



<ul style="list-style-type: none"> <li>• Undertake preliminary inventories of sources and emissions of POPs listed in Annexes A and B to the Convention.</li> <li>• Develop an Action Plan for the regular monitoring and reduction of releases of unintentional by-products; Article 5 of the Convention outlines some of the elements that should be included in this plan such as an inventory of current and projected releases, an assessment of enforcement capacity and adequacy of laws and policies to meet the obligations of by-products reduction of the Convention, and strategies to meet these obligations.</li> <li>• Build capacity to report every five years on progress in phasing out PCBs as described in Annex I part II of the Convention;</li> <li>• Prepare a preliminary assessment of stockpiles of POPs and of waste products contaminated with POPs, and identify management options, including opportunities for disposal;</li> <li>• Build capacity to enable the Executing Agency to organize and coordinate the project, which includes human resource development, training programs, equipments, etc.</li> <li>• Build capacity to report to the COP on total production, import and export, as per Article 15 of the Convention;</li> <li>• Build capacity to assess the exposure of the human population and the environment by POPs;</li> <li>• Build capacity to assess the need of continuation of specific exemptions and preparation of their reporting/extension;</li> <li>• Build capacity to identify sites contaminated by POPs; and</li> <li>• Support communication, information exchange, and raising awareness through multi-stakeholder participatory processes, as described in Article 9 and 10.</li> </ul>
<p>9. Project duration: 2 years</p>
<p>10. Project expected outcomes:</p> <p>The main outcome of this project is the National Implementation Plan, which will have been developed by following the above-mentioned five steps and appropriate activities.</p>
<p>11. Estimated total budget: US\$</p>
<p>12. Amount being requested from the GEF: US\$</p>
<p><b>Information on institution submitting Project Brief</b></p>
<p>13. Information on the organization submitting the proposal:</p> <p>UNIDO, as the specialized agency of the United Nations in industrial development in developing countries and countries with economies in transition, has participated in all those Interagency Cooperative events that led to the intergovernmental negotiations for the preparation of the Framework Convention on POPs. UNIDO participated in the first two international meetings on POPs held in Vancouver, Canada and Manila, the Philippines, held in 1995 and 1996, respectively. UNIDO also participated in the relevant meetings of the Intergovernmental Forum on Chemical Safety (IFCS) and the Inter-Organization Programme for the Sound Management of Chemicals (IOMC). UNIDO also participated in all five Intergovernmental Negotiating Committees (INC) for an International Legally Binding Instrument for Implementing International Action on Certain POPs meetings. The 15<sup>th</sup> GEF Council included UNIDO among the executing agencies under the expanded opportunities for implementing GEF projects. In 2001, UNIDO has become a member of the GEF Inter-Agency Task Force on POPs. According to the decision of the 17<sup>th</sup> GEF Council Meeting held in Stockholm, UNIDO has the mandate to submit enabling activity projects to GEF.</p>

14. Information on the proposed executing organization.	
Ministry of Environmental Protection and Physical Planning (MoEPPP) will be the executing agency of this enabling activity project. MoEPPP has also been selected as the POP Focal Point. Based on the review of the POPs related monitoring, research & development activities, and legal aspects, this institute is best suited for undertaking the key activities described in this enabling activity project. Detailed information of the Institute is attached as Annex 1.	
15. Date the proposal was submitted to a GEF Implementing Agency/Executing Agency with Expanded Opportunities:	23 July 2001
16. Date the proposal was submitted to the GEF Secretariat:	29 October 2001
17. Date the proposal was approved:	
18. Date of first Disbursement:	
Information to be completed by Implementing Agency/Executing Agency with Expanded Opportunities:	
19. Implementing Agency/Executing Agency with Expanded Opportunities contact persons:	
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2.	Mr. Zoltan Csizer POPs Focal Point Director, Cleaner Production and Environmental Management Branch (PEM) Sectoral Support and Environmental Sustainability Division (SES) UNIDO, D1215, Vienna International Centre, Wagramer Strasse 5, P.O. BOX 300. 1400 Vienna, Austria

## Project Description

The project description serves to explain how the project will be executed based on discussions held with Government officials from the Ministry of Environmental Protection and Physical Planning. This narrative part attempts to describe the context in which the step-wise process of activities, which is elaborated in the GEF Initial Guidelines (GEF/C.17/4), Annex B, takes place.

Its structure is as follows: A brief background establishes the environmental setting of Croatia and is followed by the project objective. The activities are grouped to describe the existing situation in the country in terms of the managerial, technical and social infrastructure that is in place, or intended to be put in place, for the preparation of the National Implementation Plan. Managerial aspect includes discussion of the project implementation structure as well as coordination and organization of the NIP development process. The technical aspect includes three activities, namely the establishment of POPs inventories and assessment of national infrastructure and capacity,

setting priorities and determination of objectives for POPs management, formulation of a National Implementation Plan. The social aspect relates to issues of stakeholder identification and participation, information dissemination, and social participation issues.

The Annexes are attached for a more detailed background on Croatia's situation with regard to POPs. Annex 1 provides a summary of the capacity of the Executing Agency. Annex 2 provides a detailed description of the status of the 12 POPs in Croatia, and Annex 3 gives a work plan, which follows the suggested sequence of activities attached to GEF's Guidelines, and provides the basis for the given budget. In spite of the vast destruction of the environment resulting from the Yugoslavian war, conditions have been created by the state for an efficient implementation of environmental protection.

The harmonization of the Croatian legislation to the European Union has already started. Croatia has signed several international conventions relating to POPs substances, such as the Basel Convention<sup>1</sup>, the Aarhus Convention<sup>2</sup> and the Rotterdam Convention<sup>3</sup>. The Republic of Croatia ratified, or is ratifying, almost all international environment protection treaties: Vienna Convention for the Protection of the Ozone Layer (1991); Montreal Protocol on Substances that Deplete the Ozone Layer (1991) London Amendment (1994), Copenhagen Amendment (1996), Montreal Amendment (2000); United Nations Framework Convention on Climate Change (1996); Convention on Long-range Transboundary Air Pollution (1991); Convention on Biological Diversity (1996); Convention for the Protection of the Mediterranean Sea against Pollution; Convention on Environmental Impact Assessment in a Transboundary Context (1996). The country is committed to fulfilling the requirements of the Stockholm Convention, which was signed at the Conference of the Plenipotentiaries in Stockholm on 23 May 2001.

## **Project objective(s)**

The objective of this enabling activities proposal is to strengthen national capacity and the enhance knowledge and understanding amongst decision-makers, managers, the industry, NGOs and the public at large on POPs to develop and formulate a National Implementation Plan (NIP). By achieving this objective Croatia will meet the obligations of the Stockholm Convention and will be enabled to manage the elimination of POPs. Specifically, the project will:

- (i) Allow Croatia to meet its reporting obligations under the Stockholm Convention;
- (ii) Prepare the ground for the implementation of the Stockholm Convention in Croatia;
- (iii) Strengthen national capacity to manage POPs and strengthen chemicals management capacity in general;
- (iv) Maximize government commitment and facilitate ratification of the Stockholm Convention.

## **Project activities**

### *Coordination and organization of the NIP development process*

The Government of the Republic of Croatia has nominated the Ministry of Environmental Protection and Physical Planning (MoEPPP) as the national executing agency. The executing agency will also serve as the focal point for this project. A detailed description of the executing agency and project focal point is given in Annex 1.

Throughout the project life of two years, there will be a National Project Coordinator (NPC), who reports to MoEPPP and works for the project full-time, and a Chief Technical Advisor (CTA), who reports to UNIDO headquarters and the UNIDO focal point in Croatia, and works for the project part-time. The CTA will assist the NIP development in

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<sup>1</sup> Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, adopted in 1989 and entered into force on 5 May 1992.

<sup>2</sup> Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. Aarhus, Denmark, 25 June 1998.

<sup>3</sup> Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Rotterdam, 10-11 September 1998.

other countries in the region and thereby provide for an exchange of experiences and expertise between the countries in the region. The CTA will be technically qualified to provide overall guidance on the management of the process. The NPC will ensure adherence to the work plan, which is elaborated during the first phase of the project. His/her main responsibilities will include advice and monitoring of all technical aspects of the project as well as financial control of the execution (detailed in Annex 3). The NPC will work in close co-operation with the CTA.

