, information related to the management of emissions, monitoring of POPs and other Chemical substances.	By 2010, the SEMARENA has established and implemented at least three (3) bi-national agreements for the exchange of information on POPs and other chemical substances related to compliance with the Rotterdam, Basel and Stockholm Conventions.	Signed Agreements.

**Objective 2:** Develop a centralized database on emissions and monitoring of Persistent Organic Pollutants in the Dominican Republic, with the appropriate tools to facilitate access, analysis and evaluation of the information, particularly related to the amounts of POPs, uses and applications of same, technologies and data regarding generation sources, users and intermediaries that use, emit, commercialize or import these substances.

Expected Outcomes	Activities	Objectively Verifiably Indicators	Means of Verifying Outputs
1. One (1) system for Registering Emissions and Transfer of POPs and other relevant chemical substances in the D.R. by 2010.	Compile and centralize information on stockpiles, uses, activities, emission factors, emissions and contaminated sites in one institutional server.	One (1) information system to collect, integrate and publish information on POPs and other relevant chemical substances in operation by the end of 2010.	Progress reports on the development of the computer systems at the national institutions participating in the network.
			Database on emissions and transfers of POPs and other hazardous chemical substances, purged, standardized and migrated to the CNI server.

**Objective 2:** Develop a centralized database on emissions and monitoring of Persistent Organic Pollutants in the Dominican Republic, with the appropriate tools to facilitate access, analysis and evaluation of the information, particularly related to the amounts of POPs, uses and applications of same, technologies and data regarding generation sources, users and intermediaries that use, emit, commercialize or import these substances.

Expected Outcomes	Activities	Objectively Verifiably Indicators	Means of Verifying Outputs
2. The DR has effective access to information on emissions and transfer of POPs and other relevant chemical substances, based on reliable national sources.	Reinforce internal and external information review procedures to improve the quality of the data reported by national agencies and institutions.	By 2010, five (5) national institutions included in the CNI network have the computer systems and trained technical staff needed to contribute quality information.	Annual reports on national statistics and data.
	Manage the information related to levels of POPs in persons, foods and ecosystems, as well as sources of exposure, including the work environment.	Starting in 2012 the CNI generates annual reports on national statistics and data on POPs and other hazardous chemical substances.  By 2013, the CNI has one (1) database that contains the information needed to calculate the dioxin and furan emissions in the country.	
3. Decision makers have access to new technologies on POPs and their alternatives worldwide.	Disseminate successful experiences, both nationally as well as internationally, in the elimination and/or reduction of POPs (on alternatives to POPs, residue management, etc.)	The annual reports of the CNI include, starting in 2010, a segment dedicated to new technologies for eliminating/reducing POPs, alternatives to their use and management of residues worldwide.	Annual reports on national statistics and data.

**Objective 3.** Establish functional protocols for the management and exchange of information, including the legal aspects related to ownership of same and the binding non-confidentiality clause for information related to human safety and health and the environment.

Expected Outcomes	Activities	Objectively Verifiably Indicators	Means of Verifying Outputs
1. Both the Parties, as well as key stakeholders from the public and private sectors facilitate information needed for decision making with respect to POPs and other hazardous chemical substances, based on protocols established for management and use of same.	Establish the necessary legal agreements and mechanisms for the exchange of information.	By March 2010, the DR has functional protocols for the management and exchange of information agreed to with key stakeholders.	Technical and legal protocols for the exchange of information.
	Establish mechanisms and procedures to facilitate automatic access to non-confidential information.	By 2012, at least six (6) government organizations and six (6) private civil society agencies feed the national database regularly with updated and reliable information.	Agreements signed by institutions and Parties.

**Objective 3.** Establish functional protocols for the management and exchange of information, including the legal aspects related to ownership of same and the binding non-confidentiality clause for information related to human safety and health and the environment.

Expected Outcomes	Activities	Objectively Verifiably Indicators	Means of Verifying Outputs
1. Both the Parties, as well as key stakeholders from the public and private sectors facilitate information needed for decision making with respect to POPs and other hazardous chemical substances, based on protocols established for management and use of same.	Ensure access by decision makers to information related to health and safety.	By 2014, the database has the necessary information for accurate and reliable decision making by key stakeholders and authorities on the issue of POPs and hazardous chemical substances.	Number of users of the database.
	Incorporate in the information management system aspects related to Law 200-04 on Free Access to Public Information.		

**Objective 4.** Strengthen the National Coordination Committee in its technical, operational and legal capacities for implementing the Stockholm Convention on Persistent Organic Pollutants.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
1. The Focal Points of the Rotterdam and Basel Conventions are members of the National Coordination Committee.	Clearly define the roles and responsibilities of the National Focal Points of the Stockholm, Rotterdam and Basel Conventions, disseminating information to all stakeholders and society at large.	During the first quarter of 2009, the National Coordination Committee with the Focal Points of the Stockholm, Basel and Rotterdam Conventions.	Minutes of the meetings of the National Coordination Committee.
			Terms of reference for members of the National Coordination Committee.
2. All national agencies involved in the issue of POPs are represented on the National Coordination Committee.	Clearly define the roles and responsibilities of the other government and civil society agencies and ministries related to POPs and other hazardous chemical substances, disseminating same to all stakeholders and civil society at large.	During the first quarter of 2009, the National Coordination Committee has within its structure qualified representatives from all national agencies involved in the issue of POPs.	Minutes from the meetings of the National Coordination Committee.
			Terms of reference of the members of the National Coordination Committee.
3. The member organizations of the National Coordination Committee have the trained technical staff and appropriate equipment to efficiently fulfill their roles and responsibilities, adequately supervising the execution of the National Implementation Plan (NIP).	Create synergy among the Rotterdam, Stockholm and Basel Conventions, optimizing the use of technical, administrative and financial resources.	Each year, starting in 2009, and concluding in 2014, the members of the National Coordination Committee receive training and technical resources, as well as administrative and financial facilities, which enable them to efficiently fulfill their roles and responsibilities in the National Implementation Plan.	Interinstitutional Agreement Document/Memorandum of Understanding of the National Coordination Committee.
			Press releases.
			Online publications.
			Photographs of meetings
			Annual operations plan of the member organizations.
Annual report on the implementation of the NIP.			

### 3.3.12.4 Timetable and costs of the activities included in the plan

**Table 41. Timetable and costs of the activities included in the plan on the exchange of information and involvement of key stakeholders.**

<b>Objective 1.</b> Establish an official participatory and functional system for the exchange of information intended for the Parties and other key stakeholders, on Persistent Organic Pollutants in the Dominican Republic.											
Activities / Tasks	TIMETABLE						Executing Institutions	COSTS (US \$)			Assumptions
	Year of Implementation							Dom. Gov.	Party	Intern. Org.	
	2009	2010	2011	2012	2013	2014					
R.1. A National information Center on POPs and hazardous chemical substances established at the Undersecretariat for Environmental Management/ SEMARENA							Undersecretariat for Environmental Management/ SEMARENA	60,000.00		600,000.00	UNITAR, GEF, World Bank, IDB
R.2. Key national institutions participate in the exchange of information related to POPs in a formal and sustained manner with SEMARENA.							CNI / Undersecretariat for Environmental Management/ SEMARENA. SESPAS, SEA, DGA, SEOPC, APD, CDEEE, City Governments.	10,000.00			UNITAR, GEF, World Bank, IDB
R.3. The SEMARENA regularly exchanges information related to POPs with the Parties to the Convention.							CNI / Undersecretariat for Environmental Management/ SEMARENA National Focal Point	10,000.00	10,000.00	30,000.00	
These amounts will be invested during the period from 2009 to 2014.							<b>Subtotal</b>	<b>80,000.00</b>	<b>10,000.00</b>	<b>630,000.00</b>	
<b>Total</b>								<b>720,000.00</b>			

**Objective 2.** Develop a centralized database on emissions and monitoring of Persistent Organic Pollutants in the Dominican Republic, with the appropriate tools to facilitate access, analysis and evaluation of the information, particularly that related to the amounts of POPs, the uses, applications, technologies of same and data referring to generation sources, users and intermediaries that use, emit, commercialize or import these substances.

Activities / Tasks	TIMETABLE						Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014					
R.1. One (1) Registry for Emissions and Transfer of POPs and other related chemical substances is established in the DR by the year 2010.							CNI / Undersecretariat for Environmental Management/SEMARE NA.	20,000.00		150,000.00	
R.2. The DR has effective access to information on emissions and transfer of POPs and other related chemical substances, based on reliable national sources.							CNI / Undersecretariat for Environmental Management/SEMARE NA. SESPAS, SEA, DGA, SEOPC, APD, CDEEE, Mun Govs.	40,000.00		200,000.00	
R.3. Decision makers have access to new POPs technologies and their alternatives worldwide							CNI / Undersecretariat for Environmental Management /SEMARENA. PARTES. SESPAS, SEA, DGA, SEOPC, APD, CDEEE, Mun.Govs.	5,000.00	15,000.00	8,000.00	
These amounts will be invested during the period from 2009 to 2014.							<b>Subtotal</b>	<b>65,000.00</b>	<b>15,000.00</b>	<b>358,000.00</b>	
<b>Total</b>								<b>438,000.00</b>			

**Objective 3.** Establish functional protocols for the management and exchange of information, including the legal aspects related to the rights of ownership of same and the binding non-confidentiality clause for information related to human safety and health and the environment.

Activities / Tasks	TIMETABLE						Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014					
Both the Parties as well as key stakeholders from the public and private sectors facilitate the necessary information for decision making with respect to POPs and other hazardous chemical substances based on protocols established for the management and use of same.							CNI / Undersecretariat for Environmental Management/ SEMARENA. PARTES. SESPAS, SEA, DGA, SEOPC, APD, CDEEE, Mun.Govs. National Private Business.	10,000.00	5,000.00		
These amounts will be invested during the period from 2009 to 2014.							<b>Subtotal</b>	<b>10,000.00</b>	<b>5,000.00</b>	-	
<b>Total</b>								<b>15,000.00</b>			

**Objective 4.** Strengthen the National Coordination Committee in its technical, operational and legal capacities to implement the Stockholm Convention on Persistent Organic Pollutants.

