Project SLO/01/G31:

„Initial Assistance to the Slovak Republic to Meet its Obligations under the Stockholm Convention on Persistent Organic Pollutants (POPs) “

Proposal of the National Implementation Plan under the Stockholm Convention on POPs in Slovakia

Technical Report No. 5

27 April 2004 (final version)

United Nations Development Programme
GLOBAL ENVIRONMENT FACILITY

Publisher

Ministry of the Environment, Slovak Republic, Nám. Ľ. Štúra 1, 811 02 Bratislava
Slovak Hydrometeorological Institute, Jeséniova 17, 833 15 Bratislava

English translation: Ing. Katarína Magulová

Further information:

www.shmu.sk/about/pop/index

Project funded by GEF/UNDP and MoE SR:

SLO/01/G31

„Initial assistance to the Slovak Republic to meet its obligation under the Stockholm Convention on Persistent Organic Pollutants (POPs)“

Technical Report No. 5

Proposal of the National Implementation Plan under the Stockholm Convention on POPs in Slovakia

Final version
27 April 2004

Project manager: Mgr. Róbert Chriašteľ

Technical advisors: Ing. Katarína Magulová
PaedDr. Martin Murín
RNDr. Juraj Gavora

Project assistant : Ing. Zuzana Táncošová

Table of Contents

Executive Summary

Author of the chapter: Ing. Katarína Magulová

Introduction

Problems associated with persistent organic pollutants (POPs) have to be solved on international level. This is due to their characteristic properties such as *low degradability, bio-accumulation, toxicity, semi-volatility and potential to long-range transport*. Two international conventions are presently adopted having the goal to protect human health and environment against the adverse effects of POPs: The POPs Protocol to the UN ECE Convention on Long-range Trans-boundary Air Pollution (1998) and the UN Stockholm Convention on POPs (2001). Slovakia is party to both international commitments.
The European Union is party to these conventions as well and in addition adopted also the Community Policy for POPs Management, which will upon joining the EU become mandatory also to Slovakia.
Slovakia received through UNDP a GEF grant to support implementation of the Stockholm Convention commitments and to elaborate its *National Implementation Plan (NIP).* In compliance with the GEF Guidelines NIP considers all POPs related international commitments relevant to the Slovak Republic (SR).

Goal

Based on the present situation analysis, considering the provisions of relevant international commitments identify POPs priority problems in the SR and elaborate the *National Implementation Plan* for their gradual solving within the requested period.

Method

The Ministry of the Environment of the SR (ME SR) in cooperation with the Slovak Hydro-meteorological Institute and other stakeholders were responsible for project execution. The multi-sector National Coordination Committee (NCC) was responsible to coordinate and oversee the project execution. Experts from relevant fields were involved in the project execution in order to utilize the best information and approaches available in the SR, considering at the same time documents and guidance recently published by relevant international organizations (UNEP, UN ECE and EU). All partial reports, including the NIP, were reviewed at three levels: by the project steering committee, by NCC and by expert public. After considering these comments all reports have been made available to broad public. Emphasis has been put also on overall raising of public awareness on POPs; a broad information campaign via television, radio, newspapers, information brochures and Internet has been an integral part of the project.

National Implementation Plan

The National Implementation Plan contains a brief national profile of Slovakia, description of the present legal and institutional POPs framework, as well as evaluation of particular POPs issues considering also the provisions of relevant international commitments. Based on the above, detailed strategies and action plans, including timetables and costing of their implementation, were elaborated. Following issues are subject to the NIP:

National Implementation Plan

The *National Implementation Plan* contains a concise national profile of Slovakia, description of current institutional and legal POPs framework, as well as an appraisal of the particular POPs issues concerning the requirements of international obligations. Based on this, detailed strategies/action plans for the particular problem areas are elaborated, including resource requirements and timeframe for their implementation. Following problem areas are subject to the NIP:

POPs pesticides

Baseline definition:
POPs pesticides (active substances) were never directly produced in Slovakia. Their use is currently prohibited. Obsolete stockpiles (inventory, storage and destruction) remain a problem. Central Agricultural Inspecting and Testing Institute (CAITI) performed an inventory of obsolete POPs pesticide stockpiles in the years 2000 and 2003 and documented more than 28 tons of stored POPs pesticide preparations.

Identification of problems:

- Cooperation of plant inspectors with the Slovak Environmental Inspection
- Safe storage
- Definition of environmentally sound destruction manner
- State support for the ultimate destruction of POPs pesticides
- Measures to reduce exposure of inhabitants

Action plan:

		Timeframe
1.	To assure inventorying of POPs pesticides; elaborate and implement a state support scheme for this problem area;	Ongoing
2.	To secure environmentally sound destruction of POPs pesticides in Slovakia, with respect to BAT/BEP	By 2007
3.	To set up and implement a public awareness raising information campaign; in particular adequate training of those, performing inventory of obsolete pesticide stockpiles and wastes in the agricultural sector	2004

Equipment and wastes containing PCBs

Baseline definition:
Altogether, 21000 tons of PCBs were produced in Slovakia during the period 1959-1984, and broadly utilized in former Czechoslovakia mainly for production of capacitors, paints and varnishes.
Based on extensive inventories, which were carried out in the years 2000 and 2002, current existence of about 3500 tons of PCBs (1000 tons of production wastes, 1000 tons in closed systems and 1500 tons of various PCBs containing wastes) may be assumed in the territory of Slovakia. Further 900 tons of PCBs containing wastes are probably stored at the Pláne landfill. Assumed is that the total amount of identified PCBs wastes will still increase, after the new waste management legislation will come in force. Major problem is considered the pollution of open wastewater channel in Strážske locality and resulting pollution of the

Laborec River and the Zemplínska Šírava water reservoir, as consequence of previous PCBs production. This contamination resulted in increased values of PCBs content in monitored components of environment as well as in the population of Michalovce district, comparing with the rest of Slovakia.

Identification of problems:

- Adoption of effective legislative measures
- Inventory of equipment containing PCBs
- Safe storage and handling
- Definition of environmentally sound destruction manner
- Timeframe for phase out and destruction of PCBs and PCBs containing equipment
- Decontamination of polluted areas
- Measures to reduce exposure of inhabitants

Action plan:

		Timeframe
1.	To assure continuous inventorying of PCBs containing equipment	Ongoing
2.	To secure environmentally sound destruction of PCBs in Slovakia, with respect to BAT/BEP	By 2010
3.	To assure and carry out decontamination of polluted areas	By 2015
4.	To assure elaboration and implementation of technical standards concerning analysis, transportation, storage, exchange, decontamination and destruction of PCBs	2004
5.	To set up and implement a public awareness raising information campaign; in particular adequate training of public as well as private sectors	2004

Unintentionally produced POPs

Baseline definition:

The releases of unintentionally produced POPs in Slovakia had in the period 1990-2001 decreasing trends. The PCDD/PCDF emissions decreased by 76 %, the PAHs by 65 %; HCB by 74 %; and PCBs by 85 %. Gradual implementing of environmental measures in the main polluting sectors (metallurgy, waste incineration, energy sector and transportation) triggered by the introduction and implementation of the new BAT/BEP based environment protection legislation, were the main reasons for this decrease.

Identification of problems:

- Consistent enforcement of the environmental legislation
- BAT &BEP definition
- Uncontrolled combustion
- Chlorinated and halogenated chemical production
- Waste incineration
- Handling of wastes containing or potentially releasing POPs

- Pulp and paper technologies utilizing chlorine and derivates of chlorine as bleaching agent
- Secondary nonferrous metals production

Action plan:

		Timeframe
1.	To enforce consistently the requirement of operating certain activities in compliance with BAT &BEP for new sources and gradual implementation of BAT &BEP in existing sources.	2006, Ongoing
2.	To set up a framework for monitoring and mitigation of total releases of chlorine or other halogens containing pollution	Ongoing
3.	To reach compliance in the pulp bleaching technology, based on molecular chlorine, with IPPC BAT requirements within the period of ten years	2010
4.	To eliminate uncontrolled thermal destruction of organic coatings from recycled raw materials for secondary metal production; to promote non-thermal mechanic de-coating methods	2007
5.	To modify current reporting methods and means concerning waste production, air emissions, wastewater production as well as consumption and use of hazardous substances, in order to optimize their monitoring	2005
6.	To develop and implement an education, training and course system, dedicated to employees working at various levels of the relevant sectors.	Starting with 2006
7.	To develop a project to assess the amount of unintentionally produced POPs, generated by waste wood incineration, and to apprise the seriousness of this problem in Slovakia	2006
8.	To promote non-oxidative processes and BAT for destruction of wastes containing POPs and for destruction of wastes containing chlorine	Ongoing
9.	To promote BAT &BEP related research	Ongoing
10.	To develop and implement a public campaign to promote reduction of emission releases from uncontrolled open combustion and combustion in households	

Contaminated sites and releases from stockpiles and wastes

Baseline definition:

Major problem is the pollution of open wastewater channel in Strážske locality and resulting pollution of the Laborec River and the Zemplínska Šírava water reservoir, as consequence of previous PCBs production (see PCBs).
Second important group of contaminated areas, polluted with PCBs, is the vicinity of asphalt mixing plants caused by improper handling with PCBs containing heat-exchange fluids. The rest of the identified localities may be classified as non-specific, caused mostly by accidents or improper handling with POPs.

Identification of problems:

- Ecological survey of contaminated areas as identified by the inventory
- Contaminated sites remediation strategy
- Execution of the remediation activities
- Creation of a steering and coordinating center

Action plan:

		Timeframe
1.	To assure environmental impact assessment in PCBs contaminated areas	2004-2005
2.	To develop a remediation strategy for the contaminated areas	2005
3.	To execute the remediation activities	2005-2010

Monitoring

Baseline setting:

POPs, in particular PCBs, DDT and HCB, are monitored in an uncoordinated manner in all components of environment, living organisms (including humans) and food chain. None of the monitoring programs covers the whole area of Slovakia. Highest POPs levels were detected in human population and house animals. Regarding the components of environment, highest POPs concentration levels were detected in soils and locally (Strážske region) in sediments. In general, decreasing tendency of POPs presence prevails in all monitored matrices.

Identification of problems:

- Focusing of the POPs monitoring on their potential sources
- Coordination and consistent methodical guidance of POPs measurements in the particular monitoring programs
- Coordination of reporting of the monitoring results
- Insufficient data on PCDD/PCDF presence in all monitored matrices
- Lacking data on POPs concentration in ambient air

Action plan:

		Timeframe
1.	To establish a working group on POPs monitoring	2004
2.	To elaborate a method for consistent POPs monitoring program in Slovakia	2005
3.	To assure operation and coordination of POPs monitoring according to the elaborated national monitoring program	2006
4.	To verify the analytical methods and ensure coordination of laboratories so as to utilize sufficiently accurate and selective analytical methods	2006
5.	To assure data flow between the institutions responsible for monitoring and the institution/institutions responsible for reporting	2006
6.	To make the monitoring results accessible to broad public in sufficiently comprehensible form	2006
7.	To promote basic and applied research	Ongoing

Reporting and information exchange

Baseline setting:

The reporting and information exchange obligations are for Slovakia directly implicit from the international commitments regarding POPs (the POPs Protocol, the Stockholm Convention, the Basle Convention) as well as from certain EU requirements (EC, EEA,

EUROSTAT). Basically, all actual requirements are met; however, neither coordination of the reporting nor its unified institutional background does exist.

Identification of problems:

- Establishment of a National Focal Point (NOB-POPs) in order to assure meeting of requirements, pursuant to articles 9 and 15 of the Stockholm Convention, in the framework of an already existing organization or institution, keeping records about some of the POPs
- Establishment of data-flow mechanisms to pass the partial information on POPs from the competent national institutions to the NOB-POPs
- Acquisition of complete and relevant data on production, import, export and use of POPs from the competent national institutions and in formats suitable for reporting to the Stockholm Convention Secretariat
- Legislation specifying POPs and consequent possibility of their following, pursuant to the respective legal documents

Action plan:

		Timeframe
1.	To designate a National Focal Point (NOB-POPs) responsible for information exchange and reporting, pursuant to articles 9 and 15 of the Stockholm Convention	February 05
2.	To introduce an effective system of reporting by responsible institutions towards the NOB-POPs	June 05
3.	To assure institutional background for effective recording of exports and imports of POPs or POPs containing materials between MI SR and the Customs Directorate, and reporting the actual data on POPs exports/import to NOB-POPs	August 05
4.	To assure information flow regarding gradual phasing out of the PCBs contaminated equipments, between the involved institutions and the NOB-POPs	September 05
5.	To introduce an effective surveillance system of handling with outdated obsolete POPs containing plant protection preparations	September 05
6.	To introduce an effective surveillance system of generation and handling with hazardous POPs containing wastes as well as of their importing and exporting	September 05
7.	To introduce an effective surveillance system of chemicals production, aiming at preventing production of POPs or materials with properties similar to POPs, in the Slovak Republic	September 05
8.	To introduce effective measures for inspection of use of those chemical preparations, in which the HCB content is banned (besides plant protection preparations)	September 05

Raising public awareness of POPs

Baseline setting:

There is neither an integrated public information system on POP nor a public participation scheme on decision-making process regarding POPs currently in place in Slovakia.