A new Steering Committee will need to be established for monitoring of the process, as there is presently no other suitable committee. The final composition of the committee will be decided on during initiation of the project. Strong emphasis will be put on large-scale participation in the National Implementation Plan development process, which will ensure full ownership and commitment.

The Committee will oversee the project related work of MoEPPP and the project team. The Steering Committee will review, comment and approve the workplan. Strong emphasis will be put on private sector and civil society involvement during project execution. All decisions of the Committee, such as respective responsibilities, timelines and budget (based on the tenders) will be clearly communicated to the concerned. Activities, which require expertise not available at MoEPPP will be implemented through sub-contracts. Tenders will be published in one of the daily newspapers. Submitted tenders will be reviewed and evaluated by the Steering Committee based on an evaluation system, which is going to be prepared by the Committee. It will include the review of all applicants' level of expertise, human and financial resources and work done in this field.

Monitoring of project execution will be undertaken by UNIDO by means of quarterly progress reports. A mid-term evaluation will be presented at the end of the first year under the supervision of the Chief Technical Advisor. It will evaluate efficiency of the project management, including outcomes, budget and timelines. The Steering Committee will receive the evaluation and will take corrective actions.

#### Inventories and assessments

The project team, consisting of NPC and CTA, will be responsible for the setting up of task teams. The assignment of the task teams will last until completing the inventories under scrutiny. The training will focus on the following activities:

- Process organisation and the co-ordinating mechanism functions.
- Inventory of PCB's and obsolete pesticide stocks.
- Inventory of contaminated sites and disposal opportunities.
- Inventory of unintentional by-products.
- Development of NIP.

Technical Reports will be prepared, which contain detailed information on the present state of the particular field of POPs under scrutiny. The following expertise is required for undertaking the POPs-related inventories and assessments:

1. Research team for retrieving information from authorities, relevant ministries, key industrial enterprises and NGOs. The team will be responsible for undertaking inventories of production, export, import, use, and distribution of pesticides and PCBs (Annex A of the Convention).
2. Emission expert for preparing the initial inventories for the PCBs, PCDD/Fs and HCB releases into the environment by using international guidelines.
3. Contamination expert team for assessing contaminated sites, obsolete stocks and disposal opportunities.
4. Institutional expert for assessing current POPs related infrastructure, enforcement, R&D capacities as well as monitoring system.
5. Health expert for assessing the population's exposure to POPs.

Since the Stockholm Convention has not indicated the preferred inventory procedures, and currently no inventories exist, an internationally comparable system will be initiated. Technological and economical concerns will also be taken into account in the finalization of the procedures.

Croatia is preparing as part of this project a National Chemicals Management Profile to assess and diagnose the existing infrastructure for the sound management of chemicals. This is an important prerequisite for systematically building national capacity. The findings of this National Chemicals Management Profile will therefore serve as a crucial input into the development of specific action plans and strategies for the NIP. Strengthening of chemical safety and management as emphasized in chapter 19 of Agenda 21 is closely linked to this activity.

#### Priorities and objectives for POPs management

The current legislation related to POPs in Croatia is summarized in the following table:

<b>Name</b>	<b>Current regulation</b>
DDT	Consumption is banned
Aldrin	Consumption is banned
Dieldrin	Consumption is banned
Chlordane	Consumption is banned
Endrin	Consumption is banned
Heptachlor	Consumption is banned
Hexachlorobenzene	Consumption is banned
Mirex	Consumption is banned
Toxaphene	Consumption is banned
PCBs	Still in use, not recognised in the current legislation
PCBs emission	Limit values exist and are regularly monitored
Dioxins, furans	Limit values exist and are regularly monitored
HCB emission	Limit values exist and are regularly monitored

Based on the Environment Performance Review (1999) and complying with requirements of the Stockholm Convention the following constraints need to be addressed as a matter of priority:

- Non-compliance legislation
- Instruments for financing waste management by enterprises are not established
- Uncontrolled landfills pollute surrounding soil and groundwater
- No incentives for clean technologies are present
- Lack of environmental awareness among citizens and enterprises.

#### Formulation of the NIP

The NIP and its action plans will be based on the findings of the assessment and inventory reports. Relevant international management options will be reviewed for selection of the most appropriate alternatives. The intention is to identify those management options which can be implemented using existing management systems or which need little adjustments in the present legislation. Strong cooperation is necessary between experts, the relevant ministries and civil groups for reducing the risks. Reviewing the present state of POPs in Croatia, the following actions will be required as part of the NIP to address identified concerns:

- Update present regulatory and assessment schemes for pesticides and industrial chemicals with the aim of preventing the use of chemicals that exhibit the characteristics of POPs;
- Develop legal and administrative measures that intentional POP chemicals are
  - Imported only for the purpose of environmentally safe disposal;

- Exported for the purpose of environmentally safe disposal or to a state that is permitted to use that chemical;
- Prepare a legal framework for the requirements of the annual certification listed in Article 3, paragraph b iii to the Convention,
- Introduce new regulatory schemes for assessing new and currently in use chemicals according to the criteria in paragraph 1 of Annex D of the Convention;
- Prepare an action plan on the remediation of contaminated sites, which should include the following:
  - In the light of the magnitude of the problem experts should evaluate, which procedure might be initiated to eliminate the POPs contamination, taking into account the existing economic aspects;
  - Prepare a detailed project proposal for necessary action to be executed with the required outputs and budgets;
  - Prepare an action plan and models for implementation plus undertake trial experiments with existing methods, which are economically feasible;
  - Based on the levels of PCBs in water and soil initiate and/or take remedial measures for treatment by environmentally friendly procedures;
  - Isolation and management of contaminated locations would appear to be an appropriate remediation method in anticipation of the need for substantial financial resources.
- Establish a waste cadastre
- Elaborate phase out programme for PCB-equipment elimination, in an environmentally sound manner
- Establish appropriate environmental protection information system including all relevant data on POPs
- Improve education of custom duties officers about recognizing products containing POPs
- Promote the use of alternative products and processes contributing to decrease of POPs emission into the air
- Promote development and implementation of cleaner technologies
- Prevent illegal traffic and trade of hazardous substances.
- Promote and or require the development or use of substitute or modified chemicals and processes to prevent the releases of chemicals listed in Annex D to the Convention;
- Promote the use of best available techniques (BAT) and best environmental practices;
- Develop action plan for the environmentally sound disposal of obsolete stocks of POPs (DDT, PCBs)
- Develop a complete waste management plan with strategies to identify contaminated sites and remediation action plan;
- Prepare an action plan to promote education, dissemination of information to public and raising awareness on POPs
- Set up reporting procedures to provide the Secretariat with the requested statistical data detailed in Article 15 of the Convention.

#### Stakeholder identification and participation

Primary stakeholders are the Ministry of Environmental Protection and Physical Planning, Ministry of Agriculture and Forestry, Ministry of Health, Ministry of Science and Technology, Ministry of Economy and Ministry of Finance. Non-governmental organizations, and other various sectors of the industry that use, produce, distribute and dispose Persistence Organic Pollutants will also be involved in making decisions and executing the project. The project will furthermore strengthen the capacity of small enterprises and grass roots organizations by involving them through small sub-projects.

The project foresees the organization of five workshops, although if necessary the NPC, the Steering Committee, or the CTA can call additional meetings. The first inception workshop serves to involve all stakeholders and familiarize them with the requirements of the Stockholm Convention, NIP development, the situation of POPs in Croatia, and their assigned responsibilities. While the workshop is a first step to mobilizing strong and sustained high level support among all concerned stakeholders, including widest participation of ministries, private sector and civil society representatives, it will result in strong government commitment for ratification of the Convention.

A technical training on how to identify and undertake inventories of obsolete stocks and contaminated sites precedes the second workshop. This training discusses the technical details of assessing and calculating POPs emissions, proper handling of hazardous chemicals, and will focus on DDT, and PCBs, since they were widely used. Inventory procedures, and preferred methods to apply in order to reach internationally comparable data will be agreed on. This technical training will be followed by an on-the-job training, to build credible and confident technical expertise in the country. The second workshop will then be organized during the phase where preliminary inventories are undertaken. It will analyze achievements and evolving problems and will involve a large audience.