Activities / Tasks	TIMETABLE						Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation							Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014					
R.1. The Focal Points of the Rotterdam and Basel Conventions are members of the National Coordination Committee.							CNI / Undersecretariat for Environmental Management/ SEMARENA	15,000.00			
R.2. All national agencies involved in the issue of POPs are represented on the National Coordination Committee.								25,000.00			
R.3. The member organizations of the National Coordination Committee have the trained technical personnel and appropriate equipment to efficiently fulfill their roles and responsibilities, adequately supervising the implementation of the National Implementation Plan (NIP).							CNI / Undersecretariat for Environmental Management/SEM ARENA. SESPAS, SEA, DGA, SEOPC, APD, CDEEE, Mun.Govs.	45,000.00		220,000.00	
These amounts will be invested during the period from 2009 to 2014.							<b>Subtotal</b>	<b>85,000.00</b>		<b>220,000.00</b>	
<b>Total</b>								<b>305,000.00</b>			



### **3.3.12.5 Implementation of the action plan**

This plan is scheduled for implementation over a six (6)-year period, starting with its approval by the corresponding entities and, consequently, with technical and financial facilities available. It is structured on the basis of four (4) objectives and ten (10) outcomes, each with its duly described activities and indicators, which will be implemented by the Undersecretariat for Environmental Management of the SEMARENA, under the supervision of the National Focal Point, via the National Information Center on POPs and other Hazardous Chemical Substances (to be created), with the collaboration of the following government organizations and their expert members on the National Coordination Committee<sup>3</sup>:

- Ministry of the Environment and Natural Resources (SEMARENA)
  - Undersecretariat for Management of Environmental Quality
  - Undersecretariat for Soil and Water
  - Undersecretariat for Forest Resources
  - Undersecretariat for Protected Areas and Biodiversity
  - Undersecretariat for Coastal and Marine Resources
  - Undersecretariat for Environmental Information and Education
  - Undersecretariat for Environmental Defense
- Ministry of Agriculture (SEA)
  - Agro-medicine Unit of the Department of Plant Health
- Ministry of Public Health and Social Assistance (SESPAS)
  - Center for the Control of Tropical Diseases (CENCET)
  - Hospitals
- National Customs Department (DGA)
- Ministry of Public Works (SEOPC)
  - Department of Docks and Ports
- Dominican Port Authority
  - Department of Engineering and Technical Consultancy (Dredging)
- Dominican Corporation of State Electric Companies (CDEEE)
  - Dominican Hydroelectric Generation Company EGEHID
  - Dominican Electricity Transmission Company ETED
  - Rural and Suburban Electrification Unit UERS-PRA
  - Electricity Distribution Company of the North EDENORTE
  - Electricity Distribution Company of the South EDESUR
- Municipal Governments

The National Information Center on POPs and Hazardous Chemical Substances will be the operational unit of this plan, responsible for creating, implementing and maintaining the database on emissions and transfer of POPs and other chemical substances based on reliable national sources. It will also be charged with the management of projects intended to strengthen the capacities of member

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<sup>3</sup> Directly responsible for implementing the NIP, its policies and activities. Proportionate to their relationship with the Stockholm, Basel and Rotterdam Conventions is their level of commitment and the importance of their role in implementing the Action Plan. Government Authorities/Organizations. Local Government.

Possible donors ,agents for implementing projects, co-responsible parties in the process of evaluating and monitoring compliance with the convention in all of its parts. Parties to the Convention at the international level/ Convention Secretariat/International Cooperation Agencies.



organizations of the National Coordination Council to generate quality data, as well as to provide information in a timely manner to decision makers, in fulfilling the purpose for which it has been created. Complementing its role, the CNI will be charged with producing annual national reports on POPs and other hazardous chemical substances, as well as the report that the Focal Point will present at meetings of the Conference of the Parties.

### **3.3.12.6 Cost and total financing**

**Table 42. Cost and financing plan on exchange of information and involvement of key stakeholders**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.12 Facilitating or undertaking the Exchange of Information and the Involvement of Key Stakeholders	<b>1,478,000.00</b>	240,000.00	16%	1,238,000.00	84%
Note 1: Internal financing refers to the contributions from national institutions.					
Note 2: External financing refers to the contributions from international agencies and Parties.					

### **3.3.13 PUBLIC AWARENESS RAISING, INFORMATION AND EDUCATION.**

#### **3.3.13.1 Summary of the current situation**

The Dominican Republic, in seeking to comply with the commitments contracted via the Stockholm Convention with respect to reducing and eliminating Persistent Organic Pollutants, will carry out a series of actions intended to ensure compliance with said commitments and, therefore, will develop an action plan on public awareness raising, information and education, suggested in article 10 of the aforementioned agreement.

Said plan is designed on the basis of the report on the Inventory and Analysis of Levels of Information, Awareness and Education about Persistent Organic Pollutants in the Dominican Republic (Betancourt, 2007), which in its results reflects the weakness or lack of educational programs and plans related to POPs, intended for the fifteen (15) identified risk groups and the general population.

Despite the importance of the issue of POPs and the commitments assumed by the Dominican Republic upon signing the Stockholm Convention, education and awareness on the issue of POPs has been undertaken in a timid and barely systematic manner. In fact, the report mentioned above infers that “based on the compiled and reviewed information, it can be concluded that at present, at the level of Environmental Authorities and other national institutions or organizations, there is no mechanism with well-defined tools and designed specifically to educate and raise awareness directly among the various risk groups about the issue of POPs, as part of a global educational strategy. Education and awareness on the issue of POPs has been undertaken in a partial, indirect and unplanned manner, as a result of the work of certain institutions, within the special circumstances of projects or activities...”

On the other hand, the report on the Inventory and Analysis of Levels of Information, Awareness and Education about POPs indicates that “a comparison of the statements in Article 10 of the Stockholm Convention with respect to aspects of the national legislation reveal that no document in our national

legislation related to education deals explicitly with the issue of POPs, although aspects of environmental education are present that form a basis for developing themes such as POPs contamination...” Hence, the reason why formulating a plan on this issue is so important.

### **3.3.13.2 Purpose of the plan**

Adoption of a strategy that will allow the Dominican Republic to raise awareness, inform and educate the public, particularly groups responsible for creating centers of contamination, risk groups and groups vulnerable to the actions of Persistent Organic Pollutants.

### **3.3.13.3 Objectives, outcomes and activities**

**Table 43. Description of objectives, outcomes, activities, indicators and verification means of the objective.**

<b>Objective 1:</b> Determine the current level of awareness with respect to persistent organic pollutants (POPS) among 100% of key stakeholders and a representative sampling of the general public.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
The parties, as well as key stakeholders from public and private sectors involved in implementing the action plan will have information concerning the level of awareness of key stakeholders and the general public.	Conduct a survey prior to implementing the action plan targeting key stakeholders and the general public.	By 2009 100% of the parties involved in the implementation of the action plan will have a reference report on the current level of education and awareness of key stakeholders and of the general population, prior to implementing the plan.	Executive report on the results of the survey.
	Create a questionnaire with the participation of a multi-disciplinary team.		
	Contract the services of a national consultant (a sociologist).		
	Contract and train a group of 10 national pollsters.		
	Contract a team of three national data entry operators and a systems engineer.		
	Implementation of the survey among a representative sampling.		
	Data entry and analysis of the surveys.		

**Objective 2:** Measure the level of awareness achieved through implementation of the plan five (5) years after implementation of same,

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
The stakeholders responsible for implementing the action plan will have information on the progress made concerning the levels of awareness of the target population.	Conduct a survey, via a representative sampling of the target population among whom the action plan is being implemented.	100% of the involved institutions will have the report that determines the level of success of the actions implemented through the plan by 2013.	Executive report on the results of the survey.
	Develop a questionnaire with the participation of a multi-disciplinary team.		
	Selection of a representative sampling..		
	Contract the services of a consultant (sociologist), a team of 10 pollsters and a systems engineer.		
	Administration of the questionnaire, codification, data entry and analysis of the results.		
	Reproduce the results of conducting the survey, distribute same to all institutions involved in the Education, Information and Awareness Raising Program.		
	Conduct a workshop to evaluate the results of the survey to identify the progress made and determine the efficiency or deficiency of the actions.		

**Objective 3:** Organize and facilitate education and awareness raising programs on POPs among 100% of the vulnerable groups (women, children, less educated persons), among risk groups and the general population.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
Risk groups and the general public have been provided with education and awareness raising programs on POPs.	Creation of a community committee (CC) with the responsibility of monitoring the planned actions.	Strengthening of 100% of the community committees (CC) establish two in each of the selected sites.	Testimony of members of the (CC).
	Select and train facilitators from the various community committees CC).		Number of trained facilitators.
	Creation of community committees (CC).	100% of the sites where risk groups and vulnerable groups were identified have community committees.	Number of persons trained via the programs.
	Preparation and execution of the timetable for conducting the educational sessions (workshops, lectures, discussion forums) on Persistent Organic Pollutants and their effects on health.	By 2015, 100% of the involved institutions will have a training and education program on POPs.	
	Quarterly meetings with the (CC), to monitor and evaluate all of the work carried out and to schedule the following activities.		Number of programs being implemented at companies.
	Designing of a training program that covers workers and management and technical personnel at each company involved with POPs.		Program designed

**Objective 4:** Contribute to creating a dynamic of providing relevant information on the issues related to Persistent Organic Pollutants via the major mass media.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
The organizations responsible for implementing the plan have the facilities to disseminate information to the public about POPs, via the various mass media.	Definition of a strategy for implementing activities with the written, radio and televised press, which ensures coverage in the communities directly affected by Persistent Organic Pollutants and the Dominican public at large.	By 2015, 100% of the various mass media in the country are involved in the educational campaign program on the issue of Persistent Organic Pollutants,	Videos, radio and television spots, articles on issues related to POPs.
	Awareness-raising workshops with members of the press and owners of the mass media implemented in various parts of the country.		
	Production and distribution of videos related to the issue.		
	Designing of a Webpage and continuous updating of same.		
	Production and dissemination of materials that support the awareness raising process, such as pamphlets, posters and flyers.		

**Objective 5:** Encourage environmental education, especially with respect to Persistent Organic Pollutants, via formal and informal educational programs.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
Public and private institutions have educational programs that include issues related to POPs.	Identify public and private institutions that have environmental education programs or that support informal environmental education programs.	By 2015, 100% of higher education institutions in their curricula include the subject of the environment, including the issues related to persistent organic compounds.	Curriculum that include environment subjects, with an emphasis on POPs.
The Undersecretariat for Environmental Information and Education, the libraries at the various education centers and municipal governments have sufficient and updated documentation on POPs.	Provide information and educational centers with update information on POPs.	By 2010, 85% of the NGOs have included issues related to POPs.	Libraries have documentation on POPs.
	Coordinate with the NGOs to include environmental education programs with specific topics on Persistent Organic Pollutants in their action plans.	80% of the country's libraries have updated documentation on POPs by 2015	
	Provide documentation to the country's libraries, educational centers and city governments on the issue of POPs.		

**Objective 6:** Facilitate awareness raising processes for those charged with formulating policies and adopting decisions about persistent organic pollutants with each of the parties involved.

Expected Outcomes	Activities	Objectively Verifiable Indicators	Means of Verifying Outputs
The pertinent authorities, both from the public as well as private sectors, adopt decisions and develop policies taking into account issues related to POPs.	Creation of mechanisms for interinstitutional interaction.	By 2015, 100% of the institutions involved in the plan will have information available for the public on POPs and will have integrated policies and adopted measures in favor of health and the environment.	Regular report on POPs.
	Sessions for exchanging information.		
	Incorporation of issues related to persistent toxic pollutants in their environmental standards and policies.		Policies and measures created and integrated in the educational programs of the involved parties.
	Share information experiences on the treatment of the issue and its effects on health and the environment via national and international meetings, workshops and events.		