There is no systematic education of experts; the public gets information about issues concerning POPs or other hazardous chemicals only at random (e.g. by publishing reports from relevant research or individual studies carried out in the framework of various programs). It is assumed that the UN ECE Aarhus Convention and the EP and EC Directive 2003/4/ES about Public Access to Environmental Information will provide the framework for public participation on decision-making process in the field of environment protection in the Slovak Republic. Slovakia is currently in the process of respective accession/transposition.

Identification of problems:

- General absence of systematic approach to information dissemination and public participation on decision-making process; insufficient cooperation among the responsible sectors, government departments, competent bodies and institutions
- Lacking public awareness of pollution levels in the particular components of environment and food in the contaminated Zemplín area
- Need to raise awareness among plant inspectors and customs officers on the possibility of imports of non-permitted plant protection preparations containing POPs
- Insufficient knowledge in the industrial sectors about hazardous properties of POPs containing equipment and about the way of handling with them, including their sound destruction
- Low public awareness concerning unsuitability of certain wastes burning in household stoves
- Need to include the issues of POPs (and other hazardous chemicals) in appropriate manner into the curricula at all levels of the educational-process structure

Action plan:

		Timeframe
1.	To provide sufficient information with regard to risk exposure in the contaminated area of Zemplin in order to help people decide on their "behavior pattern"	2004
2.	To raise know-how of plant inspectors and customs officers	2004
3.	To raise awareness and know-how of employees possibly handling with POPs (emphasis on PCBs: handling, destruction, transport)	2005
4.	Raising public awareness (among village people and in gardening and cottage areas) of unsuitability of uncontrolled open waste combustion	2005
5.	Gradually supplement information on POPs issues into the educational curricula for basic and high school students as well as students of pedagogic universities, entering the education process themselves	2005
6.	To develop a POPs information strategy	2005

Institutional and legal measures

Baseline setting:

Legal regulations concerning POPs are intersecting through several government departments (healthcare, environment, agriculture and finance-customs). Main driving force influencing the forming of new legislation is, besides requests of the international treaties, also necessity to harmonize the Slovak legislation with that of EU, in particular with the Proposal for a

Regulation of the European Parliament and of the Council on POPs and amending Directives 79/117/EEC and 96/59/EC.

Identification of problems:

- Management and control of pesticides
- Management and control of PCBs
- Assessment of new pesticides and chemicals
- Reduction and elimination of unintentional POPs production
- Control of handling with hazardous wastes containing POPs

Action plan:

		Timeframe
1.	To amend the enforcement regulation to the Act No: 285/1995 Coll. concerning plant-healthcare – Decree MA SR No. 3322/3/2001-100	2004
2.	To implement the amendment of the Act No: 223/2001 Coll. on Waste Management	2004
3.	To amend the enforcement regulation to the Act No: 163/2001 Coll. on Chemical Matters and Chemical Preparations – decree MI SR No: 7/2001 and to amend the act MI SR No: 2/2002 in the part concerning standards for testing methods	2004
4.	To amend the enforcement regulation to the Act No: 478/2002 Coll. On Air Protection – Ordinance ME SR No: 706/2002 about Operation Conditions in Air Pollution Sources and of the Act No. 245/2003 Coll. on Integrated Pollution Prevention and Control, Annex 1 – amend the list of pollutants according to Annex III	2004
5.	To amend the Act No. 223/2001 Coll. on Waste Management – to extend validity of the amendment regarding to the PCBs also to other POPs; to define what is considered as "environmentally sound manner of destruction"	2004

Research and development

State R&D programs and R&D according to state order are providing the most important platform for research and development concerning POPs issues (proposals as suggested in the particular POPs NIP action plans). State programs are development programs, which should contribute to socio-economic development of Slovakia. They should become the most preferred research tasks in the future, onto which also the financial support should focus.

However, general structural problems, caused by a long-term lack of state as well as private financial sources (according to EU their ratio should be 1/3 to 2/3) supporting R&D in Slovakia, are performing potential risks also for implementation of POPs specific project tasks. Besides insufficient financing, also pertaining problems with current legislation, which is not consistent enough with the program financing method pursuant to Law on Science and Engineering as well as with the Law on Support Agency for Science and Engineering (APVT), are enhancing the risks.

Possible tools for implementation of POPs related projects are:

- Utilization of the existing system of R&D financing through APVT (inclusion of POPs into the priority list of the state program of research and development)
- Participation of Slovakia in the 6-th EU Framework Program for Science and Engineering or other international cooperation.

Timetable and resource requirements for NIP implementation

Socio-economic impact of NIP implementation was evaluated based on analysis of costs and benefits of the proposed measures, which are new or different from those already pertaining to the existing legal documents, according to the modified BET (Business Effect Test) method and for the NIP implementation timeframe until the year 2010. Following two variants were elaborated:

Variant one
This variant considers also clean up of contaminated sites by the year 2016 (aliquot part until 2010). The total costs are 1 184 mil Sk, out of which 50, 9% is for clean up of contaminated sites; 23, 3% for the action plan *Equipment and Wastes Containing PCBs*; and 12, 9% for the action plan *Unintentional Production of POPs*. It is assumed that 22, 9% of the total costs (what is 271, 2 mil Sk) will be covered out of the state budget. The costs of the private sector (including implementation of new technologies in the sector of secondary metals production) represent 68, 1% of the total finances needed and the regional state budgets (Košice region) should contribute 9%. At the same time, remarkable socio-economic benefits are assumed in the Zemplín area (increased employment, reduction of health risk, removal of environmental barriers and development of tourism).

Variant two
Total assumed costs are 581, 3 mil Sk, out of which 47, 5% is for the action plan *Equipment and Wastes Containing PCBs*. Remarkable are also the costs of action plans *Unintentional Production of POPs* and *Contaminated sites and releases from stockpiles and wastes.* It is assumed that 46, 7% of total costs (what is 271, 3 mil Sk) will be covered out of the state budget. Costs of the private sector do represent 53, 3% of the total finances needed. No remarkable socio-economic benefits are assumed for this variant.

Conclusions

NIP proposal was elaborated in broad cooperation of all stakeholders on the base of detailed analysis of present situation in Slovakia bearing in mind relevant international commitments, documents and guidance. Due to their multi-sector character, priority setting of the POPs issues was done step-by-step on horizontal (identification of general priorities) as well as on vertical levels. On vertical levels priority problems as well as the strategies/action plans to solve them were identified within the individual problem areas (chapters 2.3.1-2.3.7, and 3.2.1-3.2.9).

Finally, combined horizontal and vertical national priority setting took place. On its base following priorities at national level were pointed out:

- Finalizing the process of adoption of the necessary legal documents for POPs management, setting up the necessary institutional framework and their consistent enforcement;
- Inventorying and environmentally sound destruction of wastes and equipments containing PCBs;
- Inventorying and environmentally sound destruction of obsolete POPs pesticides;
- Decontamination of the waste water channel from Chemko Strážske;
- Raising of broad public awareness about hazards connected with open uncontrolled burning (domestic waste, contaminated biomass, smoldering of cables...);
- POPs monitoring for the purposes of international reporting, POPs management at national level, and information dissemination to public;
- Gradual decontamination of all other identified contaminated sites;
- Research and development in the relevant fields.

1. Introduction

Author of the chapter: Mgr. Róbert Chriašteľ

In May 2001, the *UN Stockholm Convention on Persistent Organic* (later on referred to as the Stockholm Convention) was adopted. Signatories to this convention are obliged to adopt measures to eliminate sources of releases of the twelve chemicals belonging to the group of persistent organic compounds (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorbenzene, mirex, toxaphene, PCBs, DDT, PCDD, and PCDF). Besides the listed chemicals, these measures will in relevant cases concern also polyaromatic hydrocarbons (PAHs), as required by the *Proposal for a Regulation of the European Parliament and of the Council on POPs and amending Directives 79/117/EEC and 96/59/EC*. These measures shall include restriction of their direct production, gradual phasing out of POPs containing equipment, prevention of unintended POPs production generated by the identified industrial activities, and raising information and awareness among government institutions as well as public with regard to POPs issues. For this purpose, parties are obliged to elaborate a National Implementation Plan for POPs and submit it to the Convention Secretariat within two years after coming into force of the Stockholm Convention.

Slovak Republic in relation to relevant international treaties with regard to POPs.

At present (as of April 2004), the Stockholm Convention has 151 signatories and 55 parties. It will enter into force on May 17 2004, pursuant to its Article 26. The Slovak Republic signed the Stockholm Convention on May 22 2001. With its Decision No: 349/2002 dated on 10 04 2002, the Government advised the National Parliament to ratify the Stockholm Convention, which consequently approved this document. The instrument of ratification was delivered to the depositary, being the Secretary-General of the United Nations, on 05 08 2002.

In June 1998, the *Protocol on Persistent Organic Pollutants to the 1979 UN ECE Geneva Convention on Long-range Trans-boundary Air Pollution* was adopted. The Slovak Republic as well as the European Union and its member states, signed this protocol (later on referred to as the POPs Protocol). Slovak Republic deposited on 30 12 2002 its instrument of acceptance to the Secretary-General of the United Nations (depositary). In compliance with the Article 18 par. 1, the POPs Protocol entered into force on 23 10 2003 – it entered at the same time into force also for Slovakia (Declaration of the MZV SR No. 367/2003 Z.z.).

To facilitate early implementation of both POPs Protocol as well as of the Stockholm Convention within all member states the *Proposal for a Regulation of the European Parliament and of the Council on POPs and amending Directives 79/117/EEC and 96/59/EC* (later on referred to as the Regulation) is currently being in legal adoption procedure. The proposed Regulation contains the principles and commitments with regard to both international documents; however, in favor of attaining high level of human health and environment protection it enacts also certain obligations, which are going beyond these treaties or are stipulating them in a more stringent way.

In addition, the *Basle Convention on the control of trans-boundary movements of hazardous wastes and their disposal* indirectly relates to the POPs issues (ČSFR accession in the year

1991, SR succession in the year 1993, agreement of the Slovak Parliament with ratification of the amendment to the Convention in April 1998).

Elaboration of the National Implementation Plan on POPs

The Ministry of Environment of the Slovak Republic (ME SR) submitted in June 2002 the project proposal to elaborate a national implementation plan under the Stockholm Convention for approval, which was approved in October 2001 by the Global Environment Facility (GEF). The Slovak Hydrometeorological Institute (SHMÚ) in cooperation with the Regional Centre of United Nations Development Programme in Bratislava (UNDP) and with the ME SR finalized elaboration of the respective project document at the beginning of February 2002. In March 2002 the implementation of the project "*Initial Assistance to the Slovak Republic to Meet its Obligations under the Stockholm Convention on Persistent Organic Pollutants (POPs)*" was launched. The presented proposal of a National Implementation Plan for POPs (NIP) is representing the main output from this project.

Project inception phase

Setting of the project coordination mechanisms and building of capacities for its implementation were the main outputs of the project inception phase. Stakeholder analysis and a series of workshops, aimed at providing information about the project intentions to various interest groups, preceded these steps. During project inception phase the document "*Project Implementation Handbook*" was elaborated describing the division of responsibilities and competence as well as work-plans for the particular task teams. An independent expatriate expert undertook review of this document.

Analytical project phase

First, information on POPs management system in Slovakia as well as on POPs occurrence in components of the environment and living organisms, including humans, was collected. The results were published in the following technical reports:

- Technical report No 1: *Evaluation of the National Legal Framework and Institutional Background with Regard to POPs in the Slovak Republic*
- Technical report No 2: *Initial POPs Inventory in the Slovak Republic*

Consequently, problem areas connected with the Stockholm Convention implementation were identified. As output of these activities the Technical report No 3: *Setting of Priorities and Objectives in the Field of Persistent Organic Pollutants in the Slovak Republic* was published, defining the scope of work for NIP elaboration.

During the analytical project phase, the following additional activities were carried out in order to supplement the missing data and information:

- Supplementary as well as initial monitoring of POPs pesticides in sediments
- Supplementary well as initial monitoring of PCDD/PCDF and PCBs in sediments

- Supplementary well as initial monitoring of PCDD/PCDF and PCBs in stack emissions
- Supplementary activities concerning public relations

NIP development phase

The NIP was elaborated and formulated bearing in mind the following:

- The NIP is describing how Slovakia will meet requirements of the Stockholm Convention.
- The NIP is consisting of action plans and strategies, cross-linked into a logical whole, avoiding at the same time possible duplicity of work, wile implementing the particular action plans and strategies.
- The NIP shall be embedded into existing context of the national environment protection strategy and consider activities with regard to fulfilling of other related international commitments.

Structure of the National Implementation Plan on POPs

The presented report is divided into three parts. Introductory part, consisting of the Executive Summary and Introduction, provides brief information about commitments of Slovakia as resulting from the Stockholm Convention. The chapter "Summary" supplements this information with an overview regarding the national POPs priority issues as well as aims of their respective measures to be implemented.

Chapter 2 "Baseline Definition" describes the present situation in Slovakia with regard to POPs (national profile, institutional background and legal framework. Chapter 2.3 "Assessment of the POPs Problem in Slovakia ", defines the scope of NIP development (requirements of the Stockholm Convention, situation in Slovakia, problem identification).