The third prioritisation workshop will be held to review the national priorities and objectives. The workshop will also consider the capacity and needs of government resources to manage POPs, and will seek to identify examples of alternatives to POP chemicals, that have been successfully applied in the region. Best practices and techniques to minimize releases of such substances into the environment, and barriers to their adoption will be reviewed. Following this workshop, which is for all stakeholders, training will be provided to give guidance on the preparation of technical reports addressing the identified priorities, including phasing out and risk reduction options. Cost and benefit assessments of the management options will also be reviewed.

During the preparation of the NIP a fourth workshop will be held, where all stakeholders will be present. Technical reports on management options, their cost benefit analysis and possibilities of technology transfers will be presented and evaluated. The final workshop also involves all stakeholders and serves to present the final NIP, which has been developed with the participation of a large representation of the Croatian society.

#### Information dissemination

As Article 10 of the Convention suggests the Republic of Croatia will establish a national information centre. The centre will implement new strategies, which will be developed as part of the NIP, and include the following:

- Education programmes for teachers, medical doctors, since they are the key sources of health related information to public.
- Detailed database and information library on POPs and POPs inventories of the country that is accessible for the public.
- Training programmes for employees at industries working with POPs.

The above-mentioned workshops will serve as an important information tool. At the end of the meetings press conferences will be held, which are excellent opportunities for raising awareness at the country level. Equally all trainings, which will be provided in the course of the project, are crucial instruments to make information available in the country. The continued dissemination of information to key stakeholders in government and the private sector is essential to secure a high level of commitment of all concerned parties. This sustained level of commitment will then translate into an early ratification of the Convention.

#### Social and participation issues

As briefly described in the above, the NIP will be developed with the strong participatory approach including research institutes, universities, NGOs, civil society and private enterprises in order to cover the full social dimension of POPs related issues.

PROJECT IMPLEMENTATION PLAN																										
Activities / project month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
<b>1</b>	<b>Determining Co-ordinating Mechanism and Organizing Process</b>																									
1.1	Strengthening of national institution to serve as Focal Point																									
1.2	Identification and sensitisation of main stakeholders																									
1.3	Strengthening of multi-stakeholder national co-ordinating committee																									
1.4	Obtaining commitment of national stakeholders																									
1.5	Drawing-up overall workplan																									
1.6	Organisation of inception workshop																									
<b>2</b>	<b>Establishing a POPs Inventory and Assessing National Infrastructure and Capacity</b>																									
2.1	Preparation of National Chemical Profile																									
2.2	Constitution of task teams responsible for inventories;																									
2.3	Training on inventory procedures;																									
2.4	Preliminary inventory of production, distribution, use, import and export;																									
2.5	Preliminary inventory of stocks and contaminated sites ...;																									
2.6	Preliminary inventory of releases to the environment;																									
2.7	External independent review of initial national POPs inventories;																									
2.8	Assessment of infrastructure capacity;																									
2.9	Assessment of enforcement capacity;																									
2.10	Assessment of social and economic implications;																									
2.11	Assessment of monitoring and R&D capacity;																									
2.12	Identification of POPs related human health and environmental issues of concern;																									
2.13	Workshop on preliminary inventories																									
<b>3</b>	<b>Priority Setting and Determining Objectives</b>																									
3.1	Development of criteria for prioritisation;																									
3.2	Determination of national objectives;																									
3.3	Organization of national priority validation workshop.																									
<b>4</b>	<b>Formulating a National Implementation Plan, and specific Action Plans on POPs</b>																									
4.1	Assign mandates to task teams to develop proposals for addressing priorities;																									
4.2	Identification of management options;																									
4.3	Need for introduction of technologies;																									
4.4	Assessment of the costs and benefits of management options;																									
4.5	Defining expected results and targets;																									
4.6	Development of a detailed implementation plan;																									
4.7	Expert review of Implementation Plan;																									
4.8	Preparation of initial funding request package for implementation;																									
4.9	Development of a national strategy for information exchange;																									
<b>5</b>	<b>Endorsement of NIP by Stakeholders</b>																									
5.1	Prepare an information document to be submitted to stakeholders for comments;																									
5.2	Lobbying high Government officials;																									
5.3	Organise workshops																									

**ANNEX 1**

**DETAILED INFORMATION ON THE EXECUTING AGENCY**

**Ministry of Environmental Protection and Physical Planning  
(MoEPPP)**

The Ministry of Environmental Protection and Physical Planning was constituted by virtue of the Law on Amendments to the Law on Structure and Competence of Ministries and State Government Organisations (Official Gazette No. 15/2000), which came into force on February 5, 2000.

The newly established Ministry of Environmental Protection and Physical Planning took over the tasks and responsibilities of the former Ministry of Physical Planning, Construction and Housing in the section related to physical planning, site-permits, building permits and operation permits, urban planning and building inspection, and the corresponding legal and administrative matters, as well as the tasks and responsibilities of the former State Directorate for the Protection of Nature and Environment.

Ministry of Environmental Protection and Physical Planning is responsible for the coordination of environmental protection activities, development and implementation of the national environmental policy, and provision of the regulatory framework for environmental protection. It is the GEF Operational Focal Point in Croatia and also responsible for the implementation of the Stockholm Convention on Persistent Organic pollutants in the Republic of Croatia.

## ANNEX 2

### DETAILED INFORMATION ON THE PRESENT STATE OF POPS

#### GENERAL INFORMATION ON POPS

##### *Pesticides*

	<b>Description</b>
<b>DDT</b>	Insecticide used on agricultural crops, especially cotton, and insects that carry diseases like malaria and typhus. DDT is still widely used in developing countries mainly for mosquito control and also for the production of Dicofol.
<b>Aldrin and dieldrin</b>	Insecticides used for crops like corn and cotton. Also used for termite control.
<b>Chlordane</b>	Broad spectrum contact insecticide used on agricultural crops including vegetables, small grains, maize, other oilseeds, potatoes, sugarcane, sugar beets, fruits, nuts, citrus, cotton, and jute. Used on home lawns and gardens. Also used in control of termites.
<b>Endrin</b>	Insecticide used mainly on field crops such as cotton and grains. Used as a rodenticide to control mice and voles. Also used to combat birds.
<b>Heptachlor</b>	Stomach and contact insecticide, used primarily against soil insects and termites. Also used against cotton insects, grasshoppers, some crop pests, and to combat malaria.
<b>Hexachlorobenzene (HCB)</b>	Fungicide used for seed treatment of wheat, onions, and sorghum. Also found as impurity in several pesticide formulations. Also is found as an industrial by-product
<b>Mirex</b>	Stomach insecticide used to combat fire ants and leaf cutters, harvester termites, mealy bug, and yellow jacket wasps. Also used by a fire retardant in plastics, rubber, and electrical goods.
<b>Toxaphene</b>	A mixture of more than 670 chemicals and an insecticide, primarily used to control insect pests on cotton and other crops. Used to control insect pests on livestock and to kill unwanted fish in lakes.

##### *Polychlorinated biphenyls (PCBs)*

Major emission sources of PCBs are: certain high temperature industrial processes such as pyrogenous emission from burning, firing, combustion of fossil fuels, waste incineration, and road transport. PCBs are used in synchronous condensers and capacitors as a good dielectric fluid, in transformers as unburnable heat exchanger, for lubrication and hydraulic oils, in impregnators, as an insulator liquid and as refrigeration liquid.

##### *By-products: PCDD/PCDFs (polychlorinated dibenzo-P-dioxins and dibenzofurans) and Hexachlorobenzene (HCB)*

PCDDs/Fs have never been produced intentionally. They are formed as by-products of numerous industrial activities and combustion processes. Almost all of the 210 individual congeners have been identified in emissions from thermal and industrial processes and consequently PCDDs/Fs are found as mixtures of individual congeners in environmental matrices such as soil, sediment, air and plant and lower animals. PCDDs/Fs, particularly the higher chlorinated are poorly soluble in water, have low volatility and adsorb strongly to particles and surfaces. Thus, PCDDs/Fs can hardly be identified in water and are immobile in soils, especially the 2,3,7,8-chlorine substituted PCDDs/Fs, which are extremely stable in the environment and bioaccumulate in fatty tissues of animals and human.