### 3.3.13.4 Timetable and costs of activities included in the plan

**Table 44. Timetable of the activities included in the plan on public awareness, information and education.**

<b>General Objective:</b> To adopt a strategy that will allow the Dominican Republic to raise awareness, inform and educate the public, particularly risk groups and vulnerable groups, about the actions of Persistent Organic Pollutants.												
Activities/Tasks	Timetable							Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
The parties, as well as key stakeholders from the public and private sectors involved in implementing the action plan have information on the level of awareness of key stakeholders and the public at large.								Undersecretariat for Environmental Information and Education	90,909		151,515	Achieving this objective will be possible to the extent that the involved parties fulfill their contracted commitments.
The stakeholders responsible for implementing the action plan will have information on the progress made concerning the levels of awareness of the target population.									151,515		212,121	Economic resources are critical to achieving this objective upon which execution of same depends.

**General Objective:** To adopt a strategy that will allow the Dominican Republic to raise awareness, inform and educate the public, particularly risk groups and vulnerable groups, about the actions of Persistent Organic Pollutants.

Activities/Tasks	Timetable							Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
The risk groups, vulnerable groups and the public at large have information, education and awareness raising programs on POPs.									121,212		333,333	These committees will function depending on the follow-up provided by the institutions responsible for their operation and the willingness of same.
Public and private institutions that have educational programs include issues related to POPs in same.								Undersecretariat for Environmental Information and Education / SEMARENA. SESPAS	30,303		60,606	The institutions responsible for primary and higher education, as well as other identified organizations, fulfill their agreements and facilitate the necessary economic resources.
The Undersecretariat for Environmental Information and Education, libraries at the various educational centers and municipal governments in the country have sufficient and updated information on POPs.												

**General objective:** Adopt a strategy that will allow the Dominican Republic to raise awareness, inform and educate the public, particularly risk groups and vulnerable groups, about the actions of Persistent Organic Pollutants.

Activities/Tasks	Timetable							Executing Institution	COSTS (US \$)			Assumptions
	Year of Implementation								Dom. Gov.	Party	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
The pertinent authorities, both from the public and private sectors, adopt decisions and develop policies taking into account issues related to POPs.								Undersecretariat for Environmental Information and Education / SEMARENA, SEE, SEESCyT, Municipal Governments..	12,121.21		18,181.82	Achieving this objective will depend on compliance with the commitments among the involved parties.
Subtotal									406,060.61		775,757.58	
<b>Total</b>									<b>1,181,818.18</b>			

### **3.3.13.5 Implementation of the action plan**

To design this action plan, a set of actions was conceived that converge in the local, regional and national contexts. Harmonious participation is sought among the various sectors related to this issue, with the goal of uniting wills, efforts and resources, the SEMARENA, via the Undersecretariat for Environmental Information and Education, being the coordinating institution responsible for implementation of same.

To structure the plan, the following was done:

- a.- Identify the tasks required in order to coordinate with the various sectors, based on lines of action within a public education, information and awareness raising approach;
- b.- Determine who is responsible for launching and implementing the tasks to be carried out.
- c.- Identify the economic resources available for carrying out the tasks;
- d.- Establish the objectives to reach the beneficiary population and the issues that affect them, which were determined in accordance with the commitments assumed by the country in the Stockholm Convention;
- e.- Identify the target population, in accordance with the results of the POPs inventory conducted in the country;
- f.- Design the activities, taking into account the identified risk groups, vulnerable groups and the public at large, following study of the POPs Inventory, and the inventory of the Current Levels of Education and Awareness in the Dominican Republic.

- Risk groups identified:
  - Farmers who use pesticides in general.
  - Personnel at the Center for the Control of Tropical Diseases (CENCET) who work in close proximity to 40 tons of stored DDT.
  - Personnel in the State Electricity sector involved in the use, repair, storage and handling of equipment containing PCBs.
  - Personnel in the private Electricity sector involved in the use, repair, storage and handling of equipment containing PCBs
  - Personnel in areas outside the Electricity Sector who work at facilities where equipment containing PCBs is stored
  - Personnel not linked to any entity that uses, repairs or stores equipment containing PCBs, but who do have accidental access to oils.
  - Communities settled in areas where there is a high probability of forest fires occurring.
  - Communities that burn agricultural wastes.
  - Persons living in homes that use wood.
  - Persons who work at sugar mills.
  - Population close to sugar mills.
  - Population close to incinerators.
  - Persons living in the proximity of landfills.
  - Persons who use landfills as a source of food and materials for sale.

#### **3.3.13.5.1 Monitoring activities**

- Implementation of a database to record the actions taken and to monitor the established indicators.

- Formulation, forwarding and sharing technical and financial reports when required (quarterly, midterm, final).
- Creation of graphic materials: photographic reporting of the various stages and components of the proposal.
- Regular meetings of the coordinating team, composed of representatives from various involved institutions.
- Monitoring the progress and difficulties that arise in order to seek corrective mechanisms.

### **3.3.13.6 Costs and total financing**

**Table 45. Costs and financing of the plan on public awareness, information and education.**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.13 Public awareness, information and education	<b>1,181,818.18</b>	406,060.61	34%	775,757.58	66%
Note 1: Internal financing refers to the contributions of national institutions.					
Note 2: External financing refers to the contributions of international agencies.					

### **3.3.14 EFFECTIVENESS AND ASSESSMENT.**

This activity was not carried out.

### **3.3.15. REPORTING**

#### **3.3.15.1 Summary of the current situation**

The Dominican Republic has difficulty in collecting, compiling and managing data, as well as providing the statistical information needed to comply with Article 15 of the Stockholm Convention, in which it states that each Party has the responsibility to inform the conference of the Parties of the measures adopted to enforce the provisions of the Convention, as well as the effectiveness of said measures.

At present, information generated about the management of hazardous chemical substances, which include POPs, is very disperse and use of same is limited to the same institutions that produce it, which creates a deficiency in the processing and distribution of data and implies high costs to produce and obtain accurate statistics.

Having accurate and reliable information presented in an appropriate format, contributes to forming an overview for timely decision-making purposes and provides an informational tool for society and human groups that use and/or come into contact with hazardous chemical substances (Articles 3, 6, 10) and, above all, enables compliance with the duty to inform the conference of the Parties (Art. 15).

Despite the fact that the country has legal provisions that obligate those who participate in the management of hazardous chemical substances to provide accurate information, establishing a record, treatment and dissemination through national reports with data that is generated during the handling of the chemicals, same are not obeyed nor are procedures for same established.



The Stockholm Convention requires that these reports be submitted at regular intervals, in a format agreed to by the Parties, and that same complement the other provisions of the Convention. The recommended intervals for submitting national reports may be chosen so as to coincide with the alternate meetings of the conference of the Parties, every four years.

This action plan above all seeks to build the capacities of the country to comply with its obligation to report the statistics required by the Stockholm Convention every four years, as a way to show the results of the measures adopted for the sound and safe management of persistent organic compounds.

### **3.3.15.2 Purpose of the plan**

Provide the Dominican Republic with a legal and organizational structure that promotes the building of capacities to record and transmit the information needed to produce national reports for the Conference of the Parties every 4 years, starting in 2010, in compliance with article 15 of the Stockholm Convention.

### **3.3.15.3 Objectives, outcomes and activities**

**Table 46. Description of objectives, outcomes, activities, indicators, and means for verifying the objectives.**

<b>Objective 1:</b> Implementation of mechanisms for generating reports starting in 2010, in compliance with article 15 of the Stockholm Convention.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
R.1: A plan for building capacities to record and process required information via predesigned formats, by article 15 of the Stockholm Convention.	Implementation of a plan to build capacities starting in 2009, for recording, managing and processing data on POPs within the institutions responsible for providing the report to the Focal Point.	A capacity building plan implemented at the 9 institutions responsible for reporting.	Implementation reports, list of participants at workshops, minutes from meetings
R.2: Legal provisions that regulate recording and reporting of activities related to POPs, and determine the functional structure of the reporting program is established to comply with article 15 of the Stockholm Convention.	Support the implementation and promotion of the legal provisions that regulate the recording and reporting of activities involving POPs and determine the functional structure of the Reporting Program.	A regulation that defines the functional structure and the obligation to produce records, as per article 15 of the Stockholm Convention.	Official gazette, official documents and regulations on recording and use of reporting formats.
R.3: Reports compiled by the Focal Point, starting in 2009, with information from the institutions responsible for generating same and compiled in accordance with article 15 of the convention.	Compilation of reports each year with information from the institutions responsible for generating same and compilation of same according to article 15 of the convention by the Focal Point.	9 reports compiled annually starting in 2009	Report document, letters acknowledging receipt of the documents, minutes from meetings.

### 3.3.15.4 Timetable and costs of activities included in the plan

**Table 47. Timetable and costs of activities included in the reporting plan**

Specific objective: Efficient mechanism implemented for the generation of reports starting in 2010, in compliance with article 15 of the Stockholm Convention.												
Activities / Tasks	TIMETABLE							Executing Institution	COSTS in US\$			Assumptions
	Year of Implementation								Dom. Gov.	Parties	Inter. Org.	
	2009	2010	2011	2012	2013	2014	2015					
Outcome 1: A Plan to build capacities for recording, management and processing of information related to the requirements in article 15, as per the provided formats.								Undersecretariat for Environmental Management/ SEMARENA	5,000.00		10,500.00	National authorities and International Cooperation assume the plan to build capacities related to Reporting on POPs with sufficient resources for implementation of same.
Outcome 2: A legal provision established in the Draft Bill on hazardous chemical substances regarding the obligation to record and report activities that involve POPs and define the functional structure for compliance with the Reporting Program pursuant to article 15 of the Stockholm Convention.									500.00		2,500.00	A legal framework exists on HQS, with specific provisions on reporting.
Outcome 3: Report compiled by the Focal Point starting in 2009, with information from the institutions responsible for generating and compiling same according to article 15.									10,000.00		56,000.00	Capacities and a functional structure exist with at least one (1) person in charge of reporting and institutions comply with obligation to report.
Subtotal									15,500.00		69,000.00	
<b>Total</b>									<b>84,500.00</b>			

### **3.3.15.5 Implementation of the action plan**

Article 15 of the Stockholm Convention stipulates the duty to inform the Parties every four years. The Dominican Republic must implement activities to build capacities and update the legislation needed to comply with this commitment.

As a way to create conditions for Reporting, the building of capacities for recording, managing and processing key data for POPs reports has been considered a basic pillar of the Plan. This includes training on the appropriate use of UNEP/POPS/COP 1/20 forms, participation mechanisms (web forums, group work, etc.), information co-management modalities and definition of a functional structure for reporting as required by the Convention.