Key part of the document is Chapter 3 "Strategies and Action Plans", consisting of the following action plans and strategies:

- Action plan: POPs Pesticides
- Action plan: Equipment and Wastes containing PCBs
- Action plan: Unintentionally produced POPs (PCDD/F, HCB, PCBs and PAHs)
- Action plan: Contaminated sites and releases from stockpiles and wastes
- Action plan: Monitoring
- Action plan: Reporting and information exchange
- Action plan: Raising public awareness of POPs
- Action plan: Institutional and legal measures
- Strategy: Research and development

This chapter provides further information about the National Implementation Plan endorsement procedure and additional information on cost assessment for implementation of the particular action plans and strategies

2. Baseline Definition

2.1 National Profile

2.1.1 Geography, Settlement and Natural Environment

Authors of the chapter: RNDr. Juraj Gavora at all.

2.1.1.1 Geography

Area of the Slovak Republic is about 49 000. km^2; it borders with five states – Hungary (the longest border), Austria, Czech Republic, Poland and Ukraine, and constitutes the geographical centre of Europe.

From geomorphology point of view Slovakia extends into four provinces – Eastern and Western Panonian Basin, Eastern and Western Karpaty Mountains with highest peak of Slovakia, the Gerlach pinnacle (2 654 m) and with glacial relief of the High Tatra Mountains. Mountainous surface prevails, 56% of the total area are highlands, 21% are high mountains and 23% are flatlands. Forest crops are the most represented vegetation, about 40 6% of the total country area, ranking Slovakia among European countries with the highest forest coverage.

2.1.1.2 Settlement

Population Development in Slovakia

The present demographic situation in Slovakia correlates with the overall trends in developed countries, which are characterized by low number of children in families, overall decrease of birth rates, gradual decreasing of mother age and by general ageing of the population. Specific factors, influencing also the demographic development in Slovakia, are economic factors such as effective demand of public, average income, unemployment rate etc.

Number of inhabitants in regions

When characterizing socio-economic situation in the particular regions the number of inhabitants is important as well as their migration between the regions.

Population census takes place every ten years; the last census was carried out in the year 2001.

Number of inhabitants in the regions					
Region	**1997**	**1998**	**1999**	**2000**	**2001**
Bratislava	618 673	617 599	617048	617 049	599 042
Trnava	549 621	550 652	551368	551 441	550 918
Trenčín	610 349	609 739	609562	608 786	604 917

Number of inhabitants in the regions					
Region	**1997**	**1998**	**1999**	**2000**	**2001**
Nitra	717 241	716 560	716251	714 602	712 312
Žilina	689 504	691 201	692450	693 853	692 434
Banská Bystrica	663 845	663 492	663244	662 077	661 343
Prešov	777 301	780 875	783765	787 483	791 335
Košice	**761 116**	**763 264**	**764854**	**767 256**	**766 650**
Slovak Republic	5 387 650	5 393 382	5 398 542	5 402 547	5 378 951

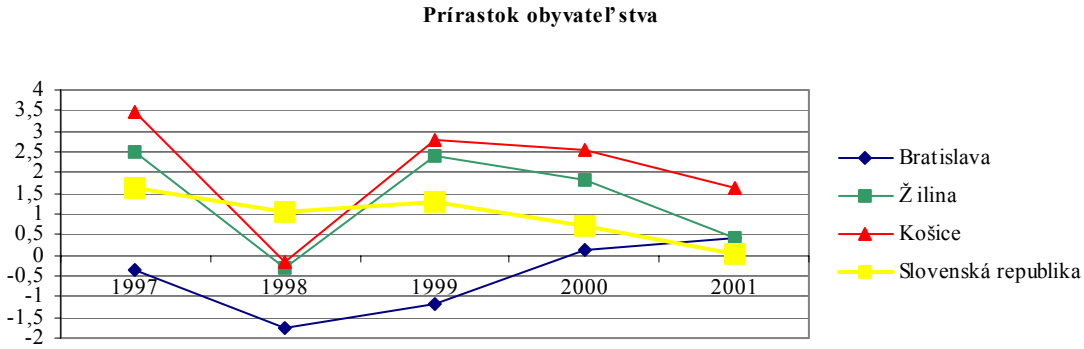
Source : ŠÚ SR

From the point of view of POPs presence, be it in certain equipments or in the environment, it is important to consider the number of inhabitants in the critical region and their concentration near by the sources of POPs releases. Based on the preliminary results of Technical report II, as critical may be considered the Košice Region, in particular the Michalovce District, where the former PCBs producer is located (Chemko Strážske).

Rise in population

Natural rise in population is the difference between the number of children born alive and the number of deceased.

Total rise in population takes into consideration besides the natural population rise also migration of the population.



Source : ŠÚ SR

The above graph depicts the trend of rise in population during the years 1997 – 2001. Increase rate in population of the Bratislava region is higher (better employment opportunities and higher salaries are the prevailing reasons) and the decrease rate in population is higher in the Košice and Žilina regions.

Forecast of population development

According to the forecast of the Slovak Office of Statistics, main attributes of the population development in Slovakia during the first half of 21st century will be decreasing of population rise and population aging. Intensity of these processes will rely directly on development of fertility, mortality and migration; however, indirect influence will be caused also by further demographic factors as well as social, political, economical and cultural factors.

Rise in population will most probably stagnate for a certain period. It is assumed that in the course of 15-20 years a period of more sustainable decrease in population will begin, which will cease most likely only by the end of the century. According to the most likely prognosis variant (middle variant), the year 2050 population of about 4, 9 mil. During this period, population decrease by approximately 25 to 30 thousand of inhabitants yearly is assumed.

Average monthly salary

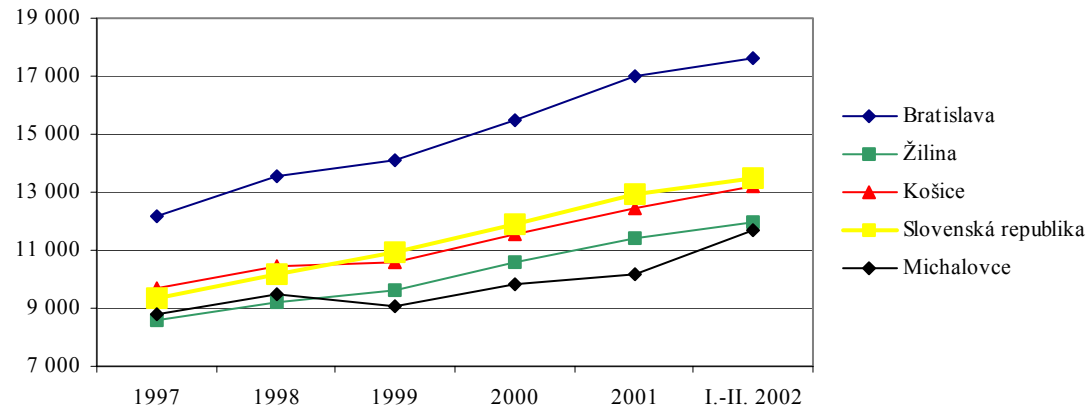
The indicator average monthly salary includes admissions based on the basic (scale) wage, set according to the wage-rules, including the components of contract-based salaries and wages.

Graphic depicting of the average monthly salary by regions indicates that the level of average monthly salaries in Bratislava region is remarkably higher in comparison with other regions and districts. This fact relates to the overall development level of this region, to the concentration of industry in the Bratislava region and by centralization of business headquarters in the city of Bratislava. The outstanding economic difference between Bratislava and the rest of Slovakia is constantly deepening. In the territory of capital approximates the average salary to the EU standard, on the other hand, majority of population in other regions is relatively pure with average salaries about 35 % of the EU standard.

Differences in salaries between the particular regions are much higher than the differences in salaries between various branches of the national economy. In underdeveloped rural areas, the salaries come up in average only to 57 % of those in urban areas.

In other regions, above all in western Slovakia the salaries tend to faster upswing as in the east part of the country. The growing rate of living costs is approximately the same in all regions, thus the uneven differences in incomes result in decreasing of living standard in the Eastern Slovakia.

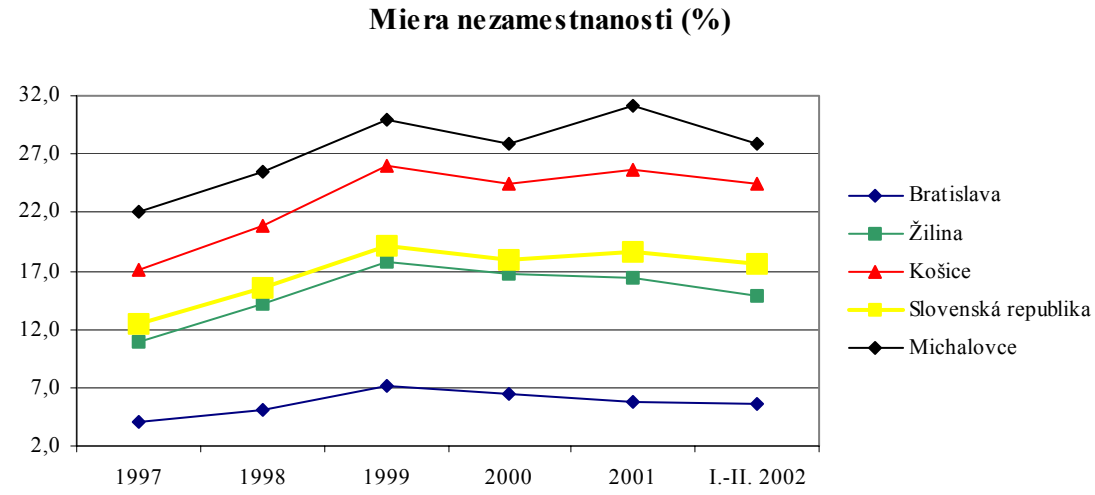
Priemerná mesačná mzda



Source : ŠÚ SR

Unemployment rate

Registered unemployment rate is based on the registered unemployed people, who could immediately accept an appropriate free job-offer, and on the number of economically active people as assessed for the previous year by means of a selective labor survey



Zdroj : ŠÚ SR

The unemployment rate also characterizes a particular territory (region). The regions with higher average salaries are more developed; they offer more job opportunities, thus have a lower unemployment rate and vice-versa. It is expected that the average unemployment rate in the year 2003 will be about 17,6 – 17,9 % .

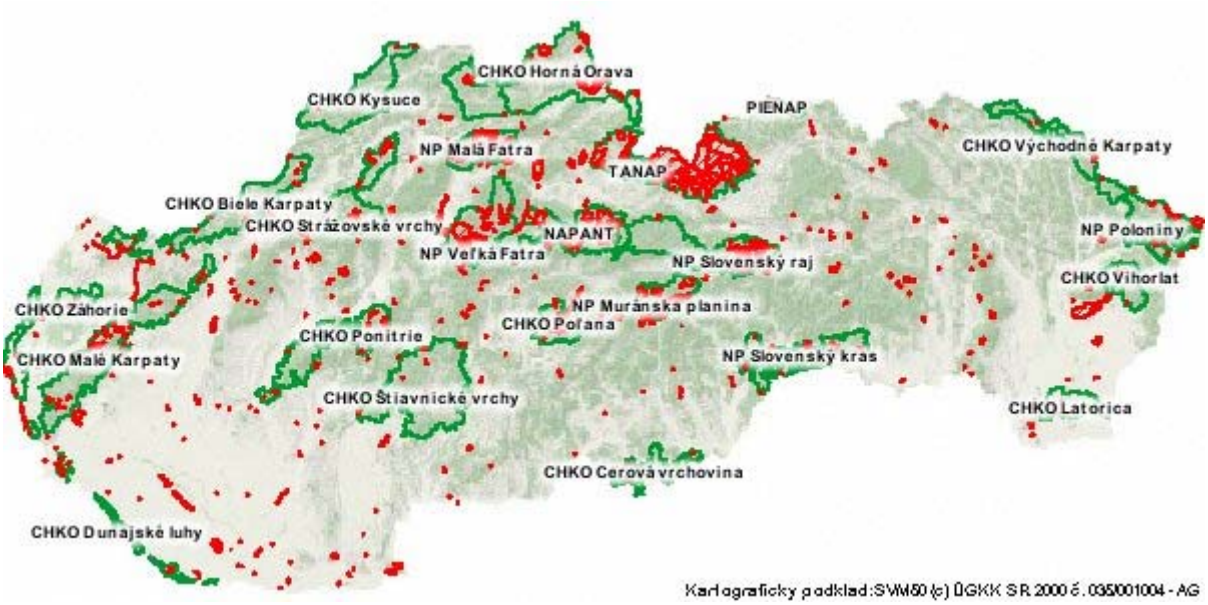
2.1.1.3 Nature conditions

The protection of natural environment in Slovakia is ensured at three levels – territorial protection (general and individual), specific protection (general and individual) and special protection of wood species. It is ranked into five rates, with rate 5. being the most stringent protection rate. Slovakia has at present nine national parks with total area of 317 800 ha and 14 protected landscapes with total area of 525 500 ha. Total land area of individually protected natural environment (rate 2-5) in Slovakia is about 23,3% of the whole country territory. Besides, some of the natural habitats are protected by bilateral agreements, programs of EU (biotope network NATURA 2000) and UN (Man and the Biosphere, UNEP, UNDP) as well as by international treaties and conventions (the Ramsar Agreement, and the European Diploma Sites).