Major possible sources of dioxins and furans are waste incineration, thermal metallurgical processes, power plant combustion of fossil fuels, residential combustion and firing of wood and coal at households, specific chemical processes releasing intermediates, PCB based transformers and electric arc furnace.

Primary sources of environmental contamination with PCDDs/Fs in the past were due to production and use of chloro-organic chemicals including the pulp and paper industry. PCDFs were/are formed as inadvertent by-products in the production and use of polychlorinated biphenyls (PCBs) and, in combination with PCDDs, in the production of chlorophenols and have been detected as contaminants in these products. PCDFs can also be found in residual waste from the production of vinyl chloride and the chloralkali process for chlorine production. Factors favourable for the formation of PCDDs/Fs are high temperatures, alkaline media, presence of UV/light, and presence of radicals in the reaction mixture/chemical process.

Major sources of Hexachlorobenzene (HCB) are almost the same as dioxins and furans: waste incineration, thermal metallurgical industries, use of chlorinated fuels in furnace installations, combustion of fossil fuels, firing of chlorinated compounds, use of solvents and wood preservers and electric arc furnace.

#### COUNTRY SPECIFIC INFORMATION

##### **Production distribution, use, export, import procedures of POPs**

There is no regulation in Croatia prohibiting the use of PCBs nor is there any deadline to handle all existing PCB quantities in an environmentally sound manner. However, handling PCBs, PCB-containing devices and hazardous waste is governed by a number of regulations. Also, PCBs are not produced in the Republic of Croatia.

Due to a largely distributed and at the same time uncontrolled industrial application of PCBs in the past (before 1991), no systematised data exist on their usage numbers or the quantities of transformers imported into Croatia. Many industrial and electricity production plants have significant quantities of PCB-containing transformers of medium and high nominal power installed. It could be said that the data on existing capacitors and energy transformers containing PCB are only just being collected and systematised.

Between 1993 to 1999, a) database for Croatia as per counties was created; b) a plan relating to the substitution of equipment and devices containing PCBs was made and c) the organized management / destruction of PCBs was started.

Data on equipment containing PCBs were collected by the poll. At first, the poll covered the biggest industrial and production facilities, as well as power supply utilities. Afterwards the database was extended and updated to the whole country. The following data were required by the poll: power, weight, year and place of installed device containing PCBs, status of device (in operation/spare/out of order), and level of danger (whether the device is damaged, and to what extent).

Furthermore, some large military vehicles contained PCBs in their hydraulic systems; many such vehicles were destroyed causing leakage in many cases to water resources.

Handling of PCB-containing devices is a costly procedure. The Republic of Croatia, primarily due to severe war damage, and a long lasting economic crisis, is not in the position to replace its PCB-containing devices in a short time, and install adequate environmentally harmless devices instead. Croatia is therefore forced to keep using major part of such devices, until the expiry date or until the first failure occurs.

The current legislation related to POPs in Croatia is summarized in the following table:

Table 1: Current POP legislation in Croatia

Name	Current regulation
DDT	Consumption is banned
Aldrin	Consumption is banned
Dieldrin	Consumption is banned
Chlordane	Consumption is banned
Endrin	Consumption is banned
Heptachlor	Consumption is banned
Hexachlorobenzene	Consumption is banned
Mirex	Consumption is banned
Toxaphene	Consumption is banned
PCBs	Still in use, not recognised in the current legislation
PCBs emission	Limit values exist and are regularly monitored
Dioxins, furans	Limit values exist and are regularly monitored
HCB emission	Limit values exist and are regularly monitored

#### Detailed information on the stocks, contaminated sites and disposal opportunities

##### Stocks

In 1993 the Croatian Electricity Company in conjunction with the Hazardous Waste Management Agency (APO) started the Project of Replacement of PCBs in Cooling Oils, in Capacitors and Transformers by Environmentally Harmless Alternatives. Until 1999, in the framework of this Project, approximately 30 % of such devices were systematically replaced. They are disposed in an environmentally sound manner (incineration at the hazardous waste incinerator). The PCB-containing devices are properly marked to warn the personnel of the presence of PCBs, and they are located in closed, locked areas.

Table 2 contains data on age, number and total weight of PCBs-containing transformers and capacitors installed in industrial and electrical plants in Croatia<sup>1</sup>

Table 2: Data on PCBs-containing equipments

Year of installation	Industry and other sectors		Electricity plants		Total	
	pieces	mass, tone	pieces	mass, tone	pieces	mass, tone
Capacitors						
until 1970	6,630	150	1250	34	7880	184
1971-1975	6,100	157	790	25	6890	182
1976-1980	4,170	130	1900	47	6070	177
1981-1991	1,800	70	740	14	2540	84
<b>TOTAL</b>	<b>18,700</b>	<b>507</b>	<b>4,680</b>	<b>120</b>	<b>23,380</b>	<b>627</b>
Transformers						
1970-1991	300	720	15	54	315	774
<b>SUBTOTAL</b>	<b>19,000</b>	<b>1,227</b>	<b>4,692</b>	<b>174</b>	<b>23,695</b>	<b>1,401</b>

<sup>1</sup> APO, d.o.o Zagreb: Project PCBs – management of equipment and devices containing PCBs in Croatia, Zagreb, December 1999

## Contaminated sites

Due to the recent wars Croatia has very specific environmental problems. Destruction of industrial facilities and spilling of chemicals have the worst effect on the environment. But the bizarre situations like the use of transformer oil, as a diesel fuel and antilace shampoo containing lindane against pests in the gardens could not be bypassed. One potential result of the pollution of food, water is the dramatic increase of large intestine carcinoma, which has been observed in the region last two years.

The first environmental accident was recorded in 1985, when testing of the Kupa River determined increased concentrations of PCBs, which called for the construction of expensive water purification filters, to make Kupa water sanitary acceptable for drinking. Recent uncontrolled and inadequate disposal of PCB-containing capacitors like energy output capacitors, and capacitors in washing machines represent a permanent contamination of the environment and public health hazard.

During the war PCBs were released from shelling and burning electric transformers and capacitors and from spilling of cooling oil, as well as from abandoned and severely damaged army vehicles. For illustration purposes, in the Dubrovnik municipality area alone over 58 energy output transformers were destroyed, and the Sibenik aluminium and ferroalloys factory also suffered destruction of large quantities of industrial transformers and energy capacitors; coupled with the damage in other areas of the country: Sisak, Karlovac, Gospic Osijek, Vukovar, Vinkovci Pakrac, Lipik, etc. The procedure of cleaning the areas contaminated with PCBs, would be lengthy and costly, and would require, professional approach and international experts, as well as the development of pilot-projects for testing and analysing risk locations, enactment of rehabilitation programme and necessary funding.

Some areas are undoubtedly so badly contaminated, or difficult to gain access to that, providing there is no likelihood of contamination of receiving waters, the only effective treatment will be to fence off such areas either to allow natural processes to take effect, which may incur waiting for decades, or until more effective techniques become available. The latter is unlikely, bearing in mind that the use of PCBs ceased in western countries in the late 1970s. However, in view of their continued use in central and eastern Europe, south-east Asia, and other less developed countries where similar contamination is occurring (but without the effects of warfare and burning), then research into new remediation techniques is conceivable.

The Adriatic Sea, part of Mediterranean Sea, as semienclosed body of water, is of special interest for an evaluation of environmental pollution.

During 1976-1981, an intensive ecological investigation of the Rijeka Bay aquatic ecosystem was performed (Picer et al., 1981<sup>1</sup>). A significant portion of the investigation concentrated on determining the extent of pollution from persistent chlorinated hydrocarbons, particularly on the distribution of DDT and its DDE and TDE analogous, as well as dieldrin and PCBs in various parts of the Rijeka Bay ecosystem. The conclusion was that the investigated pollutants had been introduced into the Rijeka Bay from the atmosphere and through various local sources of pollution, urban and industrial wastewaters, maritime activities, insecticides used on trees in tourism areas, etc.