The Reporting Plan provides for the inclusion of activities designed to establish legal provisions that explicitly state the commitment to inform. This will apply to all institutions and persons handling hazardous substances. This outcome is related to Plan 3.3.1 “*on Institutional and regulatory strengthening measures (Art. 3 of the Convention)*”.

The activities included in the plan apply to all institutions responsible for providing specific information in each case to the Convention Focal Point, starting in 2010, who in turn will be responsible before the Secretariat of the Stockholm Convention for compiling and organizing the available information from nine (9) reports per year with data from the institutions responsible for generating same (see table 2) and as stipulated in article 15 for the corresponding periods and terms in each case (see table 1).

This Plan covers a period of seven years (2009 – 2015), which will imply an extension of the compiling operations beyond 2015 by the Focal Point, latter assuming the fixed costs that subsequently result from said activity. This Plan is closely related to article 9, which deals with the commitment to exchange information among the Parties, which includes all information related to the reduction or elimination of the production, use and release of persistent organic pollutants, as well as alternatives adopted with respect to POPs, including information related to the danger of same and their economic and social costs.

The table below has been taken from the annexes provided by the Convention, from a list of reporting obligations under the Convention and a description of the requirements and frequency of each particular obligation. The Dominican Republic as a country party to the Convention must report to the Secretariat in the manner foreseen in the UNEP/POPS/COP, 1/20 document [www.pops.int](http://www.pops.int). It is specified here that all agencies and ministries involved in the implementation of specific parts of the Convention must report to the National Focal Point of the Convention using the basic format specified for each institution.

**Table 48. Obligatory reports required by the Stockholm Convention.**

Obligation stipulated in the Convention	Description of the requirement	Frequency
Paragraph a) of article 5: Measures to reduce or eliminate releases from unintentional production.	Each party is asked to develop an action plan or, where appropriate, a regional or sub regional action plan, and subsequently implement it as part of its implementation plan specified in article 7, designed to identify, characterize and address the release of chemical products listed in annex C of the Convention.	Within a period of two years of the date of entry into force of the Convention for said Party.
Subsection v) of paragraph a) of article 5: Measures to reduce or eliminate releases from unintentional production.	A review will be conducted of the strategies related to developing a national action plan to identify, characterize and address the release of persistent organic pollutants produced unintentionally, listed in annex C, and the success of same.	Every five years.
Article 7: Implementation plans	Each Party is asked to develop a plan to comply with its obligations under this Convention, which it will transmit to the Conference of the Parties and endeavor to implement same, and each Party is asked to review and update its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.	Transmission to the Conference of the Parties within two years of the date on which the Convention enters into force for said Party.
Article 15: Reporting	Each Party shall report to the Conference of the Parties on the measures it has taken to implement the provisions of the Convention and on the effectiveness of such measures in meeting the objectives of the Convention. Each Party shall provide to the Secretariat:	Every 4 years.
	a) Statistical data on its total quantities of production, import and export of each of the chemical products listed in annex A and annex B or a reasonable estimate of such data; and	
	b) To the extent practicable, a list of the States from which it has imported each such substance and the States to which it has exported each such substance.	
Article 16: Effectiveness evaluation	An evaluation is required of the effectiveness over the four years as of the entry into force of the Convention and thereafter, periodically. Reports and information are also required, among which are reports and data on monitoring, as stipulated in paragraph 2 of article 16 (outcomes of the regional and global monitoring activities), the national reports presented in accordance with article 15 and the information on non-compliance provided according to the procedures established in article 17.	Four years after entry into effect of the Convention.
Paragraph g) of part II of annex A: PCB	Each Party is asked to prepare a report every five years on the progress made in eliminating polychlorinated biphenyls and submit it to the Conference of the Parties pursuant to Article 15.	Every five years.
Paragraph 4 of part II of annex B: DDT	Each Party that uses DDT shall provide to the Secretariat information on the amount used, the conditions of such use and its relevance to the disease management strategy of such Party, in a format to be decided by the Conference of the Parties in consultation with the World Health Organization.	Every three years Exception: The Dom. Rep. does not import due to legal provisions that prohibit use of same.

### **3.3.15.6 Concerning the presentation formats**

In part A of the format provided in the UNEP/POPS/COP.1/20 document, general information is requested about the Party submitting the report, as well as contact information and the name of the official submitting the report. It is important that all relevant information be provided in order to assist the Secretariat in identifying the report.

In part B of the format, the Party is asked to provide information on the measures it has adopted to implement the pertinent provisions of the Stockholm Convention and concerning the effectiveness of such measures in achieving the objectives of the Convention. In the event that the information is not available, the Party is asked to so indicate.

### **3.3.15.7 Responsibilities of the Institutions with respect to the Reporting Program**

Various State agencies are directly or indirectly involved in the production cycle of the relevant information and may generate basic records for preparing the reports. Some are described in the following table and are organized according to the Convention articles that pertain to its activity.

**Table 49. Description of institutions with responsibilities under the Reporting Program**

<b>Institution</b>	<b>Department</b>	<b>Obligations with respect to reporting</b>
Ministry of the Environment and Natural Resources (SEMARENA)	Undersecretariat for Environmental Management	Will be responsible for promoting the proposal to include in the law the provision on recording and reporting activities related to Stockholm, Rotterdam and Basel, as well as emit standards, terms and the dissemination of recording formats, including the capacity-building plan.
	National Environmental Quality Department	Will be responsible before the Secretariat of the Stockholm Convention for the reporting program and for compiling and organizing the available information so as to comply with the stipulations in article 15.
	Undersecretariat for Forest Resources	Will be responsible before the Focal Point for reporting on measures to reduce or eliminate releases from unintentional production related to article 15, sub-paragraph a) i, ii, iii, iv, v, vi and sub-paragraph b) and C.
Ministry of Agriculture (SEA)	Department of Plant and Animal Health	This department will have the obligation to:
		- Report to the Focal Point on compliance with international and national norms to which D.R. is a Party, concerning the use of and waste from pesticides. It will also be responsible for reporting the measures taken to comply with part c of article 6.
		- Report activities mentioned in clause d i, ii, iii and iv of art. 6
		- Report on pesticide control and monitoring
		- List of chemical pesticides used
		- Reports on pesticide import certificates
	- Measures adopted to promote training on the use and management of POPs pesticides.	
National Livestock Department	Report to the Focal Point on activities linked to livestock that are related to the aforementioned clauses of article 6.	

Institution	Department	Obligations with respect to reporting
Ministry of Foreign Relations (SEREX)	Department of International Agreements	Its role is to submit the Reports prepared by the Focal Point to the Convention Secretariat every four years.
Ministry of Public Health (SESPAS)	National Environmental Health Department	This Department is responsible for informing the Focal Point with respect to annex B, part I and II, on an annual basis and providing reports on the impacts of POPs on human health.
Dom. Corporation of State Elec. Comp. (CDEEE)	Environment Department	The CDEEE will report to the Focal Point on all issues related to annex A, part II, of the Stockholm Convention on the elimination of PCBs, including part a) i, ii iii and b i, ii iii.
Ministry of Labor (SET)	National Occupational Health Department	This Department must provide the following to the Focal Point:
		-Reports on measures it has adopted to comply with labor laws related to hazardous substances and on industrial hygiene and health Regulations.. -Reports on training programs and/or materials it has disseminated related to industrial safety in the handling of POPs and hazardous substances.
Dominican Municipal League (LMD)	Environment Department	The LMD will be responsible for informing the Focal Point on measures to reduce or eliminate releases from unintentional production related to article 5, sub-paragraph a) i,ii,ii iv, v vi and sub-paragraph b) and C.
State Sugar Council	Environment Department	The CEA will be responsible for informing the Focal Point on measures to reduce or eliminate releases from unintentional production related to article 5, sub-paragraph a) i,ii,ii iv, v vi and sub-paragraph b) and C.
Ministry of Finance (SEH)	National Customs Department	The DGA will inform the Focal Point annually concerning:
		- Activities related to Article 3, paragraph 1, sub-paragraph a), item ii, on import and export of chemical substances listed in annex A and B, should same occur.
		- Verification and control of various customs operations, loading, unloading and dispatching chemical products for agriculture, livestock, industry and domestic use.
		- Declarations of classification obligations for implementing customs nomenclature with respect to chemical products.
		- Record of data for preparing statistics on imported chemical products.
Ministry of Industry and Commerce (SEIC)	Department of Quality Standards and Systems	This Department will be responsible for reporting to the FP on measures applied annually to enforce standards and actions related to articles 9 and 10, on the development of POPs training programs in the business community in coordination with the Undersecretariats for Environmental Management and Education.
	Office of Industrial Property	This office will report annually on the number of permits and projects approved for handling chemical products and the industrial or commercial purpose or intent of these permits.

### **3.3.15.7 Costs and total financing**

**Table 50. Costs and financing of the reporting plan**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.15 Reporting	84,500.00	15,500.00	18%	69,000.00	82%
Note 1: Internal financing refers to government contributions from the SEMARENA and stakeholders (NGOs, Private National Businesses, etc.)					
Note 2: External financing refers to contributions from International Cooperation Agencies					

### **3.3.16 RESEARCH, DEVELOPMENT AND MONITORING**

#### **3.3.16.1 Summary of current situation**

Article 11, paragraph 1, of the Stockholm Convention on Persistent Organic Pollutants (POPs), encourages member countries to undertake, within their capabilities, research, development, monitoring and cooperation activities.

The preliminary country inventories conducted in 2007, as part of developing the National Implementation Plan of the Convention, identified significant deficiencies and gaps for the sound and safe management of POPs. The country does not have a reference laboratory to measure PCBs in various environments, nor dioxin and furan emissions. The analytical capabilities are limited, but can be improved with technical and financial assistance and a genuine national effort. In accordance with the classification in the Guidance for the POPs Global Monitoring Plan, the country is at Level 2<sup>(1)</sup>, where only one laboratory has the partial infrastructure to measure POPs.

Research studies conducted and related to POPs are scarce, limited basically to pesticides. However, the SEESCyT has shown an interest in promoting research, joining their efforts with international agencies. At present several projects related to POPs are being implemented, which may comply with items d) and g) of paragraph 1, article 11 of the Convention.

On the other hand, the Dominican Republic has not established an emissions monitoring, recording and control system, because there has not been a tradition of research on these compounds, perhaps due to the limited development of capacities and infrastructures at the national level. However, some private and public institutions are interested in participating in the monitoring of environmental quality and are willing to be equipped to conduct POPs measurements in the various environments, including measurement of dioxins and furans. In light of the high cost of the equipment and materials, all require national and international technical and financial assistance.

These measurements would allow the environmental baseline to be expanded and risk groups could be confirmed using quantitative and qualitative data. This would also facilitate research and development of chemical and non-chemical products, methods and alternative and safe strategies pursuant to Annex B, part II, paragraph 5b, of the aforementioned Convention. In order to undertake research, development and monitoring, in other words, the detection, quantification and monitoring of the POPs specified in the convention, an adequate physical and technical infrastructure is required.