From the point of view of environmental zoning of Slovakia, five steps rating of environment quality is distinguished: I. – high quality environment, II. – satisfactory environment, III. – moderately deteriorated environment, IV. – deteriorated environment, V. – heavily deteriorated environment. About 12 % of total territory of Slovakia, where about 43% of inhabitants is living, is considered to have endangered environment (environment quality rate IV. and V.). These endangered regions are Bratislavská, Trnavskogalantská, Hornonitrianska,

Hornopovažská, Strednopohronská, Strednospišská, Strednogemerská, Košická and finally Strednozemplínska region.

Geographic map of protected areas in Slovakia



Air

Data on air pollution sources and their releases are based since 1997 on the National Emission Inventory System (NEIS). Until 1997, the data collection was based on the Registrar of Air Pollution Sources (REZZO). NEIS creates a database for whole Slovakia and includes air pollution sources, sorted according to their categorization and thermal output. Due to change of the fuels used in favor of high quality fuels as well as due to gradual implementation of the new air protection legislation in the industry, trends in air emissions releases are decreasing.

Significant share on total POPs air emissions in Slovakia have in particular the metallurgical industry, the energy sector and waste incineration

Water

Slovakia has a relatively high quantity of renewable water resources (83 mld. m^3), about 50% of which originates from large river tributaries from neighboring countries. In 2001 reached the precipitation amount 845 mm (what is 111% of normal). Surface water demand is influenced by several factors; the amount consumed is usually around 716 mil. m^3/year, the largest surface water consumer being the industry sector (83,27%).

The Slovak Hydrometeorological Institute in Bratislava caries out regular monitoring of surface water quality. Quality of surface water is classified into classes I - V.

With regard to POPs in particular the Laborec River is interesting, mouthing into the Zemplínska šírava water reservoir with water quality classified for certain indicators into classes II – V. The quality of water in the water reservoir is influenced particularly by discharging of communal and industrial wastewaters and by agricultural activities. Contamination of Zemplínska šírava is caused also by long-lasting PCBs production in Chemko Strážske. It is assumed that during the production several tons of this chemical leaked out into the waste-water effluent channel and subsequently contaminated the Laborec River. PCBs contents up to 4 grams in 1 kilogram of dry sediment of the effluent channel as well as of 2, 4 mg PCBs in one kilogram of dry sediment from Zemplínska šírava provide a clear evidence.

Soil

The share of agricultural land on the total land area of Slovakia is about 50%; chemical as well as physical degradation are contributing to its deterioration. Average POPs content (measured as polycyclic aromatic hydrocarbons) in agricultural soils is on background levels (around 200 μg.kg-1), higher concentrations were measured locally in the vicinity of industrial installations – in the area of Žiar nad Hronom and Strážske.

For other (forest) soils, no relevant data on POPs concentration are available.

Biota

Besides long-term persistence of POPs in the environment and biota, ability to bio-concentrate in fatty tissues and long degradation halftime in living organisms and components of environment are their most dangerous properties.

Based on the monitoring of contaminants in foodstuff and feeding-stuff (monitoring of hunting wildlife and fish) is evident that highest exceeding of the permitted limits takes place in the region of Eastern Slovakia, particularly in Zemplínska šírava, Chemko Strážske effluent channel and in the Laborec River. POPs contents estimated in fish usually exceeded the limits by 10 to 100 times, in some cases even by 500 to 600 times.

While analyzing milk and meet of household animals from this region no important exceeding of POPs limit values was estimated; however, according to a survey of POPs content in wildlife, permitted limits were exceeded several times.

2.1.2 Macroeconomic profile of Slovakia

Author of the chapter: Ing. Janka Kleinertová

The table bellow gives account of development in basic macroeconomic indicators during last five years.

Indicator	**1998**	**1999**	**2000**	**2001**	**2002**	**2003***
GDP (Sk bil.)	781	844	934	1 009	1 096	880
GDP per capita (Sk)	142 236	131 364	127 908	136 944	153 000	180 360
GDP growth (%)	4,1	1,9	2,2	3,3	4,2	4,2
Inflation (%)	6,7	10,6	12,0	7,3	3,4	6,3
Unemployment (%)	13,8	17,5	18,2	18,2	17,9	16,8
Monthly salary, gross (Sk)	10 003	10 728	11 430	12 362	13 407	13 776

*Source: Slovak Statistical Office. * - estimates based on data from second term 2003*

Economic growth

GDP growth that was about 6% during 1995-1997 period, plummeted to 1,9% in the year 1999. Containment of this fall and return of the yearly GDP growth over 4% succeeded in the year 2002. The experts estimate that GDP growth for 2003 should be 4,2% - 4,6% and estimates for 2004 are similarly optimistic. This ranks Slovak Republic among the fastest growing Central European countries.

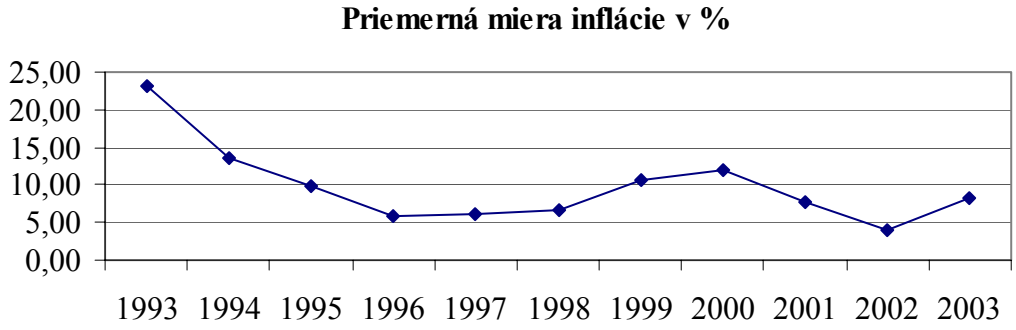
Macroeconomic instability in past years was partially result of high interest rates, which fell significantly during last years. Since the end of the year 2002, Slovak National Bank started to use simple base rate (rate used for fortnight REPO tenders) instead of discount rate. This simple base rate fell to 6,25% in September 2003. Lowering of the interest rates (which had been 8,8-12% in the previous years) substantially relieved the burden of financial costs from the industry and businesses.

Nominal GDP has had a growing tendency ever since 1997. GDP in stable prices recorded accelerating trend with yearly growth 4,1% during first 9 months of 2002. This growth rate surpasses growth in EU and CEFTA countries and has a positive effect on convergence of Slovakia. However, more detailed analysis of the growth structure lowers the optimistic view. From the point of view of GDP spending, largest part consisted of household consumption. Due to low level of inflation, it was financed mainly by the growth of real income of population, mainly by the growth in real wages. At the same time, there was yearly decrease in the household savings. Accelerating household consumption was supported also by better availability of consumer credits. Therefore, the general household propensity to consume increased.

Based upon recent GDP development, we assume its yearly growth in stable prices to be 4,0%. After the year of acceleration in 2003 we assume certain slowdown to 3,6 – 3,9%. Nominal GDP in last years grows at approximately 4,2% rate.

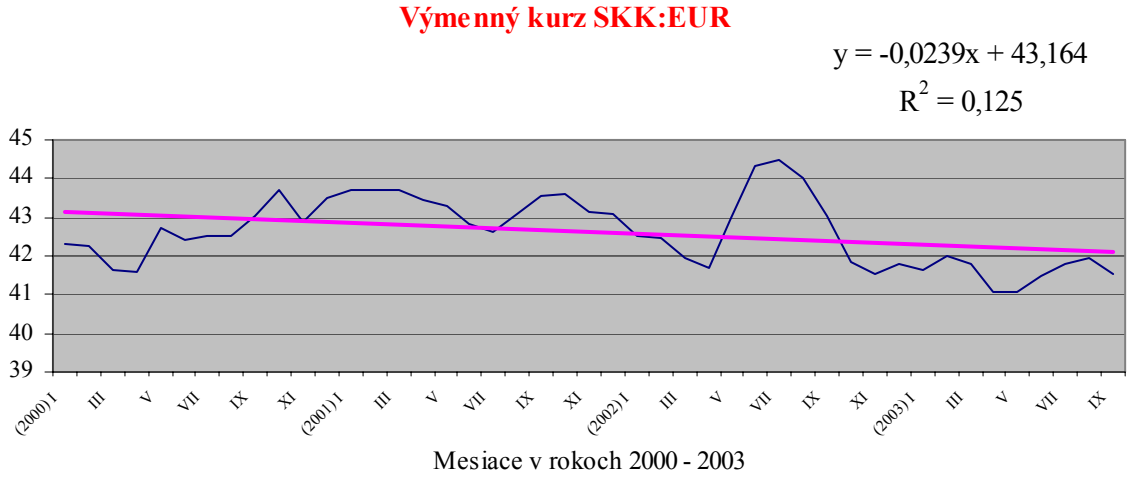
Inflation

Inflation development since 1993 is shown in the following figure. It has stayed at relatively low levels during last 5-6 years. Temporary increase in 1999 was caused by deregulation and growth of energy prices (electricity, gas and heat), transport and accommodation. This effect culminated in the summer of 2000. By the end of 2000 inflation decreased under 10% again, where it stayed during years 2001 and 2002. However, it must be mentioned that the experts expect inflation growth in next two years, if the government will continue with structural changes and price deregulation (electricity, water, gas). These changes will cause higher inflation as was in last years.



Exchange rate

Slovak currency exchange rate is very important indicator in relation to exchange of technologies, what is expected during implementation of Stockholm Convention. Development of Slovak Crown exchange rate is shown in the following figure.



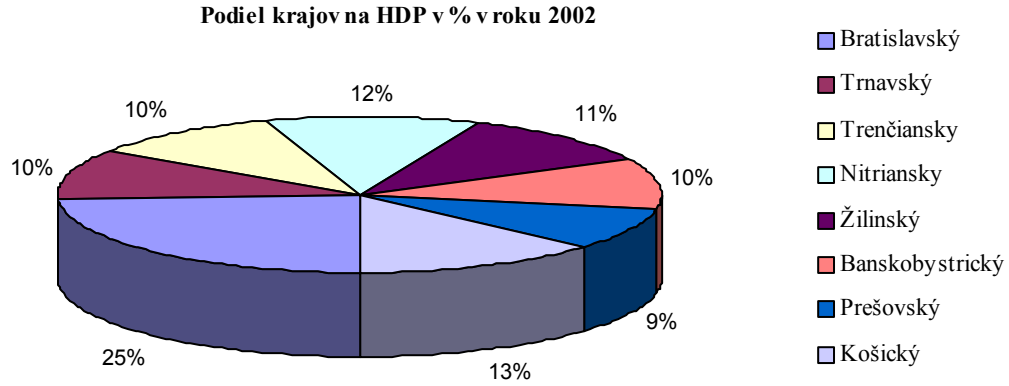
Slovak Crown has a stable exchange rate with EUR and there is general strengthening tendency.

Salaries and unemployment

Growth in real salaries followed the inflation rate. There was a substantial decrease in the years 1999-2000, what was caused by higher inflation. Currently, the real growth of salaries corresponds to real GDP growth.

Share of regions on GDP generation

Share of individual regions on generation of GDP is shown in following figure.



The figure shows shares of individual regions on total GDP of Slovakia. The region of Bratislava generates largest share despite its smallest geographic area, which is due to higher concentration of industries compared to other regions.

From the POPs production and occurrence point of view, it is necessary to turn attention mainly to Košice region. In this region, POPs presence in sediments is expected and this may have an effect on worsened health situation in the region. It is also assumed that implementation of Stockholm Convention will have largest adverse economic effect on businesses in this region.

Share of industrial sectors on GDP generation

From the POPs perspective, it was important for the economic analysis of GDP to focus on those sectors (economic activities) that are directly related to presence of POPs in equipments and on those sectors that are source of unintentional POPs production. It is therefore essential to consider share of individual sectors on GDP generation, during the assessment of impact of Stockholm Convention implementation.

GDP according to economic activities in year 2000	GDP mil. Sk	Share %
TOTAL	**887 198**	**100,00**
Subtotals		
Agriculture, game keeping, fisheries, fish husbandry	36 003	4,06
Industry total	233 147	26,28
Building industry	42 279	4,77
Trade, hotels and restaurants	134 205	15,13
Transport, storage, post, and telecommunications	90 125	10,16
Banking and insurance; other trade services; research; public administration, defense; education; healthcare and social security; other public services	163 890	18,47
Non-market services	106 067	11,96
Other	81 482	9,18

The industry is the sector with largest share on GDP generation (26,28%) and also largest POPs generating sector. Further important sectors contributing to GDP generation are financial and trade services and other services (hotels, restaurants), healthcare, education and others, that are characteristic by large amount of equipments containing compounds classified as POPs.

From the above follows that the impact of implementation of the Stockholm Convention on these sectors will have an effect on total GDP.

2.1.3 Profiles of Economy Sectors

Author of the chapter: Ing. Janka Kleinertová

Definition of those national economy sectors (later on referred to as sectors), which are potential producers of POPs in Slovakia, was based on Annex C to the Stockholm Convention Part II: Source categories, where industrial source categories having the potential for comparatively high formation and release of these chemicals to the environment are identified.