Ten years after the intensive investigation in the Rijeka Bay ecosystem, the same team investigated the levels of these pollutants there again (Picer and Picer, 1992<sup>2</sup>). The levels of POPs in rainwater, wastewater, surface microlayer and water column were determined. Samples were collected between 1976 and 1987 at several stations located in the Bay.

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<sup>2</sup>Picer M., Picer A., Nazansky B. (1981): Persistent chlorinated hydrocarbons in the Rijeka Bay. Thal. Jugosl. 17, 225-236.

<sup>3</sup>Picer N., Picer M. (1992): Inflow, levels and the fate of some persistent chlorinated hydrocarbons in the Rijeka Bay area of the Adriatic Sea. Wat. Res. 26, 899-909.

**Table 3: Concentrations of PCBs, DDT and Dieldrin in samples from Rijeka Bay area, Adriatic See, Croatia, 1976-1987 (mean, SD, range) [ng.l<sup>-1</sup> (water samples); ng.g<sup>-1</sup> (sediment samples)]**

Type of samples	Sum of PCBs	Sum of DDTs	Dieldrin
Rainwater	1.3 - 12.2	0.69 - 2.43	< 0.02 - 0.12
Wastewater	< 0.3 - 9 115.5	< 0.2 - 657.2	< 0.1 - 179.3
Coastal seawater (1m)	0.2 - 17.0	0.07 - 104.9	< 0.01 - 3.4
Coastal seawater (surface microlayer)	28.0 - 597	3.0 - 25.3	< 0.1 - 1.8
Open seawater (1m)	0.2 - 1.7	0.05 - 0.57	
Open seawater (surface microlayer)	1.0 - 52	0.75 - 4.2	

The concentrations of DDT in rainwater collected in the city of Rijeka were comparable with published data from Brest and Menton, France, but PCBs levels were twice as low in comparison with Brest and four times higher in comparison with Menton. Relatively good negative linear correlation existed among DDT concentrations with precipitation intensity.

Levels of chlorinated hydrocarbons in wastewater samples from Rijeka were among the lowest values in comparison with other data from around the world. A tendency of decreasing DDT concentrations in wastewater samples from 1979-1981 to 1986 was evident but not for PCBs. A trend of decreasing chlorinated hydrocarbons concentrations in seawater samples was also observed. About 50 % of the DDT and 80% of the PCBs were concentrated in the suspended matter of the water samples. PCBs were more concentrated in the surface microlayer than were DDT and dieldrin. Although PCBs and DDT were sorbed preferentially to suspended matter and concentrated in surface microlayers, it seems that PCB distribution in the coastal zone of the Rijeka Bay was slightly more influenced by sedimentation and evaporation from surface films than were DDTs.

DDT and PCBs levels in a study of long-term trends in sediments collected from 1976 to 1992 at over sixty stations located in the eastern Croatian coastal and open waters of the middle and northern Adriatic Sea were determined.

It was evident that the levels of DDT and PCBs were higher in samples obtained from the west stations (especially for PCBs) in comparison with levels obtained from the east stations of the open waters of the northern and middle Adriatic. Higher PCBs levels were observed in sediment samples from Rovinj area and significantly higher levels were in samples from the Pula and Dubrovnik (important harbours).

The levels of PCBs from the Mediterranean sediment samples were significantly higher in areas of south coast of France, west coast of Italy and east coast of Greece than samples from the Adriatic Sea. In the case of DDT higher levels were observed in west coast of Greece and southeast Mediterranean than in Adriatic Sea.

#### Assessment of disposal opportunities

Today PCB containing equipments are exported to France and Belgium for safe disposal. According to the existing records, in the period 1994-1999 the following quantities of transformers and capacitors were exported: 23 tonnes in 1994, 60 tonnes in 1995, 60 tonnes in 1996, 16 tonnes in 1997, 42 tonnes in 1998 and 16 tonnes in 1999. According to preliminary estimation only 10-15, percent of the total installed equipment in Croatia has been handled so far.

#### Hazardous Waste management

The Regulation on the conditions for handling hazardous waste determines the technical specifications of installations for the storage, treatment and disposal of hazardous waste. For thermal waste treatment utilities, the temperature of burning gases in the most unfavourable conditions must reach at least 850 °C. If the waste contains more than 1 % halogenated organic compounds, the combustion temperature must be at least 1100 °C.

As it was mentioned earlier, in Croatia there is only one specialized public installation exclusively treating hazardous waste PUTO (Croatia acronym for "mobile installation for thermal waste treatment"): it is a mobile waste incinerator installed in Zagreb in 1997. The modular installation makes it possible to reuse the material and energetic content of input waste, at the same time respecting German, EU and Croatian environmental regulations. Flue gas retention is 99.9 percent, and no liquid waste is produced.

Incinerator's capacity of this incinerator is 1 200-1 500 kg per hour or up to 10 000 t per year. This capacity is physically far too small to handle all hazardous waste in Croatia, but it could easily handle all obsolete pharmaceutical waste.

According to the Croatian regulation all thermal power installation with a capacity above 3MW (there are more than 20 in Croatia) can potentially be used to incinerate waste oils. This occurs in the INA refinery plants of Sisak and Rijeka. Because of their high operating temperatures, cement kilns (there are 6 cement plants in Croatia) could also be used to incinerate waste oils, various sludge, obsolete pharmaceuticals, etc.

A few companies possess waste incinerators of limited capacity for their own use, e.g. Regeneracija Zabok, Herbos Sisak, Chromos Zagreb, INA-refineries in Rijeka and in Sisak. The Dubrava Hospital in Zagreb also has a pyrolytic incinerator, which complies with EU standards. Incineration services are only exceptionally provided to other customers.

Hazardous waste such as PCBs has not yet been handled in an environmentally sound manner in the Republic of Croatia. In accordance with the Law on Waste, handling hazardous waste is entrusted to companies that are authorised by the Ministry of Environmental Protection and Physical Planning. There is no regulation in Croatia prohibiting the use of PCBs nor there is a deadline to handle existing PCB quantities in an environmentally sound manner.

#### Alternative technologies

Presently no alternative non-combustion technologies for POPs management can be found in the country.

#### **Detailed information on the releases to the environment**

Emission data collection is prescribed by Rule Book on Environmental Emission Cadastre (1996) - KEO, covering solid waste generation, air pollutant emissions and wastewater discharges related to air pollutant emission. KEO differentiates single sources and collective sources. Single sources are thermal power plants, district-heating plants, heating plants, boiler plants, industrial combustion plants, waste incinerators, industrial furnaces and all kinds of industrial facilities. Collective sources are households, commercial and institutions and road traffic. Approved forms are used for collecting data on single sources. Information on technology, fuel consumption, abatement technique and emissions are also captured. Polluters are obliged to send their forms in County Offices for Environmental Protection, every year till the end of March for previous year.

The discharge of air pollutant emissions and the compliance with emission limit values set out in the By-Law on Limit Values of Pollutants Emission from Stationary Sources into the Air (1997) must be determined by measurements.

The By-law prescribes general emission limit values (ELVs) for total particulate matter, inorganic and organic compounds and carcinogenic substances. Each substance is put in a risk category (I-V) depending on its toxicity, persistence and accumulation potential and the technological possibilities for emission reduction. For some selected technological processes, e.g. production of nonferrous mineral raw materials, chemical industry, food-processing industry, heating installations, gas turbines, internal combustion engines, waste incineration plants, ELVs are prescribed for certain process-specific pollutants. Since 1 January 1998, all new or reconstructed stationary sources

have to comply with the By-law. Existing sources have to comply with the prescribed ELVs by the year 2004. In the transition period, existing stationary sources may, exceed the prescribed limit values by a factor of three.

Owners and users of air pollution sources are obliged to: report their air pollution sources and any reconstructions in these sources to the county authority, reduce the air emissions to be in compliance with the relevant legislation, regularly monitor air emissions, keep records and finally submit the emission data to the Environmental Emission Cadastre on a regular base.