### **3.3.16.2 Purpose of the plan**

Build the technical capacity of the analytical laboratories and research centers to conduct POPs analyses in various environments and establish a monitoring and vigilance system for same.

### **3.3.16.3 Objectives, outcomes and activities**

**Table 51. Description of objectives, outcomes, activities, indicators and verification means of the objectives.**

<b>Objective 1:</b> Four (4) analytical laboratories are operating, each with the technical capacity and resources to conduct analyses and research studies on pesticides, polychlorinated biphenyls, dioxins and furans by 2013.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
1.1 Contracting of technical assistance to implement analytical tests and techniques to measure POPs pesticides, polychlorinated biphenyls, hexachlorobenzenes, dioxins and furans and other hazardous chemicals in relevant environments.	June 2010. Contracting of (1) expert.	Terms of reference of the contract.	Dominican Republic has the capability to conduct reliable measurements in the process of reducing and eliminating the release of dioxins and furans, analysis of PCBs and pesticides in the environment and assess the risks of same.
1.2 Adaptation of the physical installations of the laboratories.	June 2011. Four (4) laboratories equipped to conduct various tests.	Analytical laboratories duly equipped. Report of compliance with requirements.	
1.3 Technical training of staff to conduct POPs tests, using various techniques.	December 2011. Eight (8) technicians trained in the taking of samples and testing of pesticides, polychlorinated biphenyls and hexachlorobenzenes.	Personnel duly trained. Results of assessment and accreditation certificates.	
1.4 Acquisition of laboratory equipment and materials.	June 2012. Equipment, materials and supplies deposited at each laboratory.	Equipment installed and personnel trained in technology to conduct tests. Purchase invoices.	
1.5 Validation of analytical methods.	January 2013. Analysis methods to measure POPs and other hazardous chemical substances validated.	Procedures documented and records of parameters validated.	
<b>Objective 2:</b> A vigilance and monitoring system on the effects of POPs on the environment and human health is implemented by 2015.			
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verifying Outputs</b>
1.1 Contracting of technical assistance for implementation of a monitoring system.	January 2014. The SEMARENA contracts one (1) expert.	Terms of reference of the contract.	Dom. Rep. has a vigilance and monitoring system on the effects of POPs on the environment and on human health.
1.2 Develop an annual vigilance and monitoring program.	June 2014. One (1) laboratory equipped to conduct dioxin and furan measurements.	Report with timetable.	
1.3 Implement the annual vigilance and monitoring program.	Starting in December 2014 and at the end of each year, SEMARENA has a report with the results of the assessments.	Record of results from the assessments.	



### 3.3.16.4 Timetable and costs of activities included in the plan

**Table 52. Timetable and costs of the activities included in the plan on research, development and monitoring.**

**Objective 1:** Dominican Republic has the capability to conduct reliable measurements in the process of reducing and eliminating the release of dioxins and furans, analysis of PCBs and pesticides in the environment and assessment of the risks of same.

ACTIVITIES	TIMELINE						Executing Institution	COSTS (US\$)			Assumptions
	YEAR OF IMPLEMENTATION							Dom. Gov.	Parties	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
1.1 Contracting of technical assistance to implement analytical tests and techniques to measure POPs pesticides, polychlorinated biphenyls, hexachlorobenzenes, dioxins and furans and other hazardous chemicals in relevant environments.							UASD, INTEC, IIBI, LAVECEN		144,000.00		** Global Environmental Facility (GEF)
1.2 Adaptation of physical installations of the laboratories.								90,000.00			SEESCyT
1.3 Technical training of personnel to conduct POPs tests, using various techniques.									40,000.00		Global Environmental Facility (GEF)
1.4 Acquisition of laboratory materials and equipment.											JICA, IDB, OIEA, Others
1.4.1 Accessories for existing equipment.											
1.4.2 Hydrogen generator											
1.4.3 Nitrogen generator											
1.4.4 Basic equipment for extracting and cleaning samples.										390,000.00	
1.4.5 Reagents, standards, reference material											
1.4.6 Glassware and others											
1.4.7 Bibliography											
1.5 Validation of analytical methods										Contemplated in 1.4	
<b>Subtotal</b>								90,000.00	184,000.00	390,000.00	
<b>Total</b>								<b>664,000.00</b>			

(\*) As long as the financing from these institutions is obtained.

(\*\*) Estimate based on US\$3,000.00/ month for four years.

**Objective 2:** Dominican Republic has a vigilance and monitoring system on the effects of POPs on the environment and on human health.

ACTIVITIES	TIMETABLE						Executing Institution	COSTS (US\$)			ASSUMPTIONS*
	YEAR OF IMPLEMENTATION							Dom. Gov.	Parties	Inter. Org.	
	2010	2011	2012	2013	2014	2015					
2.1 Contracting of technical assistance to implement the monitoring system.							SEMARENA, SESPAS		72,000.00		** Global Environmental Facility (GEF)
2.2 Develop annual vigilance and monitoring program.								20,000.00			
2.3 Implement the annual vigilance and monitoring program.								85,000.00			
3.0 Coordination of the activities								144,000.00			***
Subtotal								249,000.00	72,000.00	0.00	
<b>Total</b>								<b>321,000.00</b>			

(\*) So long as financing is obtained from these organizations.

(\*\*) Estimate based on US\$3,000.00/ month for two years.

(\*\*\*) Estimate based on US\$2,000.00/month for six years.

### **3.3.16.5 Implementation of the action plan**

This action plan can be carried out over the course of six (6) years, estimating the start in 2010 and depending on the capabilities of the country and the technical and financial assistance that could be received from other member countries of the Convention and international agencies.

Although management of the plan is the responsibility of the Undersecretariat for Environmental Management of the SEMARENA, because it is the National Focal Point for the Convention, the organization and implementation of same must be agreed to by those who head the involved institutions, in order to determine the responsibilities for equipping the laboratories to undertake the various analytical POPs measurements, based on their experience, the amount of investment and time required to become equipped to provide these services, so as to avoid the overlapping of efforts and resources.

The laboratories that were contacted to participate in this plan belong to state organizations and university research centers, selected from the group of inventoried laboratories because they have experience in activities related to POPs. The investment required to implement this plan would be lower than in other laboratories, considering their infrastructure. These are:

- ❖ Laboratory of the Chemical Institute of the Autonomous University of Santo Domingo (UASD)
- ❖ Chromatography Laboratory of the Biotechnology and Industry Research Institute (IIBI)
- ❖ Environmental Laboratory of the Technological Institute of Santo Domingo (INTEC)

❖ Chromatography Laboratory of the Central Veterinarian Laboratory (LAVECEN)

These analytical laboratories that will measure POPs and other hazardous chemical substances will be instrumental in supporting the implementation of research, development and monitoring programs on the effects of POPs on human health and the environment and other action plans that require confirmation of results.

### **3.3.16.6 Costs and total financing**

**Table 53. Costs and financing research, development and monitoring plan**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.16 Research, development and monitoring	<b>985,000.00</b>	339,000.00	34%	646,000.00	66%
Note 1: Internal financing refers to government contributions from the SEMARENA and stakeholders.					
Note 2: External financing refers to the contributions from International Cooperation Agencies and Parties to the Convention.					

### **3.3.17 TECHNICAL AND FINANCIAL ASSISTANCE**

#### **3.3.17.1 Summary of the current situation**

This plan is based on the contents of articles 12 and 13 of the Stockholm Convention, which deal with the technical assistance and financial resources and mechanisms needed to achieve the objectives of the convention and the national programs, plans and priorities for effective implementation of same.

At the GEF meeting in May 2001, funds were approved so the countries could develop plans to implement the convention, as mentioned in the GEF document titled: *Guidelines for Initial Support Activities related to the Stockholm Convention on Persistent Organic Pollutants*. Since same entered into force, the UNEP has provided Secretariat services for the aforementioned agreement and most of the financing for implementation of the Convention is administered by the *GEF*, which acts as the *financial mechanism* of the Convention and by means of which the Dom. Rep. obtained funds to become enabled to comply with its contracted obligations.

Said technical-financial assistance was established via the signing of the GEF 2606 project, the implementation of which began in 2006 under the administration of the UNDP, within its area of action, Energy and Environment, with a global budget of US\$470,000.00, including government counterpart funds, represented by the SEMARENA, through the Undersecretariat for Environmental Management, as the national counterpart.

Within the GEF Programs System of the UNDP, is the SGP (Small Grants Program), through which projects have been developed that constitute an indirect provision of technical and financial assistance for POPs management in the country, because investments via this program have supported a.- the promotion of organic production, which promotes a reduction in the use of POPs pesticides; b.- the promotion and implementation of alternative energy sources (solar), which reduces the use of transformers and capacitors containing PCBs; c.- promotion of solid waste management that prevents burning and hence, the production of dioxins and furans.

However, despite the fact that these activities support the fight against POPs, the fundamental objective of the actions was not to contribute directly to this; hence, we conclude that that country has not received technical-financial support directly and perceptibly for POPs management, although some local and international institutions have supported activities that to some degree are related to this, such as:

- ✓ Japan Cooperation Agency (JICA): support for organic agriculture projects;
- ✓ German Cooperation Agency (GTZ): Project to improve Environmental Education at the Primary Level;
- ✓ Center for Rural Studies and International Agriculture (CERAI): creation of the School for Farmers;
- ✓ Interamerican Institute of Cooperation for Agriculture (IICA): Integrated Pest Management;
- ✓ United Nations Food and Agriculture Organization (FAO): Integrated Pest Management and Organic Agriculture;
- ✓ Network for Action on Pesticides and their Alternatives in Latin America (RAP-AL): information on POPs on the web.
- ✓ United Nations Environment Programme (UNEP): Production of flowers without Methyl Bromide, using soil fumigants at low doses as an alternative (metam, sodium, dazomet), steam. Via UNIDO;
- ✓ United States Agency for International Development (USAID): Integrated Pest Management and Organic Fertilizers

### **3.3.17.2 Purpose of the Plan**

Determine the means for obtaining technical and financial assistance that the national entities, developed countries, international cooperation agencies and other parties could grant, according to their capabilities, for the successful implementation of the Stockholm Convention in the Dominican Republic and the measures adopted in the NIP, with the aim of strengthening, among other things, the regulatory and institutional framework, research, promotion and implementation of the best available techniques and best environmental practices, the elimination of POPs wastes and the transfer of technology for destruction of same, remediation of contaminated sites and the exchange of information.