Some of these sources are sectors (branches) of the national economy, others only activities or even side effects of certain industrial and non-industrial processes. For this reason, the economic analysis was carried out on that level, where the pollution source was assumed and where the socio-economic impact could be described or estimated in certain way.
It is concerning:

- Waste incineration plants
- Electric power plants and heating plants
- Pulp production
- Metallurgical industry
- Open burning of wastes including landfills
- Chemical production – unintentional POPs production.

Problems with regard to identification of those national economy sectors, where equipments containing POPs are located, were dealt with separately.

Waste incineration plants

With regard to waste incineration plants, it is not possible to identify a certain concerned sector. Waste incineration plants are technical installations, which may fall under various industrial branches, depending on their type, as well us under different kinds of administration. Some of them are operated on commercial bases (they are owned by a private company) while others are included into the public sector. The question of their operation and financing as well as assessment of the economic impact will therefore differ from case to case.

- Communal / industrial waste incineration plants – in Slovakia is currently about 20 % of waste incinerated in waste incineration plants of different technical levels. There are 30 waste incineration plants for communal and industrial waste

incineration in Slovakia now. Most waste incineration plants are located in Bratislava (6) and Trenčin (6) regions.

- Hazardous waste incineration plants – high quality incineration plants, incinerating high variety of materials.
- Hospital waste incineration plants – level of the incineration plants is different, the quantity of waste incinerated is relatively low, and however, this waste contains high quantities of chlorine. There are 37 hospital waste incineration plants in Slovakia now, most of them in Prešovský (8), Nitrianský (7) and Banskobystrický (7) regions. Many of this incineration plants do not meet the required emission limits; therefore, it will be necessary to close them down or reconstruct / replace them. In this case, the impact on the health will be significant either because of need to finance the newer technologies or because of need to finance transportation of the waste to be incinerated elsewhere.

Electric power plants and heating plants

Electric power plants and heating plants utilizing coal and other fossil fuels are also unintentionally producing POPs. In order to operate effectively the incineration technology meets high quality, complies with emission limits and therefore is considered as less important from POPs emissions point of view. Possible economic impact on this sector will be most likely not important.

Pulp production

As bleaching agent in pulp and paper production and wood processing chlorine and carbon dioxide was used in the past. At present is this technology used only by one company – Bukocel Vranov.

Economic impact onto this company will be remarkable as exchange of technology in the required period is not in their possibility. Switch to the new technology requires large investments (about 200 mil Sk), which the company is not in position to secure in a short period of time. From national economy point of view, pulp production in general will be not endangered; neither its producing nor financing. Other companies (SCP Ružomberok, KAPPA Štúrovo, etc) will secure it.

However, closing down of the respective company will have a large socio-economic impact in the Vranov district.

Metallurgical industry

Annex C of the Stockholm Convention is further listing the following branches of metallurgical industry as potential sources of POPs releases:

- secondary copper production
- sinter plants in the iron and steel industry
- secondary aluminum production
- secondary zinc production

Iron and steel industry represents one of the most important industrial sectors in Slovakia. Volumes of raw materials consumed and products produced are very high, thus resulting in biggest share of this sector in total POPs releases in Slovakia. On the other hand, environment

protection measures recently were - or are being introduced in this sector and starting with the year 2004, technologies mostly contributing to POPs releases (ore sintering and coke production) will comply with BAT. Secondary non-ferrous metal production is currently not operated in Slovakia.
For these reasons, the potential economic impact in metallurgy sector is considered as minimal.

Open burning of wastes, including landfills

At present, 43 landfills are located in Slovakia. Most of them are located in the Banska Bystrica region as well as in the Nitriansky, Prešovský and Košický regions. To assess the socio-economic impact of the Stockholm Convention with regard to landfills is similarly difficult as in the case of waste incineration plants, as the landfills are likewise belonging to various sectors and falling under different administrations.

Chemical production – unintentional POPs production

Potential unintended POPs producers are producers of organic solvents as well as producers of wood finishing / protecting preparations (bating). There are about 40 organic solvents producers (typical representative of which is for example Novácke Chemické závody, a.s.) and about 35 companies are dealing with production of wood finishing preparations. These companies are usually middle – sized chemical plants with approximate number of employees about 50-250. Monitoring results do not indicate their importance as POPs pollution sources; therefore, economic impact onto this national economy branch will be not significant.

Localization of POPs containing equipment

Technical Report No. 2 deals in detail with this problem. POPs-containing equipment may be located within various sectors of national economy.

Mostly concerned are obsolete stocks of PCBs in Chemko Strážske, further unused agrochemical plant - protection preparations, as well as transformers, capacitors and other small equipment, which may be located within almost all national economy sectors. Economic impact is quantified based on expenditure of their destruction.

2.2 Institutional and Legal Framework

Author of the chapter: MUDr. Jindra Holíková.

2.2.1 Baseline

Issues related to persistent organic pollutants (POPs) have been in the center of environmentalists' attention during the last years. Regarding the toxicity of these compounds and their ability to accumulate in biological materials, they can constitute a time-bomb whose effects may show in the next years. The possible adverse effects are mainly potential effects on human health, but also damage to the biotic sphere of the environment.

The first international material dealing with this issue was the Protocol on Persistent Organic Pollutants to the Convention on Long-Range Transboundary Air Pollution ("POPs Protocol" entered into force on October 3, 2003), which was adopted by Slovak government in the year 2002.

Then followed UN Stockholm Convention on Persistent Organic Pollutants from 2001, which was also ratified by Slovak government in August 2002. Its implementation in Slovakia is subject of this material.

In 2003 the European Council issued Decisions that adopted both these Conventions in the name of European Community together with assignment to prepare proposals for annex changes (lists of compounds) regarding their distribution.

A proposal of European Parliament and Council Regulation on POPs and about change of 79/117/EEC and 96/59/EC Directive (Regulation) is currently in comment procedure. This Regulation enlarges list of compounds planned for exclusion (Annex I) from 9 to 12 compounds, enlarges the list of restricted compounds (Annex II) by HCH, enlarges the regulation of unintentional production by PAHs (Annex III) and regulation of waste handling with 13 compounds (new Annex IV).

Taking into account near entry of SR to EU, the action plan was prepared considering this enlarged version, according to the quoted Regulation.

2.2.2 Current national institutional and legal framework

Legal regulation of POPs recording, monitoring and management and their institutional support currently overlaps among several government ministries. They are Ministries of Healthcare (foodstuff and articles of daily use, working environment), Environment (air, water, wastes), Agriculture (compounds for protection of plants, soil and foodstuff) and Industry (chemical compounds and chemical products). Following laws will be most affected and will have to be changed in relation to implementation of Stockholm Convention and Regulation of EP&C:

1. Act No. 163/2001 Coll. on chemical compounds and chemical preparations, as amended
2. Act No. 285/1995 Coll. on plant-medical care, as amended
3. Act No. 223/2001 Coll. on waste and on amendment and complementation of some laws, as amended
4. Act No. 478/2002 on air protection that amends Act No. 401/1998 Coll. about fees for air pollution, as amended
5. Act No. 184/2002 Coll. on water and amendment and complementation of some laws, as amended
6. Act No.245/2003 Coll. on integrated prevention and control of environment pollution and on amendment and complementation of some laws (valid since 31.07.2003).

Institutional securing of POPs management currently includes also the Ministry of Finance (customs institutions) and the Ministry of Interior (regional and district offices). Competences in this area have been since January 1, 2004 transferred to specialized public administration – Environment Offices and Public Healthcare Offices.

Regarding the institutional background for implementation of the Stockholm Convention, partial recording, partial monitoring and partial management of POPs are on agenda of following institutions:

1. Center for chemical compounds and preparations (under Ministry of Healthcare)
2. Public Healthcare Offices (until 31.12.2003 state healthcare institutes)
3. Central Agricultural Control and Testing Institute (under Ministry of Agriculture)
4. State Veterinary and Food Institute (under Ministry of Agriculture)
5. Research Institute of Foodstuff (under Ministry of Agriculture)
6. Slovak Hydrometeorological Institute (under Ministry of Environment)
7. Slovak Environmental Agency (under Ministry of Environment)
8. Slovak Environmental Inspection(under Ministry of Environment).

The list of these institutions is not final, the POPs-related issues are partially on agenda of several institutes of Slovak Academy of Sciences and research institutes belonging under different ministries.

2.2.3 Overview of preparedness of Slovakia in relation to obligations pursuant to the Stockholm Convention

Analysis of laws that are currently in force and of Stockholm Convention and EP&C Regulation provisions leads to following conclusions:

1. Absence of **unambiguous** legal **ban** (or other administrative tool for exclusion) of production (introduction to the market) and use of 9 chemical compounds listed in Annex A of Stockholm Convention, and of **restriction** of production and use of chemical compound listed in Annex B of Stockholm Convention (DDT), or rather also in this particular case a ban, as SR did not register any special exception according to Article 4 of the Stockholm Convention.

2. Absence of such unambiguous restrictions (alternatively prohibition) on import and export of all chemical compounds listed in Annexes A and B of Stockholm Convention, which should follow from Article 3, paragraph 1, subparagraph a) point (ii) and from paragraph 2 of Stockholm Convention – with regard to absence of registration of special exceptions, are the possibilities for their import or export limited to the purposes of their disposal in a environmentally acceptable manner.

3. The need for further specification of patterns (procedures) for evaluation of properties (including risk, etc.) of new and also existing (currently used) chemical compounds including pesticides, in compliance with the criteria specified in Annex D (especially part 1) of the Stockholm Convention.

4. Absence of strategy and consistent system (including gaps in necessary legal regulation) for lowering or eliminating the emissions from **unintentional production** of chemical compounds described in Annex C of Stockholm Convention from anthropogenic sources, for example:

   a) Identification, inventarization and evaluation of current and future expected emitted amounts (including inventarization of their sources) created in observance of Annex C of Stockholm Convention,

   b) Preparation of (national) action plan for this problem.

5. Need for further specification of handling regime with:

   a) **reserves**, which consist of chemical compounds listed in Annex A or B of the Convention or contain these compounds, as well as

   b) with **waste** (including products and goods that will become waste), which consist of chemical compounds listed in Annex A, B, or C of the Convention or contain these compounds or are contaminated by them

   in accordance with Article 5 of the Convention so that adequate health protection of people and environment is secured.

6. Absence of strategy, or adequate law for identification of areas contaminated by chemical compounds listed in Annex A, B or C of the Stockholm Convention as well as for their remediation.

7. Absence of (national) implementation plan for (complex) fulfillment of the obligations following from the Stockholm Convention including contingent integration of this plan with strategy for sustainable development.

8. Need for establishment of **national focal point** for facilitation and realization of exchange of information listed in Article 9, paragraph 1 of the Stockholm Convention between Slovakia and other parties to the Convention or between Slovak Republic and Secretariat of the Stockholm Convention, including securing protection of the confidential data.

9. Need for further specification of modes of informing (including possible participation on decision-making), education and public awareness raising (including management and employees of individual operators) in accordance with Article 10 of the Stockholm Convention.

10. Monitoring of POPs sources and release into environment and transfer of POPs through the environment, including harmonization of individual methodologies and procedures, as well as timely and regular providing of results of this monitoring to the public.

11. Legal and institutional securing of submitting reports for Slovak Republic to Conference of Parties and Secretariat of the Stockholm Convention in accordance with Articles 15 through 17, as well as legal and institutional securing of fulfillment of the tasks of a Party to Stockholm Convention in accordance with further provisions of the Convention (e.g. Articles 8, 12, 13, 18, 21, 22 a 23).

2.2.4 Means of addressing the implementation of Stockholm Convention – proposals for amendments of legal documents

Existing gaps in Slovak legal system can be filled in two general ways:

1. *Amendment* (in necessary scope) of respective above mentioned laws – there is however danger of duplicity and of failure to remove all gaps (taking into consideration also expected enlargement of the list of compounds in Annexes A to C of the Convention), problems with implementation of some 'specific' provisions (specific mode) related only to a small group of chemical compounds, or to very narrow deviation from generally established procedures, into these 'general' laws.

2. Passing a *separate Act* on POPs together with contingent amendment and complementation of some other laws.

Taking into account currently prepared Regulation and early entry of Slovakia into EU, which will bring the duty to include all EP&C Regulations in Slovak legal system, it appears that the best alternative is the one described in point 2 above.

Therefore, we recommend that for implementation

a) of **most obligations** following for Slovakia from the Stockholm Convention, there is separate Act on POPs published and if necessary, partial amendments of some other existing laws are made

b) of **remaining** obligations, these should be implemented into Slovak legal system as necessary by their implementation into some prepared or amended laws.

At the same time we consider it necessary to:

- prepare comprehensive strategy for identification and remediation of areas contaminated by chemical compounds (not only according to Annexes A, B and C of the Convention) and legally address so-called environmental strains,

- define environmentally acceptable disposal of waste

We would like to point out that some POPs are also in the European Registry of Pollutants (EPER), or currently prepared European Pollutant Release and Transmission Registry, which will become binding also for Slovakia, after it will join the EU.