Selected emission limit values:

**Waste incinerating plants**

ELV for dioxins and furans	0.1 ng/m <sup>3</sup> (TEQ)
ELV for vaporous or gaseous organic substances indicated as total carbon	10 mg/m <sup>3</sup> (TEQ)
Dioxins and furans should be measured two times per year and total carbon continuously	
Stationary, sources (unit: mg/m <sup>3</sup> )	CH 20 (for mass flow of 100 g/h and more) Benzene 5

Recommended (RVs) and limit values (LVs) of air quality are regulated in a By-law. RVs and LVs are based on EU guide values, WHO guidelines and Swiss ambient air quality standards, while LVs are based on EU limit values, German ambient quality standards and WHO guidelines. RVs and LVs limit some carcinogenic substances from fuel combustion are based on recommended United Kingdom air quality standards.

The highest sources of PCDD/Fs emissions in Croatia are: combustion of fuel wood in the households and thermal waste treatment installations (municipal, industrial and hospital wastes). Other significant sources are steel production processes in electric arc furnaces, road transport and fuel combustion processes in energy output facilities.

The construction of a mobile plant for thermal destruction of waste, located at Jakuševac, a village south of Zagreb, initiated an investigation of levels of PCDDs/Fs, in the ambient air of Zagreb (Krauthacker et al., 1998<sup>3</sup>). The new mobile incineration plant 'PUTO' for industrial waste equipped with modern emission control devices was constructed in 1997 at the landfill site of Zagreb. A total of twenty ambient air samples were collected at five locations. These sites were different in the expected levels and possible PCDDs/Fs sources.

In general the results of the spring measurements were lower than in winter. There are no limitations for the PCDDs/Fs level in the ambient air. In spring all results are significantly below the limit value of 150 fg I-TEQ.m<sup>-3</sup> (used as recommended level in Germany) whereas it was occasionally exceeded in winter. Obviously the sampling point Imi, which is located at the north edge of Zagreb, indicates the background level of the region with about 10 fg I-TEQ.m<sup>-3</sup> in the spring and up to 70 fg I-TEQ.m<sup>-3</sup> in winter. The calculated I-TEQ values were between 9 and 47 fg.m<sup>-3</sup> for samples collected in May/June 1997 and between 17 and 308 fg.m<sup>-3</sup> for samples collected from January to April 1998. The samples collected in 1997 showed the highest levels at the location of 'PUTO' plant and in the Jakuševac village. The highest levels in the samples from 1998 were found at the location of Žitnjak, while the lowest I-TEQ values were determined at the Imi location. The sampling points PUTO and Jakuševac seem to be influenced by the

<sup>4</sup>Krauthacker B., Wilken M., Milanovic Z., Herceg S. (1998): Ambient air measurements for determination of PCDD and PCDF in Zagreb. *Gospodarstvo i okolis* 35/98.

same sources (waste disposal, industry), because the results at each location in both sampling periods showed comparable results as well as similar profile of the isomer distribution. The elevated concentrations in winter months are probably due to the meteorological conditions with more inversion situations resulting in a worse transportation of the pollutants and due to the private heating systems. As the emissions of PCDDs/Fs reduced mainly due to the installation of modern filter systems at incineration plants and plants with other thermal processes such as metal reclamation or steel production, the reduction of private coal heating systems and the ban of halogenated scavengers in the (leaded) gasoline, the level of PCDD/PCDF has been decreasing over the recent years.

Table 4 and 5 show emissions per sectors in Croatia, for 1990 and 1998 <sup>5</sup>.

**Table 4: PCDD/Fs emissions per sectors in 1990**

Sector	Emission gTEQ/y
Combustion in energy production and energy transformation	0.12
Combustion in commercial, institutional and residential sectors and agriculture, forestry, fishing	149.33
Combustion in industry	0.17
Production processes	28.66
Road transport	0.36
Other mobile sources and machinery	0.0008
Waste treatment and disposal	-
<b>Total</b>	<b>178.64</b>

**Table 5: PCDD/Fs emissions per sectors in 1998**

Sector	Emission gTEQ/y
Combustion in energy production and energy transformation	0.13
Combustion in commercial, institutional and residential sectors and agriculture, forestry, fishing	88.18
Combustion in industry	14.76
Production processes	7.34
Road transport	0.18
Other mobile sources and machinery	< 1x10 <sup>-4</sup>
Waste treatment and disposal	0.17
	110.77

Compared to 1997, a 17 % increase in emissions of PCDD/Fs was observed, due to the increased production of steel in electric arc furnaces and larger quantities of thermally treated industrial waste; however, the emissions are considerably lower (38 %) than the 1990 ones.

### PCBs

Levels of polychlorinated biphenyls were determined in ambient air samples in Zagreb (Romanic and Krauthacker, 1999<sup>6</sup>). Sampling was done in October, November and December 1997 at two locations: Ksaverska cesta, which is at

<sup>5</sup> Ministry of Environmental Protection and Physical Planning Republic of Croatia, Ekoneg holding, d.d., Zagreb: Emission pollutants inventory for the Republic of Croatia for the period 1990-1998, Zagreb, February 2000

<sup>6</sup> Romanic H., Krauthacker B. (1999): Distribution of organochlorine pesticides and polychlorinated biphenyls (PCBs) in ambient air collected in Zagreb. Zaštita Zraka.

the north edge of the city and Jakuševac, a village at the south edge of Zagreb. The level of PCB congeners ranged between 4 - 94 pg.m<sup>-3</sup>. Within the PCB group, PCB-28 showed highest concentration levels (medians: 30 pg.m<sup>-3</sup> (Ksaverska c.) and 37 pg.m<sup>-3</sup> (Jakuševac)). All compounds were found at higher levels in samples collected at Jakuševac than in those collected in Ksaverska cesta. This may be explained by the influence of emissions from the municipal waste dump about 100 meters distant from the sampling point.

Emission inventories are never completely accurate, because non-surveyed or inadequately described sources are always present. Inventories are never finished, because society changes rapidly, generating new emission sources. Controlling the emissions and introducing environmentally sound technologies are of high priority.

### **Detailed information on the regulatory control**

Handling PCBs, PCB-containing devices and hazardous waste is governed by a number of regulations:

Basel Convention on the Control of Transboundary Movements of Hazardous Waste Law on Environmental Protection (1994)

Law on Waste (1995)

By-Law on Waste Categories (1996)

By-Law on the Conditions for Handling Hazardous Waste (1998)

By-Law on Safe Handling of Substances Containing Polychlorinated Biphenyles, Polychlorinated Naphtalene and Polychlorinated terphenyles (1991)

Law on Transport of Hazardous Waste (1993)

Law on Air Quality Protection (1995)

By-Law on Recommended and Limit Ambient Air Quality Values (1996)

Rule Book on Environmental Pollutants Inventory (1996).

The Law on waste is the basic legal instrument concerning the management of non-radioactive solid waste. It classifies waste according to its origin as municipal waste or industrial waste, and according to its characteristics as hazardous waste or inert waste. The basic goal of waste management is to avoid and minimize the generation of waste, particularly hazardous waste. If possible, they should be reused for material and energy recovery prior to disposal. All imports, exports and transits are under the control of the Ministry of Environmental Protection and Physical Planning. The import of hazardous waste is prohibited.

In compliance with the regulations of the Republic of Croatia, waste PCBs or wastes contaminated with PCBs are classified as hazardous wastes and their management falls within the State authority. By the special authorisation granted by the authorised ministries, in 1992 APO (Waste Management Agency) d.o.o. of Zagreb was nominated to be the institution for keeping records, supervising of waste management and elaborating the strategy relating to the substitution of all installed and spare devices filled up with PCBs.

### **Human Health assessments**

The Ministry of Health is in the process of developing a legislative framework necessary to safeguard human health and the environment.

<b>ANNEX 3</b> <b>DETAILED WORKPLAN</b>
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## **PROJECT ACTIVITIES**

### **1. Determination of Co-ordinating Mechanism and Organizing the Process**

#### *1.1 Strengthening of the national focal point*

The project will be executed by the Ministry of Environmental Protection and Physical Planning on behalf of the Government of the Republic of Croatia. Ministry will have the responsibility of the overall coordination of the activities. Expertise of the Agency justifies that the Agency is fully capable of executing the project.