### 3.3.17.3 Objectives, outcomes and activities

**Table 54. Description of objectives, outcomes, activities, indicators and verification means of the objectives.**

<b>Objective 1:</b> Obtain national and international technical and financial assistance for the organizational strengthening of government agencies charged with implementing the Stockholm Convention and its NIP 2010-2015, as well as POPs management (waste elimination, emissions reduction, contaminated site remediation and transfer of applied technologies and the best available practices) and the implementation of a national integrated information system (including awareness raising and education).				
<b>Expected Outcomes</b>	<b>Activities</b>	<b>Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
1. Dom. Rep. has project proposals that can be presented to country Parties to the Convention and International Cooperation Agencies (ICAs) for provision of technical and financial assistance that will enable synergetic compliance with the commitments assumed under the Stockholm, Rotterdam and Basel Conventions.	1.1 Contract expert consultant (s) to write the required project proposals.	In 2008 the qualified personnel is hired to write the proposals.	TofR, contract, work report	DR has the qualified personnel to undertake the work. The funds for contracting are available in the POPs projects.
	1.2 Develop project proposals on POPs in accordance with national priorities and the support agendas on the issue established by the ICAs.	By January 2009 at least seven (7) project proposals have been prepared, which contribute to the environmentally sustainable management of POPs.	Written, reviewed and approved proposals	The National Implementation Plan of the Dom. Rep. on the Stockholm Convention establishes national priorities and same are inserted in the POPs-related support programs and focus of the ICAs.
2. Dom. Rep. has a list of national and international sources of technical and financial assistance that can support the commitments assumed in the Convention for the sound and safe management of POPs.	2.1 Create a list of GOs, NGOs, and ICAs that can cooperate in the implementation of the NIP, relating same to the area of greatest incidence with respect to POPs.	By 2009 a detailed list is available of international and national entities that contribute technically and financially to POPs management and the programs and projects they implement related to this issue.	List of institutions, contacts made	The SEMARENA has logistical support staff that is in charge of carrying out this activity.
3. National institutions (public, private and mixed) involved in the management of hazardous chemical substances, invest resources from their budgets that contribute directly or indirectly to compliance with the Stockholm, Rotterdam and Basel Conventions.	3.2 Ensure and/or verify the technical and financial support of national parties for implementation of the NIP activities, via ongoing monitoring of the implementation.	From 2009 to 2015 the relevant national institutions have invested resources that support the NIP, contributing to the strengthening of the regulatory framework, reporting system, as well as the management and development of the POPs information system.	Budgets and/or annual POAs, technical reports, communications, agreements	SEMARENA, SEA, CESFRONT, CITAR, INDRHI, CAASD, DIA, SESPAS, DGA, SEOPC; APD, SEIC, LMD (Municipal Governments), IIBI, UASD, OIRSA and Airport Concessionaires, CDEEE and Edes, NGOs locales (JAD, CEDAF, CAD, FAMA, IDEAC, etc.), Private companies (KER and ERSA) invest resources or provide technical support that contribute to POPs management and the exchange of information.

**Objective 1:** Obtain national and international technical and financial assistance for the organizational strengthening of government agencies charged with implementing the Stockholm Convention and its NIP 2010-2015, as well as POPs management (waste elimination, emissions reduction, contaminated site remediation and transfer of applied technologies and the best available practices) and the implementation of a national integrated information system (including awareness raising and education).

Expected Outcomes	Activities	Verifiable Indicators	Means of Verification	Important Assumptions
4. International agencies that provide technical and financial represented or not in the country, support the implementation of the NIP in Dom. Rep. via implementation of projects related to POPs.	4.1 Identify the ICAs that can cooperate in the implementation of the NIP via prioritized project proposals.	By the end of 2008, a list has been drawn up of cooperation agencies, means and contact persons for forwarding project proposals.	List of contacts prepared, ICAs database	By September 2008 initial contact has been made with agencies that participated in the information sharing workshop. There is an existing database, reviewed and analyzed by the National Quality Department and the Department of Chemical Substances of the SEMARENA.
	4.2 Send to regional, multilateral and/or bilateral agencies the project proposals prioritized by the country.	By 2009 the list of project proposals has been sent to local contacts for same to identify the activities and/or areas of technical and financial support.	Communications sent, contacts made	Contacts have been made with representatives of USAID, GEF, UNDP, PPS, UNIDO, UNITAR, FAO, UNESCO, IDB, WB, AECID, GTZ, DED, JICA, UNEP, EU, USEPA, Embassy of France, of Italy, COSUDE and contacts have been arranged with IPEP, FISQ, CERAI, IICA, REP-AL, OAS.
	4.3 Arrange visits to ICAs to obtain an answer regarding the project to be supported, as well as the method of cooperation.	In 2009 visits have begun to the ICAs to determine the amounts and manner for obtaining the external assistance funds required for implementing the NIP (project proposals).	Communications requesting appointments, list of visits, minutes from meetings, signed agreements.	The agencies have funds assigned to support the management of hazardous chemical substances, and the NIP activities fit perfectly within their areas of actions and/or country programs.
	4.4 Determine the areas receiving least cooperation and seek cooperation mechanisms between countries to support same.	From 2009 to 2015 Dom. Rep. has established bilateral cooperation agreements, based on international treaties, such as FTA, in order to promote the support for the issue of POPs.	Contacts made, agreements signed, technical reports	The cooperation procedures and POPs management mechanisms are streamlined and agreed to by SEMARENA, SEREX and SEEPyD.
	4.5 Forward implementation reports for the financed projects and/or activities, and establish permanent contact with the ICAs.	A model for reporting to the ICAs has been integrated into the CNI in order to provide information about implementation of the financing funds provided for implementation of the NIP.	Technical and financial reports completed.	The national institutions, along with the SEMARENA are counterparts in the execution of the projects, activities and programs financed with international funds, compile and provide timely information for the pertinent reports.

### 3.3.17.4 Timetable and costs of the activities included in the plan

**Table 55. Timetable and costs of the activities included in the technical and financial assistance plan**

Activities / Tasks	TIMETABLE								Executing Institution	COSTS (US\$)			Important Assumptions
	Year of Implementation									Dom. Gov.	Parties	Inter. Org.	
	2008	2009	2010	2011	2012	2013	2014	2015					
Dom. Rep. has project proposals that can be presented to Country Parties to the Convention and to International Cooperation Agencies (ICAs) for the provision of technical and financial assistance that will enable synergetic compliance with the commitments assumed in the Stockholm, Rotterdam and Basel Conventions.									SEMARENA (SGA/ National Quality Dept.-Dept. Chemical Substances, POPs Proj)			8,000.00	The Operational Plan includes budget items for contracting consultants to obtain Outcome 1.
Dom. Rep has a list of national and international sources of technical and financial assistance that can support the commitments assumed in the Convention for the sound and safe management of POPs.										1,000.00		-	That SEMARENA personnel is given responsibility to execute this activity.
National institutions (public, private and mixed) related to the management of hazardous chemical substances invest resources from their budgets that contribute directly and indirectly to compliance with the Stockholm, Rotterdam and Basel Conventions. (An annual expenditure of US\$2,000 is estimated each year, starting in 2009 until 2015. US\$500 for quarterly monitoring).									SEMARENA (SGA / National Quality Dept.- Dept. Chemical Substances), CNC, CNI, other involved entities (ICAs)	14,000.00			That the DNC include these activities in its AIP and nat'l parties involve their Budget Depts.
International technical and financial cooperation agencies, represented or not in the country, support the implementation of the NIP in Dom. Rep. via the execution of projects related to POPs.										15,000.00		3,500.00	That the DNC include these activities in its AIP and nat'l parties contribute by ensuring the ICAs that support them include funds for the NIP.
Subtotal										30,000.00		11,500.00	
<b>Total</b>										<b>41,500.00</b>			



### **3.3.17.5 Costs and total financing**

**Table 56. Costs and total financing for the technical and financial assistance plan**

Estimated Cost of the Plan	Total Cost US\$	Financing			
		Internal	%	External	%
3.3.12 Technical and financial assistance plan	<b>41,500.00</b>	30,000.00	72%	11,500.00	28%
Note 1: Internal financing refers to government contributions from the SEMARENA and involved parties.					
Note 2: External financing refers to contributions from the GEF-UNDP, via the POP Project.					

### **3.3.17.6. Synergy of the Technical and Financial Assistance Plan with the Basel and Rotterdam Conventions**

The three conventions have points in common and overlap in certain aspects with respect to their scope and the chemical products and wastes listed in each one. The Basel Convention and Stockholm Convention in particular are related in various aspects, because the chemical substances and wastes included in the Stockholm Convention are contemplated in the Basel from the standpoint of waste.

The aforementioned conventions reflect the concern of the international community with respect to addressing and minimizing/preventing risks that the inadequate handling of hazardous waste and chemical products may cause. However, despite the fact that the three conventions at present are supported by a growing number of country parties committed to complying with the objectives of each of them and aware, both of the problem as well as the measures to be taken, many do not have the infrastructure, capability or resources needed to undertake the management of hazardous wastes and substances.

In this sense, obtaining national and international technical and financial resources to implement the NIP of the Stockholm Convention promotes the synergy of latter with the Basel and Rotterdam Conventions, because in the national implementation plan, activities are contemplated that converge or are relevant to all three conventions; hence, the funds or investments made for bolstering the regulatory framework, elimination and final disposal of DDT and PCBs, reduction in the burning of solid and agricultural wastes, as well as identifying cross-border introduction of POPs pesticides, are activities that intervene in the life cycle of hazardous chemical substance management encompassed by the aforementioned conventions.

At present and within the framework of the Basel Convention, the SEMARENA is implementing a project on lead contamination from batteries with government funds in the community of Haina, for the approximate amount of RD\$6.5 million, said resources to be used for remediation, isolation of the polluted zone, more in-depth assessment of the problem, as well as community education and awareness raising. This project could be expanded, because financing negotiations are currently underway with the IDB and it constitutes an activity that is synergetic, not only with this plan, but also with plan 3.3.11 Identification of Contaminated Sites and remediation of same in an environmentally sound manner and 3.3.13 Public awareness raising, information and education.



### 3.4 SUMMARY OF ACTIVITIES TO DEVELOP AND BUILD CAPACITIES

Activities that involve capacity building are an integral part of the action plans that comprise the NIP and are presented in this section in a summarized form in table 57. They include training activities, via technical courses, workshops, lectures, brochures, newsletters, etc.

The NIP also includes development activities that are summarized in table 58.