2.3 Baseline Definition – POPs Problem Assessment in Slovakia

2.3.1 Inventory of POPs Pesticides

Author of the chapter: PaedDr. Martin Murín

2.3.1.1 Introduction

POPs pesticides belong to the group of most bio-active substances, which are directly introduced into various components of the environment, and may significantly endanger ecosystems and human health in areas with intensive agriculture. Health effects of this substance group are based on the facts that they are effective also in very law concentrations, practically ubiquitous and are present also in remote regions, far from their production, storage or application sites. POPs pesticides degrade in the environment only very slowly, and concentrate mainly in fatty tissues due to bioaccumulation. In this way, they are still present in the environmental media or in human and animal tissues even decades after cessation of their use. Typical examples are DDT, mirex and others.

2.3.1.2 Requirements of the Stockholm Convention

With regard to pesticides, the Stockholm Convention concentrates on reduction of their production and use. Because of actual broad present uses of DDT for malaria control, possible exemptions for countries, combating vector-based diseases, are dealt with separately.

Following are the basic provisions:

1.a) i Each party shall prohibit and/or take the legal and administrative measures necessary to eliminate its production and use of the chemicals listed in Annex A

1.a)ii Each party shall prohibit and/or take the legal and administrative measures necessary to eliminate its import and expert of the chemicals listed in Annex A

1.b) Each party shall restrict its production and use of the chemicals listed in Annex B (DDT)

2.a)i Each party shall take measures to ensure that a chemical listed in Annex A or Annex B is imported only for the purpose of environmentally sound disposal.

2.a)ii Each party shall take measures to ensure that a chemical listed in Annex A or Annex B is imported only for the purpose which is permitted for that party.

2.b) Slovak Republic neither has any specific exemption under the Convention nor a reason to ask for it.

2.c) Each party shall take measures to ensure that a chemical listed in Annex A is not exported from it except for the purpose of environmentally sound disposal.

3. Each party that has one or more regulation and assessment schemes for new pesticides or new industrial chemicals shall take measures to regulate with the aim of preventing the production and use of new pesticides or new industrial chemicals which, taking into consideration the criteria in paragraph 1 of Annex D, exhibit the characteristics of persistent organic pollutants.

4. Each party that has one or more regulation and assessment schemes for pesticides or industrial chemicals shall, where appropriate, take into consideration within this schemes the criteria in paragraph 1 Annex D when conducting assessments of pesticides or industrial chemicals currently in use.

2.3.1.3 Situation in the Slovak Republic

POPs pesticides represent a large group of POPs-substances, whose elimination is stipulated in the Stockholm Convention with great emphasis. From the point of view of Slovakia, is relevant in particular the problem of obsolete stockpiles and possible illegal importing of plant protection preparations, containing POPs based active ingredients. Nowadays, neither production nor use of POPs pesticides takes place in Slovakia.

A Registration Committee under the Ministry of Agriculture of Slovakia, with membership of further state authorities such as the Ministries of Health and Environment, has the competence of permitting plant protection preparations, as well as preparations for disinfection, disinfestation and rodent control. According to the Act NC SR No. 217/2003 about conditions for introduction of biocide products onto the market and about amendment of certain legal documents pursuant to Article 3 Para. 1, a biocide product may be introduced onto the market only upon decision of the Centre for Chemical Substances and Preparations.

Historically, (since the period of Czechoslovak Federation) a so-called "positive list" of permitted plant protection preparations is issued. According to this, substances that are not included in this list may not be used for the given purposes.

Regulation of the MA SR No. 33/1999 on plant protection preparations regulates the assessment of preparations as well as the conditions of their registration and importing. Annex 9 contains a list of active substances, import of which to Slovakia is prohibited. All pesticides that are listed among the prohibited and restricted substances in the Annexes A and B to the Stockholm Convention (aldrin, DDT, dieldrin, endrin, heptachlor, hexachlorbenzene, chlordane, lindane and mirex), besides *toxaphene,* are included in this list.

All POPs pesticides are included also in the list of substances, falling under the PIC-procedure (*Prior Informed Consent*), being also an integral part of chemical legislation in Slovakia. The PIC –procedure is ensuring the necessary consent of the importing country with import of a substance, being included in this list.

Numerous POPs pesticides belong to substances, whose use is banned or severely restricted in Slovakia.

As far as it is possible to find out, POPs pesticides were never produced in the territory of Slovakia or Czechoslovakia respectively. With regard to the neighboring states, for example

in Poland such production took place and active pesticide substance mirex was produced. However, POPs pesticides were imported to Slovakia and some plants used them to formulate plant protection preparations.

Central Agricultural Inspecting and Testing Institute (CAITI), department of plant protection and plant inspection, carries out as part of its regular activities, surveys of obsolete plant protection preparations stockpiles. This task is assigned to regional plant inspectors, pursuant to Article 5 Para. 2 of the Act NR SR No. 285/1995 Coll., on phyto-medical care as amended by the Act No 471/2001 Coll., where is stated that „Plant inspectors carry out ... inspection of introduction of plant protection preparations or plant protection means of mechanization into circulation and use.“.

During the last five years, CAITI carried out such a survey twice. The first survey was assigned to the inspectors on 02 23 2000, with deadline by 06 30 2000. Baseline documents to elaborate a PHARE project proposal, covered out from the EU funds, for ultimate destruction of these preparations should have been produced by this survey. This project was not implemented in the end. It is estimated that about 60 % of all plant protection preparation stores have been inspected during this survey. This was mainly because plant inspectors carried out this task along with their usual duties and not as a separate assignment. Besides the state of preparation-stockpiles, state of empty packing was surveyed as well, but the best before date was not investigated. Of course, also POPs preparations were included in the overviews of obsolete stockpiles.

The second survey was assigned to the inspectors on 11 22 2002. This task was implied also by negotiations during the EC DG(SANCO)8694/2002 Mission, carried out by the Food and Veterinary Office in Dublin during 14 to 18 of October in Slovakia, with the aim to assess the system of pest control and the inspection system of introduction of plant protection preparations onto the market and in use.
Results of the survey on POPs preparations state, as of 03 12 2003, are published in the Technical Report No. 2. According to estimation, 98 % of all known stores of plant protection preparations in Slovakia were included.

Altogether, more than 28 tons of stockpiled POPs pesticide preparations were documented in the framework of POPs pesticide inventory

The inventory results are shown in the following table:

Recorded amount of POPs pesticides in Slovakia:

Preparation	Active substance	Quantity in kg
AGRONAL H	HCB	40
DDT	DDT	8000
DDT	DDT	50
DYKOL	DDT	40
ENDRIN	Endrin	246,5
GAMADYN	DDT	1830
LIDYKOL	DDT	15
MELIPAX	Toxaphene	18457
	Spolu	28678,5

Source: CAITI(as of 01 31 2003)

2.3.1.4 Identification of problems

Priority problems in the field of POPs pesticides are concerning mainly completion of stockpiles inventory and their environmentally sound destruction.

1. Completion of inventory of the stockpiles with the aim of their immediate safe storage until final disposal
2. Environmentally sound disposal of chlorinated POPs pesticide preparations-preparatory work and implementation
3. Consistent completion of inventory of hexachlorobenzene-based preparation use; execution of activities that should help to identify pathways of human and environment exposure.
4. Elaboration and ensuring of measures to reduce population exposure due to POPs pesticides.

As potential problems for Slovakia, following issues may be pointed out:

- Cooperation of plant inspectors with the Slovak Environmental Inspection (SEI)
- Safe storage
- Definition of environmentally sound destruction manner
- State support of the ultimate destruction of POPs pesticides
- Measures to reduce exposure of inhabitants

2.3.2 Inventory of PCBs

Author of the chapter: PaedDr. Martin Murín

2.3.2.1 Introduction

Polychlorinated biphenyls (PCBs) and equipment containing PCBs, represent a serious problem for Slovakia from the point of view of the Stockholm Convention requirements. This is the reason why particular attention is needed in order to meet the Stockholm Convention requirements as well as the requirements of respective EU directives.

PCBs were produced in the Slovak Republic during the years 1959-1984 in Chemko Strážske company. Alltogether 21 500 tons were produced. About 1 000 tons of production residues are still stored at the production site. In Czech Republic manufacturing of PCBs containing equipment was linked to the PCBs production, in particular the broad variety of capacitors in the company ZEZ Žamberk, but also PCBs use in production of paints and varnishes. Thus, during the period of common state, PCBs were broadly used in various applications, contaminating the environment and leading to high population exposure.

With regard to environmental burdens concerning different components of the environment, major problems are concentrated in the Strážske and Michalovce areas as well as near asphalt mixing plants, where PCBs containing heat-exchange fluids were broadly used.

Utilization of PCBs-containing equipment is a general problem, where the total number of currently registered equipment is higher than 31 000 pieces.

2.3.2.2 Requirements of the Stockholm Convention

Polychlorinated biphenyls are subject to the separate Part II of Annex A, where following obligations are stipulated:

Each party:

(a) With regard to the elimination of the use of polychlorinated biphenyls in equipment (e.g. transformers, capacitors, or other receptacles containing liquid stocks) by 2025, subject to review by the Conference of the Parties, take action in accordance with the following priorities:
    (i) Make determined efforts to identify, label and remove from use equipment containing greater than 10 per cent polychlorinated biphenyls and volumes greater than 5 liters;
    (ii) Make determined efforts to identify, label, and remove from use equipment containing greater than 0.05 per cents polychlorinated biphenyls and volumes greater than 5 liters;
    (iii) Endeavor to identify and remove from use equipment containing greater than 0.005 per cent polychlorinated biphenyls and volumes greater than 0.05 liters;

(b) Consistent with the priorities in subparagraph (a) promote the following measures to reduce exposures and risk to control the use of polychlorinated biphenyls:
    (i) Use only in intact and non-leaking equipment and only in areas where the risk from environmental release can be minimized or quickly remedied;
    (ii) Not use in equipment in areas associated with the production or processing of food or feed;
    (iii) When used in populated areas, including schools and hospitals, all reasonable measures to protect from electrical failure which could result in a fire, and regular inspection of equipment for leaks;

(c) Notwithstanding paragraph 2 of Article 3, ensure that equipment containing polychlorinated biphenyls, as described in subparagraph (a), shall not be exported or imported except for the purpose of environmentally sound waste management;

(d) Except for maintenance and servicing operations, not allow recovery for the purpose of reuse in other equipment of liquids with polychlorinated iphenyls content above 0.005 per cent;

(e) Make determined efforts designed to lead to environmentally sound waste management of liquids containing polychlorinated biphenyls and equipment contaminated with polychlorinated biphenyls having a polychlorinated biphenyls content above 0.005 per cent in accordance with paragraph 1 of Article 6 as soon as possible but not later than 2028, subject to review by the Conference of the Parties;

(f) In lieu of note (ii) in Part I of this Annex, endeavor to identify other articles containing more than 0.005 per cent polychlorinated biphenyls (e.g. cable-sheets, cured caulk and painted objects) and manage them in accordance with paragraph 1 of Article 6;

(g) Provide report every five years on progress in eliminating polychlorinated biphenyls and submit it to the Conference of the Parties pursuant to Article 15;

(h) The reports described in subparagraph (g) shall, as appropriate, be considered by the Conference of the Parties in its reviews relating to polychlorinated biphenyls. The Conference of the Parties shall review progress towards elimination of polychlorinated biphenyls at five years intervals or other period, as appropriate, taking into account such reports.

It is necessary to consider in the action plan also requirements resulting for Slovakia from the legislation of the European Union (*Regulation 96/59/EC on Disposal of PCBs and PCT and Directive of the European Council and Parliament on Implementation of the Stockholm Convention*), with regard to certain differences, in particular concerning the schedule:

- **To eliminate the use of PCBs containing equipment by 12 31 2010**.

2.3.2.3 Situation in the Slovak Republic

PCBs production started previous century, in the thirties, and were broadly utilized in the industry (in transformers, capacitors, as hydraulic fluids, heat-exchange fluids, plasticizers,

cured caulk, impregnation, paints, varnishes, additives to building materials, lubricants, flame retardants, pesticides etc.).

PCBs were produced in the company Chemko Strážske in 1959 – 1984 under product names Delor, Hydelor and Delotherm. Altogether, more than 21 500 tons of PCBs products were manufactured. It is assumed that considering exports, still about 7 000 tons of these materials remain in the territory of former Czechoslovakia.

In the components of environment, PCBs are evaporating into the ambient air from PCBs contaminated materials and landfills. In water media, due to their strong adsorption properties, PCBs usually concentrate in sediments. They do not tend to spread in soils thanks to their adsorption properties and low water solubility.

PCBs destruction is very slow – the slower, the more chlorinated they are. According to recent investigations from 1998, their half-live period in air is estimated to be 3-21 days, in water more than 5 days and in soils more than 40 days (what means total decomposition only after several years). In addition, bio-degradation with help of microorganisms is slow. PCBs may also get into plants and accumulate in some of them. Via vegetal food but also directly from water these compounds may get also into living organisms.

In humans, PCBs accumulate mainly in fatty tissues, and may be gradually in long terms released from the fat cells into the blood circulation. Important is also the fact that they are contained also in fatty components of mother milk and PCBs thus may get also into the organisms of newborn.

In 1989, the World Health Organization (WHO) considered as acceptable daily intake (ADI) 10 picograms of PCBs per kilogram of body-weight. However, currently are the ADI-values set in some countries (USA, Germany) much more stringent. For example, acceptable daily intake for PCBs and dioxins together is considered 1 picogram per kilogram of body-weight.