The implementation of the different project activities will be shared between institutions and individual experts, which are most suitable and competent to undertake these tasks. The strategy of the project is to involve the best expert institutions in Croatia to implement the different activities of the project taking stock and fully utilizing the resources and results of relevant prior or ongoing national or international activities.

A National Project Coordinator will be selected following the selection procedure and appointed by the National Executing Agency (Focal Point). He/she will be responsible for coordinating the project and for a better communication between the implementing agency, GEF and all stakeholders. National Project Coordinator will be responsible for the management of the project on day-to-day basis, monitoring and guiding all technical aspects as well as financial control of the execution.

The National Executing Authority (Focal Point) will allocate a Team Secretary (local technical assistance) with technical background for the initial months of the project, who will also be responsible for all administrative issues.

#### *1.2 Determination of multi-stakeholder national co-ordinating committee*

The following ministries and civil societies are represented in the Steering Committee:

The GEF Operational Focal Point, the Focal Point to the Stockholm Convention, the NPC, Ministry of Environmental Protection and Physical Planning, Ministry of Health, Ministry of Foreign Affairs, Ministry of Economy, Ministry of Finance, Ministry of Agriculture and Forestry and Ministry of Science and Technology will delegate one person, from the National Academy of Science one person will be delegated, two from NGOs, one from the Chamber of Economy. Upon request the CTA will also participate in the sessions. The final composition of the committee will be settled during the initiation of the project.

#### *1.3 Identification of main stakeholders, assigning responsibilities amongst government departments and other stakeholders and obtaining commitment of national stakeholders*

MoEPPP has an overall view of the environmental protection sector. The agency is best suited to identify the main national and regional stakeholders due to its wide connections. Co-operation will be sought with NGOs and governmental institution. If necessary, MoEPPP will call for tenders for sub-projects that will be finalized during the preparation of the workplan. . Approximately 7-9 tenders are expected and 3-5 NGOs will be selected for cooperation.

The Focal Point will obtain commitments from all the selected stakeholders. Commitments will be composed of agreements and contracts. Since the focal point will oversee the overall execution of the project, the clear workplan with delegated responsibilities, with set timeframes and budget is mandatory for cost effective execution.

The Focal Point will, in addition to own needs, identify additional financial and human resource requirements necessary to achieve the given objectives for other relevant government entities/organizations

#### *1.4 Drawing-up overall workplan*

The National Executing Agency with the guidance of the National Project Coordinator, and Chief Technical Advisor will prepare the workplan. The Steering Committee, where NGOs are also represented, will review, if necessary, comment and finally approve the workplan. Strong emphasis will be made on the private sector and civil society to ensure its involvement in the execution. All the responsibilities, timelines and budget (based on the tenders) will be clearly spelled out in order to guarantee the fast, safe and accurate execution of the project. The parallel executable activities will be underlined for time effective implementation. The workplan (implementation manual or guide) will be regarded as an orientation document for planning and coordinating the project activities and will be subject to regular reviews and revisions as project implementation progresses.

#### *1.5 Inception workshop*

The last activity of the preparation phase is an inception workshop where all stakeholders will be present for an open discussion and for effective communication. The two-day workshop is an excellent opportunity for raising awareness at the country level. This workshop will be held in Zagreb. The agenda will include the discussion of the activities that are needed to achieve the outcomes as well as the indicative timeframes. Approximately 40 people will be invited, mainly the representatives of contracted NGOs and experts, decision makers as well as an international expert. The agenda will include the discussion of the activities of the work plan in the light of the indicative timeframes and budget. All contracted NGO will be stressed to allocate the necessary financial and human resource capacity. A lecture will be held on new environmental sound disposal technologies as well as the possible phase out of POP substances. A press conference will also be held to raise public awareness.

## **2. POPs Inventory Established and assessment of national infrastructure and capacity**

### *2.1 Preparation of National Chemical Profile*

The National Profile for Croatia has not yet been prepared. Although chemicals related issues are regulated, they are not collected and summarized in one document. This will be prepared during the project by a national expert. Relevant structures of the National Profile will be reviewed. Priority concerns related to import; export, use of POPs and legal instruments and non-regulatory mechanisms for managing chemicals will be emphasized.

### *2.2 Constitution of task teams responsible for inventories*

The following task teams will be constituted:

1. Research team for retrieving information from authorities, relevant ministries, key industrial enterprises and NGOs. The team will be responsible for undertaking inventories of production, export, import, use, and distribution of pesticides and PCBs (Annex A of the Convention).
2. Emission expert for preparing the initial inventories for the PCBs, PCDD/Fs and HCB releases into the environment by using international guidelines.
3. Contamination expert team for assessing contaminated sites, obsolete stocks and disposal opportunities. In order to ensure optimal coordination one of the research team members will always participate in this team.
4. Institutional expert for assessing current POPs related infrastructure, enforcement, R&D capacities as well as monitoring system.

## 5. Health expert for assessing the population's exposure to POPs.

In consultation with the National Executing Agency and the Steering Committee the National Project Coordinator is responsible for day-to-day management, coordination and supervision of the implementation of the project. In specific, his/her responsibilities are:

- to prepare a detailed work plan for the project and draft terms of reference for the subcontracts (in consultation with the Ministry of Environmental Protection and Physical Planning and UNIDO);
- to prepare the detailed communication strategy which will be reviewed by the Steering Committee at its first meeting.;
- to organize and supervise the workshops and training needed during the project;
- to identify and to supervise the work of the national and international (in cooperation with the CTA) experts and institutions to be hired to work for the project;
- to liaise with the relevant ministries, national and international research institutes, NGOs, and other relevant institutions in order to involve their staff in project activities, and to gather and disseminate information relevant to the project;
- to prepare periodic progress reports of the project;
- to control the expenditures and to ensure otherwise an adequate management of the resources provided for the project;
- to summarize the results of the project;
- to initiate and mobilize resources for the potential follow-up activities.

### 2.3 *Training on inventory procedures*

Two international experts will be invited for holding lectures and on the job trainings.

One of the trainings will focus on

- Procedures for collecting and disseminating POPs related information
- Surveying contaminated sites (mainly with DDT and PCBs)

While the other training will give guidance and technical expertise on

- POPs related human health and environmental issues of concern; basic risk assessment and size of exposed population
- NIP development

### 2.4 *Preliminary inventory of production, distribution, use, import and export*

Two experts from the Research team will be allocated starting in the 4<sup>th</sup> project month to gather relevant information regarding the import, use, distribution and export of POPs containing products. This research will collect information from, relevant ministries, institutions, key industrial enterprises and NGOs. The preliminary inventories will be finalized in two months.

### 2.5 *Preliminary inventory of stocks and contaminated sites; assessment of opportunities for disposal of obsolete stocks*

The Hazardous Waste Management Agency will be requested to submit questionnaires on obsolete stocks to approximately 2000 mid or large size companies. Hazardous waste management enterprises will also be contacted with requesting information on obsolete stocks.

In the 4<sup>th</sup> month one, from the 5<sup>th</sup> months another expert from the Research Team will join the Contamination expert team for the inventory of stocks, contaminated sites and disposal opportunities. The inventories will be finished and finalized by the 11<sup>th</sup> project months. Based on the preliminary data approximately 80 sampling will be done and will be tested for POPs.

#### *2.6 Preliminary inventory of releases to the environment*

The emission expert will collect data from the Research Expert Team and from the Central Statistical Bureau. Total annual emissions will be calculated based on developed factors. Since extensive research has been done in the Czech Republic to develop emission factors based on the technologies popular in the region a co-operation will be initiated to work out the most proper emission factors for Croatia. Five months are available for completing this activity.

#### *2.7 External independent review of initial national POPs inventories*

An external professional consultant will review the inventories on POPs. It can also be an NGO, which has expertise in this field. The inventories need to be sent to the expert reviewer as well as all the representatives in the Steering Committee for comments. It would also be preferable if the first review would be done after the preliminary data is analysed. Thereby the procedures can be refined and initial problems and mistakes can be corrected.

#### *2.8 Assessment of infrastructure capacity and institutions to manage POPs, including regulatory controls; needs and options for strengthening them*

One legislation expert will assess the infrastructure capacity including regulatory controls in one month.

#### *2.9 Assessment of enforcement capacity to ensure compliance*

The legislation expert will assess the enforcement capacity in the following month.