**Table 57. Capacity building activities**

Plans	Capacity building activities	ST	MT	LT
3.3.1 Institutional and regulatory strengthening measures	Regional meetings with key stakeholders to discuss the inclusion of the environmental dimension in the Political Constitution of the country.			
	Produce 100 thousand units of informational material with 10 reasons why this constitutional reform should be approved, distributed in at least 5 universities and 8 high schools.			
	Produce a chemical substance operations manual that includes POPs.			
3.3.3 Production, import and export, use, storage pesticide wastes.	Train the Specialized Border Corps (CESFRONT) and the DGA on aspects related to POPs.			
	Training of technical staff and accreditation of laboratories in standard methods of analyzing and monitoring various environments (water, soil, air and biotic components)			
3.3.4 Production, import and export, use, identification, marking, removal, storage, and disposal of PCBs and equipment containing PCBs	Training of members of the state and private electricity sectors on the issue of PCBs. Training of technical personnel on techniques for PCB sampling and analysis.			
3.3.5 Production, import and export, use, storage and DDT wastes.	Conduct a workshop with CENCET personnel to train them on the DDT packaging activity.			
3.3.7 Measures to reduce the production of unintentional POPs.	Training and awareness raising among owners and administrators of identified sources of dioxins and furans.			
	Establish at least 3 pilot projects to classify domestic garbage at the place of origin (includes training on the issue).			
	Enforce the “Regulation on Waste and Residue Generated by Health Centers and Related Entities” at a minimum of 30% of the country’s hospitals (includes knowledge of personnel about this issue).			
	Strengthen the program to classify international solid waste from air travel at 8 airports.			
3.3.12 Facilitate and Undertake the Exchange of Information and Involvement of Key Stakeholders.	Strengthen internal and external procedures for reviewing information in order to improve the quality of data reported by national agencies and institutions.			

	Capacity building activities	ST	MT	LT
3.3.13 Public awareness raising, information and education	Train the personnel of the Ministry of Education on the issue of POPs and include the subject at various levels of teaching (primary, high school and university)			
	Select and train facilitators from various community committees.			
	Produce and execute a timetable to conduct educational sessions (workshops, lectures, discussion forums) on Persistent Organic Pollutants and the effects of same on health.			
	Awareness raising sessions with journalists and owners of the media that operate in various regions of the country.			
3.3.15 Reporting	Implementation of a capacity building plan starting in 2009, on the recording, management and processing of POPs data at the nine institutions responsible for providing the report to the Focal Point.			
3.3.16 Research, development and monitoring	Technical training for the personnel that conducts POPs testing, using various techniques.			

**Table 58. Development activities**

Plans	Development activities	ST	MT	LT
3.3.4 Production, import and export, use, identification, marking, removal, storage, and disposal of PCBs and equipment containing PCBs	Build or lease PCB waste storage locales (at least 2 locales).			
3.3.5 Production, import and export, use, storage and DDT wastes	Prepare the area to be used for DDT storage.			
3.3.7 Measures to reduce the production of unintentional POPs	Installation of cooperatives or small material (plastic, glass, cardboard and metals) recycling companies.			
	Construction of nine (9) sanitation landfills.			
	Installation of medical waste incinerators in the various regions of the country, in accordance with the regulation on medical waste and residue management.			
	Install incinerators at the country's eight airports, with optimum air pollution control systems.			
3.3.16 Research, development and monitoring	Four (4) laboratories equipped to conduct various tests			

ST= Short-term; MT = Mid-term; LT = Long-term

Short-term activities are those that are implemented during the first year.

Mid-term activities are those that are implemented during the second and third year.

Long-term activities are those that are implemented starting in the fourth year.

### 3.5 GENERAL TIMETABLE FOR IMPLEMENTATION OF THE NIP AND SUCCESS FACTORS

This point summarized the implementation timetable of the action plans, taking into account the estimated time for achieving the objectives proposed in each one. To implement the action plans and consequently, to implement the NIP, the following items have been considered as factors that will ensure the success of compliance with same:

- ✓ **Key agents or stakeholders:** involvement of public officials, representatives from companies related to the issue and citizens in general
- ✓ **Bases:** That the SEMARENA exercise *leadership* in the implementation of the NIP and apply the *strategies* and policies needed for effective execution of same.
- ✓ **Relationships:** establishing intersectorial, intra- and inter-institutional relationships that promote *participation* and *collaboration* in the processes and activities that pertain to each of the interested parties.
- ✓ **Instruments:** *organization* and establishment of *processes* by the SEMARENA to ensure the effectiveness of the NIP.
- ✓ **Outcomes:** the NIP must be evaluated based on the visibility and/or contracting of services and/or activities

**Table 59. General Timetable of the NIP**

Action Plans	Objectives	Timetable							
		Year of Implementation							
		2008	2009	2010	2011	2012	2013	2014	2015
3.3.1 Institutional and regulatory strengthening measures	Promote a constitutional legal framework that serves as support for adopting effective norms on hazardous chemical substances by 2010.								
	Produce a draft bill on the appropriate management of hazardous chemical substances, especially POPs and promote promulgation of same by 2015.								
	Update and adopt standards and regulations related to hazardous chemical substances in accordance with the requirements of the Stockholm Convention by 2015.								
3.3.3 Production, import and export, use, storage and pesticide wastes	Confirm the import, use, storage and wastes from POPs pesticides in the zones denounced as sources of illegal import.								
3.3.4 Production, import and export, use, identification, marking, removal, storage, and disposal of PCBs and equipment containing PCBs	Conclude the national inventory of PCB stockpiles								
	Promote the environmentally sound management and handling of equipment and wastes containing PCBs.								
	Gradually eliminate 40 % of the equipment and wastes containing PCBs among state and private companies in the country by 2015.								
3.3.5 Production, import and export, use, storage and DDT wastes	Package and store 20 tons of DDT deposited at the CENCET in an environmentally sound manner.								
	Undertake the final disposal of the DDT in a country having the capability to dispose of same in an environmentally sound manner by 2015.								

Action Plans	Objectives	Timetable							
		Year of Implementation							
		2008	2009	2010	2011	2012	2013	2014	2015
3.3.7 Measures to reduce the production of unintentional POPs	Identify and quantify emission sources of dioxins and furans in the Dominican Republic by 2013.								
	Reduce the open burning of materials that produce dioxins and furans, as well as the burning of wood to generate domestic energy and the incineration of medical wastes by 2015.								
3.3.11 Identification of Contaminated Sites and remediation of same in an environmentally sound manner.	Identify sites contaminated with POPs in the Dom. Rep. by 2012.								
	Remediate the sites, prioritized in accordance with their level of POPs contamination, in the Dom. Rep. in an environmentally sound manner by 2015.								
3.3.12 Facilitate or undertake the Exchange of Information and Involvement of Key Stakeholders.	Establish an official participatory and functional mechanism for the exchange of information for the Parties and other key stakeholders, on POPs in the Dom. Rep.								
	Develop a centralized database on POPs emissions and monitoring in the Dom. Rep. with the appropriate tools to facilitate access, analysis and evaluation of the information, particularly with respect to the amounts of POPs, the uses, applications of same and technologies and data referring to production sources, users and intermediaries that use, emit, commercialize or import these substances.								
	Establish functional protocols for the management and exchange of information, including the legal aspects related to the rights of ownership of same and the binding non-confidentiality clause for information related to human safety and health and the environment.								
	Strengthen the National Coordination Committee with respect to its technical, operational and legal capabilities to implement the Stockholm Convention on POPs.								
3.3.13 Public awareness raising, information and education	Adopt a strategy that will enable the Dom.Rep. to raise awareness, inform and educate the public, particularly risk groups and vulnerable groups, about the actions of POPs.								
3.3.15 Reporting	Implement efficient mechanisms for generating reports starting in 2010 in compliance with article 15 of the Stockholm Convention.								
3.3.16 Research, Development and Monitoring	Dom. Rep. has the capability to conduct reliable measurements of the process of reducing and eliminating the release of dioxins and furans, analyzing PCBs and pesticides in the environment and assessing the risks of same.								
	Dom. Rep, has a vigilance and monitoring system on the effects of POPs on the environment and on human health.								
3.3.17 Technical and Financial Assistance	Obtain national and international technical and financial assistance for the organizational strengthening of government agencies charged with implementing the Stockholm Convention and its NIP 2010-2015, as well as POPs management (waste elimination, emissions reduction, contaminated site remediation and transfer of applied technologies and the best available practices) and the implementation of a national integrated information system (including awareness raising and education).								

### 3.6 SUMMARY OF THE COSTS AND FINANCING REQUIRED TO IMPLEMENT THE NIP

**Table 60. Resources required to implement the NIP**

Action Plans / Objectives	Estimated Costs in US\$				
	Internal or National Resources		External or International Resources		Total
	Dom. Gov.	NPB	Parties	ICA/ IPB	
<b>3.3.1 Institutional and regulatory strengthening measures</b>					
Promote a Constitutional legal framework that serves as support for adoption of effective norms on hazardous chemical substances by 2010.	13,800.00	-	-	-	13,800.00
Produce a draft bill on the appropriate management of hazardous chemical substances, especially POPs, and promote promulgation of same by 2015.	21,000.00	-	-	15,000.00	36,000.00
Update and adopt standards and regulations related to hazardous chemical substances in accordance with the requirements of the Stockholm Convention by 2015.	16,500.00	-	-	11,500.00	28,000.00
<b>Subtotal plan 3.3.1</b>	<b>51,300.00</b>	<b>-</b>	<b>-</b>	<b>26,500.00</b>	<b>77,800.00</b>
<b>3.3.3 Production, import and export, use, storage and pesticide wastes.</b>					
Confirm the import, use, storage and wastes from POPs pesticides in the zones denounced as sources of illegal import.	45,500.00	-	-	-	45,500.00
<b>Subtotal plan 3.3.3</b>	<b>45,500.00</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>45,500.00</b>
<b>3.3.4 Production, import and export, use, identification, marking, removal, storage, and disposal of PCBs and equipment containing PCBs</b>					
Conclude the national inventory of PCB stockpiles	131,500.00	-	-	70,000.00	201,500.00
Promote the environmentally sound management and handling of equipment and wastes containing PCBs.	373,000.00	-	-	32,000.00	405,000.00
Gradually eliminate 40 % of the equipment and wastes containing PCBs among state and private companies in the country by 2015.	668,000.00	165,000.00	-	-	833,000.00
<b>Subtotal plan 3.3.4</b>	<b>1,172,500.00</b>	<b>165,000.00</b>	<b>-</b>	<b>102,000.00</b>	<b>1,439,500.00</b>
<b>3.3.5 Production, import and export, use, storage and DDT wastes</b>					
Package and store 20 tons of DDT deposited at the CENCET in an environmentally sound manner.	-	-	-	50,000.00	50,000.00
Undertake the final disposal of the DDT in a country having the capability to dispose of same, in an environmentally sound manner by 2015.	-	-	-	130,000.00	130,000.00
<b>Subtotal plan 3.3.5</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>180,000.00</b>	<b>180,000.00</b>
<b>3.3.7 Measures to reduce the production of unintentional POPs</b>					
Identify and quantify emission sources of dioxins and furans in the Dominican Republic by 2013.	21,000.00	-	-	150,000.00	171,000.00
Reduce the open burning of materials the produce dioxins and furans, as well as the burning of wood to generate domestic energy and the incineration of medical wastes by 2015.	5,280,000.00	8,050,000.00	-	151,540,000.00	164,870,000.00
<b>Subtotal plan 3.3.7</b>	<b>5,301,000.00</b>	<b>8,050,000.00</b>	<b>-</b>	<b>151,690,000.00</b>	<b>165,041,000.00</b>