Based on the available information (inventory of PCBs equipment in 2000 and activities in the framework of the project "Initial Assistance to the Slovak Republic to Meet its Obligations under the Stockholm Convention on Persistent Organic Pollutants" in 2002) total amount of PCBs wastes and PCBs containing equipment in Slovakia is estimated to be 3500 tons.

Of which:

- **<u>1000 tons are PCBs production residues in company Chemko Strážske</u>**

  Concerned are various wastes/residues resulting from PCBs production, contaminated cloths, materials etc. The waste is stored relatively safely in objects within the factory. Majority of these wastes are semi-liquid materials, difficult to handle

- **<u>1000 tons of PCBs containing equipment – transformers, capacitors and others</u>**

  - At present, following PCB-containing equipment is registered:
    - transformers – 400 pieces
    - capacitors – 30 000 pieces

- other equipment – 400 pieces

❖ **1500 tons of various wastes**, mainly in the agricultural sector, including stockpiles of used hydraulic and transformer oils, contaminated with PCBs; removed PCBs paints; contaminated pieces of concrete and similar materials.

Moreover, in addition to the recorded amounts, further 900 tons of PCBs production residues are assumed at the Plane landfill. Safety of the current deposition will need reassessment.

Shortly, new waste management legislation will come into force. In its framework, also the issues of management of PCBs wastes and equipments will be solved addressed. It is assumed that the total amount of wastes and equipment, as estimated today, may be in reality higher.

Owners of the equipment are state institutions as well as private companies. In the state sector, the total amount of PCBs wastes and PCBs equipment is assumed about 500 tons, mainly in the sectors of defense, internal affairs, transportation post and telecommunications, and health. Inventory in the educational sector is not documented, mainly with regard to elementary schools. Similarly, communities may have ownership of certain amount of PCBs containing equipment, mainly capacitors in various buildings and transformers, which are not in the evidence of power distributing companies. As problematic is considered management of PCBs waste and equipment within the agricultural sector. According to the inventory carried out in 1999 by the State Veterinary Office, agricultural farms and companies have ownership of more than 1 500 tons of PCBs wastes and equipments. There is substantial concern that non-existence of a governmental support scheme for collecting and disposal of these wastes could lead to remarkable leakages, resulting in contamination of components of the environment.

With regard to PCBs contaminated sites in Slovakia as serious problem is considered pollution of the open industrial wastewater channel in Strážske locality, resulting subsequently in pollution of the Laborec River and Zemplínska Šírava water reservoir. This locality seriously suffers from this pollution, which leads to functions constraints in water environment, and is threatening population of the respective areas, in particular certain target groups. As PCBs are adsorbed onto the surface water bottom sediments, the contamination gradually moves downstream, contaminating further sections of the streams, and increasing the contamination of deposition surfaces downstream; example of which is the Zemplínska Šírava water reservoir. From the point of view of population health risks in the concerned localities, accelerated decontamination of PCBs-polluted sites is the most important task.

2.3.2.4 Identification of problems

With regard to PCBs and to PCBs-containing equipment as problem areas the following issues may be defined:

- Stockpiles of obsolete wastes and stored PCBs stocks
- Use and gradual remove from use of equipment containing PCBs
- Safe and environmentally sound destruction and disposal of PCBs and PCBs wastes

Following issue may be pointed out as potentially problematic:

- Inventory of PCBs containing equipment

2.3.3 Inventory of unintended POPs by-products

Authors of the chapter: Ing. Katarína Magulová, Ing. Viera Fecková PhD.

2.3.3.1 Introduction

The Stockholm Convention identifies as unintended POPs by-products PCDD (Polychlorinated dibenzo-p-dioxins), PCDF (Polychlorinated dibenzofurans), PCBs (Polychlorinated biphenyls) and HCB (hexachlorobenzene). Subject of the POPs Protocol to the UN ECE Convention on Long-range Trans-boundary Air Pollution (hereafter referred to as „POPs Protocol“) are in addition PAHs (poly-cyclic aromatic hydrocarbons).

Unintended POPs by-products are unwanted by-products, generated and released by certain thermal and chemical processes, particularly if organic matter is present under higher temperature and relatively low or no oxygen concentration.

Depending on process type releases of unintended POPs by-products to air (e.g. from incineration), to products (PVC production), to land and to solid wastes (e.g. production of bleached pulp) and rarely also to water, may be prevailing.

2.3.3.2 Requirements of the Stockholm Convention

The goal of the Stockholm Convention (Article 5) is continuing minimization and, where feasible, ultimate elimination of unintentional POPs production. Countries shall achieve this goal by a set of measures such as elimination of sources; exchange of materials, products and/or processes; and above all, by introduction of BAT and BEP for activities contributing to POPs releases.

Required is to develop an implementation schedule for BAT and BEP use in new sources within the priority categories as identified by the respective country, focusing particularly on source categories as identified in Part II of Annex C to the Stockholm Convention.

For existing sources operation under best technically feasible conditions of the given technology is required. At the same time, countries should promote gradual implementation of BAT also for existing sources.

2.3.3.3 Situation in the Slovak Republic

The legislation in Slovakia, in compliance with the EU legislation, is gradually enlarging the general requirement that certain anthropogenic activities shall be operated in a way minimizing their resulting environmental impact in the framework of the present technical development and experience under economically and technically viable conditions – that means in compliance with BAT and BEP.

This is posing additional important pressure onto selected source categories (hazardous waste incineration, IPPC source categories etc.) to gradual implementation of BAT and BEP not only in new sources, where this requirement is already in place, but also in existing sources.

As problems are still considered:

- Transition period, needed to achieve compliance in existing sources,
- Definition , what is for the given activity considered as BAT and BEP
- Setting of concrete parameters for the respective activities

However, it is to stress that the requirement of BAT and BEP implementation itself represents an efficient tool to control all polluting substances, including POPs.
Besides the Slovak legislation concerning certain activities and processes also EU BAT reference documents, so called BREF are available. However, these documents are not specifically aiming at POPs controlling. A BAT overview from the POPs releases point of view is included in the technical annexes to the POPs Protocol.

Special problem are the POPs emissions resulting from uncontrolled burning and non-industrial processes. For this source categories implementation of BAT is not possible, therefore different tools such as involvement of public and an overall public awareness raising on POPs have to be applied.

Evaluation of unintentionally produced POPs releases in the Slovak republic

Air emissions of unintentionally produced POPs in Slovakia had in the period 1990-2001 decreasing trends. The PCDD/PCDF emissions decreased by 76 %, the PAHs by 65 %; HCB by 74 %; and PCBs by 85 %.

The most important source of POPs emissions in Slovakia is the metallurgical sector. In 1990 contributed this sector to 86% of PAHs emissions and to 46% of PCDD/PCDF emissions and in the year 2001 to 79% of PAHs emissions and 61% of PCDD/PCDF emissions. Iron ore sintering and secondary iron and steel production contribute mostly to PCDD/PCDF emissions. Emissions of PAHs are generated predominantly during the coke and electrolytic aluminum production. It is to stress that this sector is one of the most important industrial branches in Slovakia and the volume of processed raw material and production produced are very high. Correspondingly, share of this sector in the total emissions is also high. During the monitored period, emissions of PCDD/PCDF decreased by 31% and PAHs emissions by 32%. HCB emissions decreased by 57% and PCBs emissions by 53%. Production decrease comparing with the year 1990 caused this development, together with gradual implementation of environmental measures in the sector of iron and steel production. PAHs emissions decreased mainly due to reconstruction of aluminum production. Obsolete technology utilizing anodes baked during the process has been replaced with an up-to-date technology utilizing pre-backed anodes. Production volumes in this sector are quite steady in the last years and there is no reason to anticipate their decreasing in the future. Further decrease of emissions from this sector will be therefore possible only by consistent BAT/BEP implementation.

In the period 2001-2003, a broad reconstruction of the sintering units took place; consequently, the present situation is already in compliance with the BAT/BEP requirements

for this technology. PCDD/PCDF emissions from ore sintering will therefore decrease by 80% under the same conditions of production volume, starting with the year 2004. Reconstruction of coke production should be ready by the end of 2004; at the same time, the technology will comply with BAT requirements. For the same production volume, emissions of PAHs will decrease by 90%.

The waste incineration sector is second in order from the PCDD/PCDF emissions point of view. In the year 1990, this sector contributed to 37% of total PCDD/PCDF emissions while in the year 2001 to 29% of PCDD/PCDF emissions. Before 1990, incineration of industrial, communal as well as hospital waste was a relatively common waste management practice in Slovakia. Due to adoption of new legislation in the waste management as well as air protection sectors, technical and technological requirements the waste incineration plants had to comply with got gradually in compliance wit those of the EU. Consequently, the number of waste incineration plants in Slovakia decreased remarkably. On the other hand, technical level of those remaining is gradually improving. Emissions from this sector reached their maximum in the year 1995, when a certain revival of the economy sector, connected with increased industrial waste production took place and the pressure of the new legislation still did not prove. All waste incineration plants will have to comply with the stringent BAT-based emission limits by 31 of December.

Third in order from the PCDD/PCDF emissions point of view is the power and heat production sector. In 1990 contributed this sector to 3% of PAHs emissions and to 16% of PCDD/PCDF emissions, and in the year 2001 to 1% of PAHs emissions and 8% of PCDD/PCDF emissions. Within the energy sector, household heating and commercial sector heating are the main contributors to POPs emissions. This is mainly because unlike in the large public power plants, boilers in these sectors are not always operated under optimal conditions, and at the same time usually not equipped with any kind of end of pipe APC.

Traffic emissions are relatively steady despite of the gradually increasing number of vehicles and volume of road performance. This is due to progressing exchange of the vehicle park in favor of vehicles equipped with 3-way catalytic converter, as well as the steady decrease of leaded fuel use until its ultimate phase out in the year 1996. Contribution of traffic to overall PCDD/PCDF emissions is relatively low (1%); however its contribution to PAH emissions was 7% in the year 1990 and 14% in the year 2001. Though in absolute numbers, in the period 1990-2001, emissions from this sector decreased by 530 kg, what represents 26%.

From PAHs emissions point of view production of carbon materials is important as well as anode production for aluminum industry, even if their contribution to the total is only about 3-5 %. In the period 1990-1995, environmental measures have been introduced in the carbon material production plant (sealing-of the backing oven, thermal emission destruction). At the same time, production of pre-backed anodes for aluminum electrolysis has been launched in 1995. Despite of this, total decrease of PAHs emissions from this sector constituted 39% in the period 1990-2001.

It may be assumed that POPs emissions do occur also in chemical production, particularly in processes utilizing chlorine. However, there is not enough knowledge available at present to estimate these emissions. With regard to the relatively low production volumes, contribution of this sector to the total will be probably nil; however, from the local point of view these emissions should be not neglected. As evident from **Table No. 2.3.3.3/1**, more important

problem in this sector is the PCDD/PCDF content in wastes and products. Since the year 1998, is one of the pulp producers utilizing bleaching technology without elementary chlorine, through what the PCDD/PCDF content in the respective products decreased approximately by 90 %.

Uncontrolled combustion is further POPs emission source, for which emission estimation is a methodical problem; however, from POPs emissions point of view this sector may be an important environmental burden. Usually the incineration takes place under unfavorable conditions, and the incinerated substrate may be a mixture of various materials. The emission factors published for uncontrolled combustion are as a rule by three orders higher as it is in case of combustion under optimal conditions. Assessment of the amount of burned material represents the most important methodic problem.

Tab. No: 2.3.3.3/1: Dioxin and furan emissions (g TEQ) in the Slovak Republic in the year 2001, estimated according to the new methodology

	Category	Air	Water	Soil	Products	Wastes
1	Waste incineration	20,274	0	0	0	58,205
2	Ferrous and non-ferrous metal production	42,575	2,9E-07	0	0	19,177
3	Power generation, cooking	5,244	0	0	0	0
4	Production of mineral products	0,610	0	0	0	0,010
5	Transport	0,524	0	0	0	0
6	Uncontrolled combustion processes	0,466	0	0,373	0	0
7	Production of chemicals, consumer goods	1,9E-05	0,002	0	0,781	344,170
8	Miscellaneous	0,062	0	0	0	0,02
9	Disposal / Landfills	0	0	0	0	0
	Total	**69,756**	**0,002**	**0,373**	**0,781**	**421,577**

2.3.3.4 Identification of problems

- Consistent enforcement of the environmental legislation
- BAT &BEP definition
- Uncontrolled combustion
- Chlorinated and halogenated chemical production
- Waste incineration
- Handling of wastes containing or potentially releasing POPs
- Pulp and paper technologies utilizing chlorine and derivates of chlorine as bleaching agent
- Secondary nonferrous metals production

2.3.4 Inventarization of polluted areas

Authors of the chapter: RNDr. Ivan Čop, RNDr. Milan Deščík

2.3.4.1 Introduction

Occurrence of POPs in the natural environment and in polluted areas or in different areas in general is a function of technological development of the country and its past production infrastructure. In the past, POPs and their effects on human health and environment were not yet sufficiently known and therefore, no effective regulation for their production, spread, use and liquidation existed.