#### *2.10 Assessment of social and economic implications of POPs use and reduction; including the need for the enhancement of local commercial infrastructure for distributing benign alternative technologies/products*

The socio-economic implications will be assessed in a sub-programme. The National Executing Authority will call for tenders in the initiation phase and the winner would have one month to prepare the report. The Focal Point will serve as information centre on POPs and will be expected to disseminate information to the local commercial sector to ensure support for and participation in adoption and developing environment friendly alternative technologies and products.

#### *2.11 Assessment of monitoring and R&D capacity*

Unfortunately no comprehensive information exists on research and development regarding to POPs. Ministry of Science and Technology will be contacted to receive further information on this matter. A detailed plan will be developed on how the monitoring of POPs can be integrated into the present system. The Institutional expert will assess the monitoring and R&D activities in one month.

#### *2.12 Identification of POPs related human health and environmental issues of concern; basic risk assessments*

Focal Point will initiate a co-operation with Institute for Medical Research and Occupational Health (IMI). If no research has been done in this field, IMI will screen approximately 200 people to at least have preliminary information on the exposure of the Croatian population by POPs. Since Slovak research teams have started to work on this issue and measure POPs in human tissues, a co-operation will be initiated to exchange knowledge and expertise.

The health expert will review the present activities and work done in this field in the country and based on the preliminary information of the releases and contaminations will spot-check a statistically representative size of the population at the selected sites.

### *2.13 Workshop on preliminary inventories*

To facilitate the work, during the inventory procedures one meeting will be organized in Zagreb for 15 persons to review the work done so far and to give advice on the questions raised during the first three months of the inventories.

## **3. Priorities Setting and determination of objectives**

### *3.1 Development of criteria for prioritisation*

During the execution of the project a national expert will prepare a Prioritisation Report based on the information on the inventories and assessments. The expert's review of the inventories and assessments should propose a prioritisation among the necessary activities. Timelines, financial needs, resources (technical, human) and human health issues will be taken into consideration in setting the priorities. Risk reducing technologies and priority setting documents of other developed countries will also be reviewed. The Steering Committee will review and decide on the priorities in the Prioritisation workshop.

### *3.2 Determination of national objectives in relation to priority POPs or issues*

The national expert, who has prepared the Prioritisation Report, will prepare a proposal for the objectives based on the priorities. This report will be submitted to the workshop for discussion.

### *3.3 Organization of a national priority validation workshop*

A three-day workshop will be organized for 20 participants to validate the priorities and objectives set by the Steering Committee. The purpose of this meeting is to discuss the draft Prioritisation Report, which will be finalised after this meeting. This activity will establish a list of priority POPs related environmental issues and their root causes. The meeting will also consider the capacity and needs of the government to manage POPs, and will seek to identify examples of alternatives to POP chemicals that have been successfully applied in the region as well as best practices and techniques to minimise releases of such substances into the environment, and the barriers to their adoption. This workshop will be utilized to raise general public awareness. Involvement of NGOs and other stakeholders and private sector in the NIP development will be sought. Based on the objectives decided by the Steering Committee at this workshop, 4-5 task teams will be appointed for developing proposals to address the priorities.

## **4. Formulation of a National Implementation Plan and specific Action Plans on POPs**

### *4.1 Training and assign mandates to task teams to develop proposals for addressing priorities*

International experts will train each expert, appointed at the priority validation workshop. The training will underline the effective objective oriented development of Action Plans, strategies and NIPs.

#### 4.2 *Identification of management options, including phasing out and risk reduction options*

Four experts will be appointed for two months to prepare proposals for resolving the highlighted issues. These reports will be Technical Reports based on the findings of the assessments and inventory reports. Relevant international management options will be reviewed for selection of the most appropriate alternatives. It is important to identify those management options that can be implemented on the present management systems or those that need little adjustments in the present legislation. Strong cooperation is necessary between the experts and the relevant ministries and civil groups for reducing risks. Preferably more than one solution should be outlined in these reports for one priority allowing more choices for the cost and benefit assessment teams to decide upon.

One of experts will also prepare a Phasing Out Report with alternative methods for phasing out of POPs and materials that upon becoming wastes produce POPs, such as PVCs.

#### 4.3 *Need for introduction of technologies, including technology transfer, possibilities of developing indigenous alternatives*

New environmentally sound technologies are required for the disposal of PCBs, and DDT. Since the Stockholm Convention suggests the irreversible and green disposal of such wastes, green alternative technologies are of high priority.

#### 4.4 *Assessment of the costs and benefits of management options*

During the 18<sup>th</sup> and 19<sup>th</sup> project months 3 economists will assess the costs and benefits of the management options. The input for this activity will be the Technical Reports. Presumably this activity will be contracted –with time frame and budget- to a consulting agency.

#### 4.5 *Defining expected results and targets*

At the 19<sup>th</sup> project month a Steering Committee workshop will be held for refining the expected results and targets. It will be a short one-day discussion for all member of the Steering Committee and all task teams. Technical Proposals, the Technology Transfer Proposals with the cost and benefit reviews will be evaluated and commented on this meeting. Decision will be made in the mirror of the financial means which alternatives are realistically implementable.

#### 4.6 *Development of a detailed implementation plan, including an action plan for un-intentional by-products, PCBs and, where appropriate, for DDT and other POPs as prioritised*

Two experts will be appointed from the five experts, who have developed the Technical Reports and will be responsible for the preparation of the NIP and the relevant action plans. They will start the preparation from the 17<sup>th</sup> months.

Two experts will finalize the NIP and prepare these action plans that will cover all objectives set in the prioritisation phase such as safe disposal of the obsolete stocks, evaluation of the possible introduction of indigenous alternatives and possible technology transfer activities by the end of the 20<sup>th</sup> project month.

#### 4.7 *Expert review of Implementation Plan*

An international expert will have one month to review and comment the NIP.

#### *4.8 Preparation of initial funding request package for implementation, including cost estimates and incremental costs*

Since the detailed implementation plan will also contain a brief budget, with the preferred timeframe for allocation, the preparation of the funding request package will be finished in a month. The timeframes will have to be stricter than the deadlines set by the Convention, thereby ensuring conformity to all paragraph compliance with the Convention.

#### *4.9 Development of a national strategy for information exchange, education, communication and awareness raising*

An international expert will prepare -in two months- the national strategy for information exchange, education communication and awareness raising with the preparation of the following action plans:

- Awareness raising among policy and decision makers with regard to POPs
- Preparation and provision to the public with information on POPs such as
  - o Basic information
  - o Contact details of the relevant bodies dealing with POPs
  - o Human health and safety
  - o Inventories and emissions
  - o Contaminated sites
  - o Possible exposure to human population and the environment

### **5. NIP Endorsement by Stakeholders**

#### *5.1 Prepare an information document/report to be submitted to stakeholders for comments;*

Based on the National Implementation Plan a questionnaire will be prepared by a the international expert who has reviewed the NIP to make the evaluation easier and to channel possible concerns. The NIP, together with this questionnaire will be submitted to the stakeholders for comments at the end of the 22<sup>nd</sup> project month. All stakeholders will have 15 days for submitting their comments. The next 15 days will be enough to amend and update the NIP. The finalized document will have to be finished for the last workshop.

#### *5.2 Lobbying high Government officials;*

Because the Steering Committee has representatives from all the relevant Ministries, lobbying for commitment and support will start from the beginning of the project. Decision makers and high level governmental officials will be invited to all meetings, except the technical meeting during the inventory procedures. Thereby they will be aware of all aspects of the project activities. Communication and cooperation among ministries and enforcement bodies will also be enhanced.

#### *5.3 Organize workshops and circulate information to obtain commitment of stakeholders and decision-makers, including resources*

A workshop will be organized for all the stakeholders and relevant governmental bodies to review the corrected NIP. Approximately 50 people, including high level governmental officials and decision makers will be invited for this one-day meeting, where the NIP will be accepted. UNIDO will also be presented on this meeting to support the allocation of the necessary resources for the successful implementation. At the end of the meeting a press conference will be held to inform the public. Finally the NIP will be translated and submitted to the Secretary of the Convention.