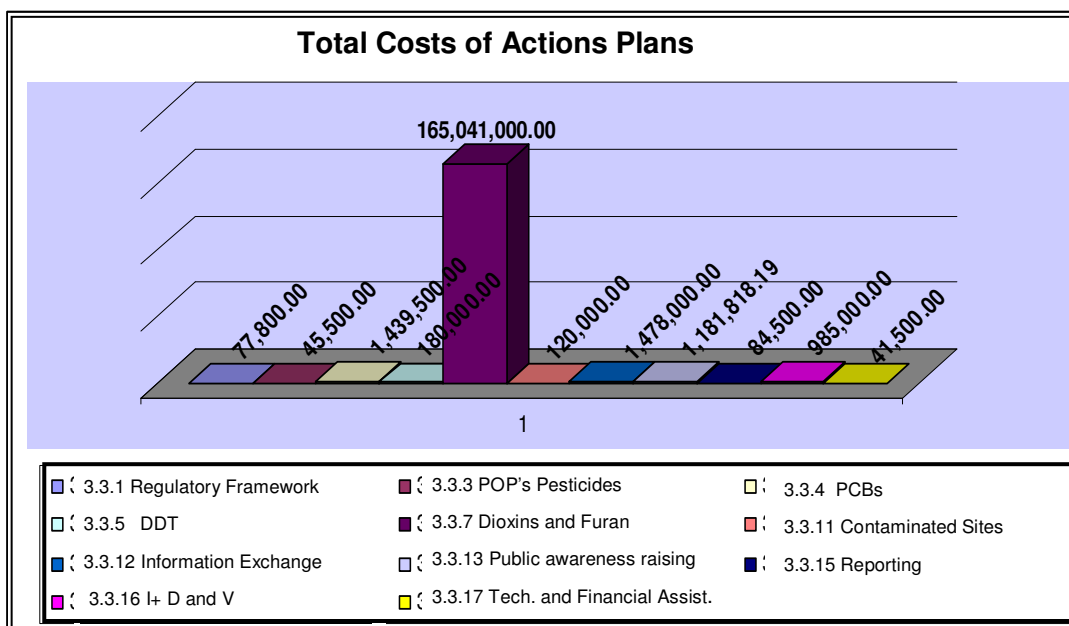
Action Plans / Objectives	Estimated Costs in US\$				
	Internal or National Resources		External or International Resources		Total
	Dom. Gov.	NPB	Parties	ICA/ IPB	
<b>3.3.11 Identification of Contaminated Sites and remediation of same in an environmentally sound manner.</b>					
Identify sites contaminated with POPs in the Dom. Rep. by 2012.	100,000.00	-	-	-	100,000.00
Remediate the sites, prioritized in accordance with their level of POPs contamination, in the Dom. Rep. in an environmentally sound manner by 2015.	20,000.00	-	-	-	20,000.00
<b>Subtotal plan 3.3.11</b>	<b>120,000.00</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>120,000.00</b>
<b>3.3.12 Facilitate or undertake the Exchange of Information and Involvement of Key Stakeholders.</b>					
Establish an official participatory and functional mechanism for the exchange of information for the Parties and other key stakeholders, on POPs in the Dom. Rep.	80,000.00	-	10,000.00	630,000.00	720,000.00
Develop a centralized database on POPs emissions and monitoring in the Dom. Rep. with the appropriate tools to facilitate access, analysis and evaluation of the information, particularly with respect to the amounts of POPs, the uses, applications of same and technologies and data referring to production sources, users and intermediaries that use, emit, commercialize or import these substances.	65,000.00	-	15,000.00	358,000.00	438,000.00
Establish functional protocols for the management and exchange of information, including the legal aspects related to the rights of ownership of same and the binding non-confidentiality clause for information related to human safety and health and the environment.	10,000.00	-	5,000.00	-	15,000.00
Strengthen the National Coordination Committee with respect to its technical, operational and legal capabilities to implement the Stockholm Convention on POPs.	85,000.00	-	-	220,000.00	305,000.00
<b>Subtotal plan 3.3.12</b>	<b>240,000.00</b>	<b>-</b>	<b>30,000.00</b>	<b>1,208,000.00</b>	<b>1,478,000.00</b>
<b>3.3.13 Public awareness raising, information and education</b>					
Adopt a strategy that will enable the Dom.Rep. to raise awareness, inform and educate the public, particularly risk groups and vulnerable groups about the actions of POPs.	406,060.61	-	-	775,757.58	1,181,818.19
<b>Subtotal plan 3.3.13</b>	<b>406,060.61</b>	<b>-</b>	<b>-</b>	<b>775,757.58</b>	<b>1,181,818.19</b>
<b>3.3.15 Reporting</b>					
Implement efficient mechanisms for generating reports starting in 2010 in compliance with article 15 of the Stockholm Convention.	15,500.00	-	-	69,000.00	84,500.00
<b>Subtotal plan 3.3.15</b>	<b>15,500.00</b>	<b>-</b>	<b>-</b>	<b>69,000.00</b>	<b>84,500.00</b>

Action Plans / Objectives	Estimated Costs in US\$				
	Internal or National Resources		External or International Resources		Internal or National Resources Dom. Gov.
	Dom. Gov.		Dom. Gov.	OCI/ EPI	
<b>3.3.11 Research, Development and Monitoring</b>					
Dom. Rep. has the capability to conduct reliable measurements of the process of reducing and eliminating the release of dioxins and furans, analyzing PCBs and pesticides in the environment and assess the risks of same.	90,000.00	-	184,000.00	390,000.00	664,000.00
Dom. Rep. has a vigilance and monitoring system on the effects of POPs on the environment and on human health.	249,000.00	-	72,000.00	-	321,000.00
<b>Subtotal plan 3.3.16</b>	<b>339,000.00</b>	<b>-</b>	<b>256,000.00</b>	<b>390,000.00</b>	<b>985,000.00</b>
<b>3.3.17 Technical and Financial Assistance</b>					
Obtain national and international technical and financial assistance for the organizational strengthening of government agencies charged with implementing the Stockholm Convention and its NIP 2010-2015, as well as POPs management (waste elimination, emissions reduction, contaminated site remediation and transfer of applied technologies and the best available practices) and the implementation of a national integrated information system (including awareness raising and education).	30,000.00	-	-	11,500.00	41,500.00
<b>Subtotal plan 3.3.17</b>	<b>30,000.00</b>	<b>-</b>	<b>-</b>	<b>11,500.00</b>	<b>41,500.00</b>
<b>General sub-total</b>	<b>7,720,860.61</b>	<b>8,215,000.00</b>	<b>286,000.00</b>	<b>154,452,757.58</b>	<b>170,674,618.19</b>
<b>Coordination expenses implementation NIP (3.2)</b>	<b>918,466.67</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>918,466.67</b>
<b>General total</b>	<b>8,639,327.28</b>	<b>8,215,000.00</b>	<b>286,000.00</b>	<b>154,452,757.58</b>	<b>171,593,084.86</b>

Dom. Gov.: Dominican Government

NPB: National Private Business

ICA/IPB: International Cooperation Agency / International Private Business



**Table 61. Summary of resources required to implement the NIP**

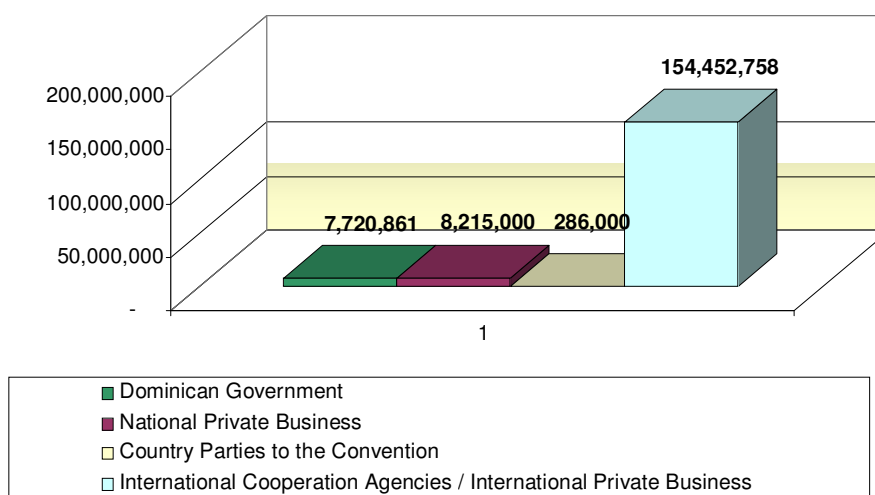
Action Plans	Estimated Costs in US\$				Total
	Internal or National Resources		External or International Resources		
	Dom. Gov.	NPB	Parties	ICA/IPB	
3.3.1 Institutional and regulatory strengthening measures	51,300.00	-	-	26,500.00	77,800.00
3.3.3 Production, importation and exportation, use, storage and pesticides wastes	45,500.00	-	-	-	45,500.00
3.3.4 Production, importation, and exportation, use, identification, marking, removal, storage and disposal of PCB's and equipment containing PCB's	1,172,500.00	165,000.00	-	102,000.00	1,439,500.00
3.3.5 Production, importation and exportation, use, storage and DDT wastes	-	-	-	180,000.00	180,000.00
3.3.7 Measures to reduce production of unintentional POP's	5,301,000.00	8,050,000.00	-	151,690,000.00	165,041,000.00
3.3.11 Identification of Contaminated Sites and remediation of same in an environmentally sound manner	120,000.00	-	-	-	120,000.00
3.3.12 Facilitate or undertake the Exchange of Information and Involvement of Key Stakeholders	240,000.00	-	30,000.00	1,208,000.00	1,478,000.00
3.3.13 Public awareness raising, information and education	406,060.61	-	-	775,757.58	1,181,818.19
3.3.15 Reporting	15,500.00	-	-	69,000.00	84,500.00
3.3.16 Research, development and monitoring	339,000.00	-	256,000.00	390,000.00	985,000.00
3.3.17 Technical and financial assistance	30,000.00	-	-	11,500.00	41,500.00
<b>General sub-total</b>	<b>7,720,860.61</b>	<b>8,215,000.00</b>	<b>286,000.00</b>	<b>154,452,757.58</b>	<b>170,674,618.19</b>
<b>Coordination expenses implementation of NIP (3.2)</b>	<b>918,466.67</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>918,466.67</b>
<b>General total</b>	<b>8,639,327.28</b>	<b>8,215,000.00</b>	<b>286,000.00</b>	<b>154,452,757.58</b>	<b>171,593,084.86</b>

Dom. Gov.: Dominican Government

NPB: National Private Business

ICA/IPB: International Cooperation Agency / International Private Business

**Estimated costs in US\$ by financing source**





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