2.3.4.2 Stockholm Convention requirements

Obligations relevant to contaminated areas are listed in part 1.2 of the Convention. Stockholm Convention requires that all parties develop their own strategy for identification of areas contaminated by POPs compounds listed in Annexes A, B or C. Moreover, if remediation of these areas is planned, this should be carried out in an environmentally appropriate manner.

The proposed Action plan (further only AP) is prepared in compliance with "Guidance on Planning and Developing NIPs under the Stockholm Convention" – Guidance Set 6 POPs Contaminated Sites Survey and Action Plan.

2.3.4.3 Situation in the Slovak Republic

1. The most significant group of pollutants contaminating areas in Slovak Republic and classified among chemical compounds called POPs are polychlorinated biphenyls (PCBs). This conclusion is not surprising with regard to the history of production and distribution in Slovakia and is supported by large amount of data in published research and by current monitoring in PCB-polluted areas.

2**. The most significant area (or rather, region) polluted by POPs is the surrounding of former producer of these compounds, Chemko Strážske, which had produced PCBs for almost 25 years.** In this case, not only the area of the factory is polluted, but also area adjacent to waste-water channel, including areas of Zemplínska Šírava dam and Laborec river (including the supply channel of the water dam) and wider area of waste dump.

3. **Important group of PCB-contaminated areas area sites of asphalt mixing plants,** where substantially higher PCB levels in soil samples were recorded. In extreme cases, as much as 53kg of PCB in a ton of soil were revealed. This conclusion is supported by measurements in localities of Ľubiša, Mních, Lehota, Smolenice, Stropkov, Vechec, Zempl. Široká, Žabany. For total generalization of this conclusion, it is necessary to test pollution in the areas of remaining asphalt mixing plants by field investigation on their sites.

4. Other localities with POPs occurrence were identified only by rare samples from different elements of the environment and are recorded in Technical report No. 2. So far, we classify them as nonspecific occurrence justified by 'emergency' disposal with individual POPs.

2.3.4.4 Strategy of approach to a contaminated area

The finished stage of inventarization of POPs-polluted areas has been affected by previously unsystematic collection of relevant data, what applies also to areas that are in the above described as most polluted and most endangered. The data obtained from until now realized projects in these areas lead to useful conclusions with respect to assessment of the rate of pollution of these areas. Nevertheless, we recommend to subject these priority areas to a targeted research in order to quantify the scope of pollution.

Strategy and manner of area decontamination is contingent on thorough knowledge of the contaminated area and degree of its contamination. General approach to contaminated area, that is in accordance with the above can be characterized by following scheme (Fig. 1).

This approach is based on recommended procedure in terms of „A Federal Approach to Contaminated Sites – CSMWG Canada“ (Guidance – Set 6). Proposal of exploration activities should reflect to-date knowledge of the site in following areas:

- scope of contamination (degree of pollution and its spatial dimensions),
- natural conditions at this site relating to threat of spreading of the contamination and thus endangering individual elements of the natural environment and eventually the human organism. This knowledge has the purpose of contamination specification, description of distribution channels of the contaminant from the pollution source to final recipient (human organism and environment), that can result in proposal of ways in which the area can be decontaminated and remedied.

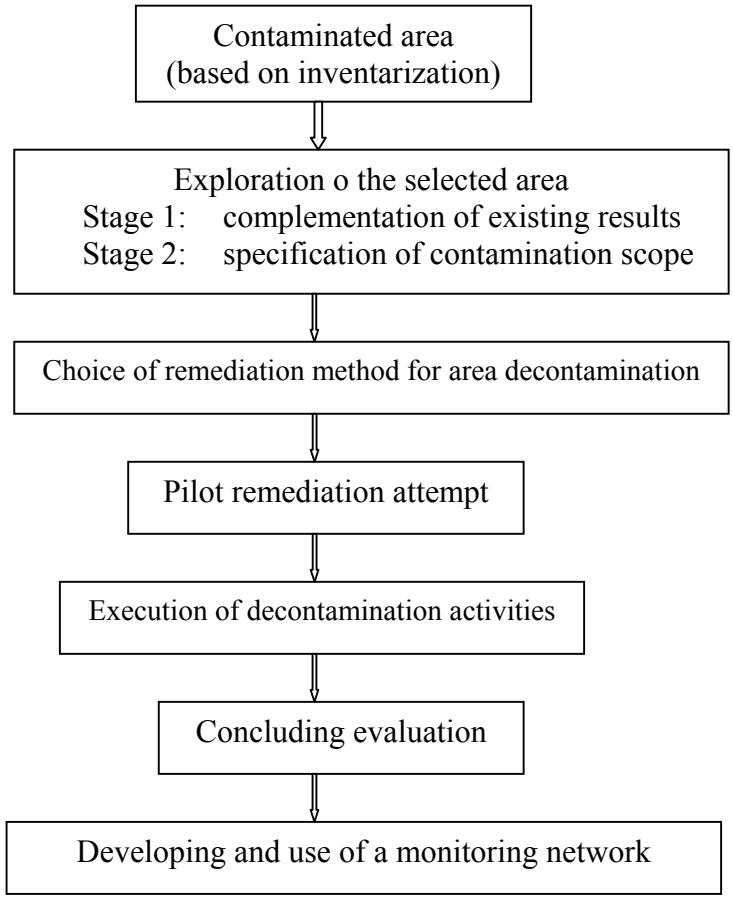
Based on the above, remediation methods are proposed, taking into account scope of decontamination activities, amount of material to be decontaminated and its properties (degree of contamination, contaminated matrix – soil, water, equipment, other contaminated wastes, etc.) and economic and time requirements of these activities.

Proposal of remediation methods, especially the technology of decontamination should reflect specific characteristics of the contaminated material and also distance of individual conaminated sites, current legal limitations for handling with such kind of contaminated material (waste), etc.

2.3.4.5 Principles and sequence of proposed exploration and remediation activities

Proposed exploration activities should follow in several stages, from general characterization of the area to its detailed examination. Each stage should be finished by a stage report and proposal of further exploration activities based on obtained knowledge.

Approach to contaminated area Figure 1



Last stage of the exploration would include evaluation of all obtained data and make a preliminary proposal of decontamination technology.
The exploration should characterize natural conditions of the contaminated area also in broader context, in relation to possible movement of contaminant and quantify its spatial distribution.

2.3.4.6 Problem identification

Based upon current results from polluted areas inventarization and their monitoring we identify following problems:

1. **Ecological exploration of the areas identified by inventarization.**
   As there is insufficient relevant data on scope of pollution in individual areas, there are some uncertainties in quantification and further steps necessary for their remediation. Quantity of expected polluted areas (70 asphalt mixing plants and larger area of Strážske) and estimated cost of exploration, there are following problems:
   a. strategy of realization of the exploration activities

b. exploration methodology
c. unified analytical methodology of PCB detection in the matrix
d. securing of exploration capacities
e. cooperation with local specialized self-government
f. execution of exploration activities
g. monitoring of areas with identified PCB presence

2. **Strategy of remediation of contaminated areas**
   With regard to results of ecological exploration we identify following problems:
   a. prioritization of the areas for decontamination
   b. processing of technical and economic aspects of remediation in individual areas

3. **Execution of remediation activities**
   Following the results of addressing the issues described above, we identify following problems:
   a. financial backing of remediation activities
   b. technical and technological procedures for individual areas
   c. cooperation with local governments
   d. cooperation with non-government organizations
   e. cooperation with the media

For securing of an effective solution of the above tasks, we identify following problem:
4. Establishment of a management and coordination body .

2.3.5 POPs monitoring

Author of the chapter: Mgr. Róbert Chriašteľ

2.3.5.1 Introduction

The obligation to undertake monitoring of the persistent organic compounds (POPs) group is directly specified in both Stockholm Convention and proposal of the Regulation of European Parliament and Council 2003/0119 (COD) on POPs which modifies Directives 79/117/ES and 96/59/59 (further referred to as Regulation proposal). However, neither of these norms specifies the way, how the POPs should be monitored. In the Convention, there is general statement that monitoring programs should be methodologically harmonized by different parties to the Convention and should be carried out in extent appropriate to possibilities of a given party to the Convention.

The obligation of monitoring of 12 compounds defined by the Convention (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene, PCB, DDT, PCDD/PCDF,) is enlarged by proposal of the Regulation for further four compounds listed in POPs protocol to CTRLTAP (chlordecone, hexabromobiphenyl, HCH including lindane, poly-aromatic hydrocarbons). The subject of monitoring should be content levels of these compounds in human organism and in elements of the environment.

2.3.5.2 Requirements of Stockholm Convention on POPs and proposal of EP&C Regulation on monitoring

Stockholm Convention defines in its article 11 requirements for monitoring as follows:

1. The parties shall, within their capabilities, at the national and international levels, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants, including on their:

    (a) sources and releases into the environment
    (b) presence, levels and trends in humans and the environment
    (c) environmental transport, fate and transformation
    (d) effects on human health and the environment
    (f) release reduction and/or elimination
    (g) harmonized methodologies for making inventories of generating sources and analytical techniques for the measurement of releases.

2. In undertaking action under paragraph 1, the parties shall, within their capabilities:

    (a) support and further develop, as appropriate, international programs, networks and organizations aimed at defining, conducting, assessing and financing research, data collection and monitoring, taking into account the need to minimize duplication of effort;
    (b) support national and international efforts to strengthen national scientific and technical research capabilities, particularly in developing countries and

countries with economies in transition, and promote access to, and the exchange of, data and analyses;

(c) take into account the concerns and needs, particularly in the field of financial and technical resources, of developing countries and countries with economies in transition and cooperate in improving their capability to participate in the efforts referred to in subparagraphs (a) and (b)

(d) undertake research work geared towards alleviating the effects of persistent organic pollutants on reproductive health;

(e) make the results of their research, development and monitoring activities referred to in this paragraph accessible to the public on a timely and regular basis;

(f) Encourage and/or undertake cooperation with regard to storage and maintenance of information generated from research, development and monitoring.

Article 16 than further states:

1. Commencing four years after the date of entry into force of this Convention, and periodically thereafter at intervals to be decided by the Conference of the Parties, the Conference shall evaluate the effectiveness of this Convention.

2. In order to facilitate such evaluation, the Conference of the Parties shall, at its first meeting, initiate the establishment of arrangements to provide itself with comparable monitoring data on the presence of the chemicals listed in Annexes A, B and C as well as their regional and global environmental transport. These arrangements:

   (a) should be implemented by the parties on a regional basis when appropriate, in accordance with their technical and financial capabilities, using existing monitoring programs and mechanisms to the extent possible and promoting harmonization of approaches

   (b) may be supplemented where necessary, taking into account the differences between regions and their capabilities to implement monitoring activities

   (c) shall include reports to the Conference of the Parties on the results of the monitoring activities on a regional and global basis at intervals to be specified by the Conference of the Parties.

3. The evaluation described in paragraph 1 shall be conducted on the basis of available scientific, environmental, technical and economic information, including:

   (a) reports and other monitoring information provided pursuant to paragraph 2

   (b) national reports submitted pursuant to Article 15

   (c) Non-compliance information provided pursuant to the procedures established under Article 17.

In Annex D the Convention further defines the obligation to submit evidence of bio-accumulation potential of any chemical compound that should be included in the list of chemical compounds in Annex A, B, or C. This evidence should be based on biota monitoring.

Proposal of the Regulation defines requirements for monitoring in its Article 9 as follows:

Commission and member countries will develop in close cooperation appropriate programs and mechanisms that will be in accordance with current state, serve for provision of comparable data from monitoring of presence of dioxins, furans and PCB in the environment. Implementation of these programs and mechanisms will take into account recent development pursuant to POPs protocol to CRLTAP and Stockholm Convention.

2.3.5.3 Situation in Slovakia

There is no monitoring program focused specifically on POPs in Slovakia. Despite this, POPs are monitored in practically all elements of the environment and living organisms including humans, as well as in foodstuff, but in an uncoordinated manner.

None of the individual currently realized monitoring programs comprehensively covers whole area of Slovakia.

Evaluation of spatial distribution of individual POPs can be carried out on regional level by combination of results of monitoring by several institutions. In case of PCB, HCB and DDT this is monitored in water and farm animals, Heptachlor is only monitored in water. The data basis is insufficient for planar evaluation of other parameters and matrices. The results of supplementing monitoring that was carried out as a part of project Initial help for Slovakia in fulfillment of obligations following from Stockholm Convention, indicate that pollution of the environment by POPs pesticides does not constitute a problem for Slovakia.

Highest level of POPs content was detected in human population. Relatively high POPs levels were recorded also by farm animals. From the elements of the environment, highest level of POPs concentration was observed in soils. However, very high POPs contents were locally documented also in sediments.

The monitoring programs indicate that there is trend of decreasing POPs occurrence in all monitored matrices, where available data allow for time series analysis.

2.3.5.4 Problem identification

Priority problem in the area of monitoring is the insufficient communication between the institutions methodologically coordinating and executing the partial monitoring programs. To achieve higher effectiveness of POPs occurrence evaluation in different matrices, following problem areas will have to be addressed:

- Focus of POPs monitoring on their potential sources
- Coordination of POPs measurement in individual monitoring programs and their methodological direction
- Coordination of presentation of the measurement results
- Insufficient data base about the occurrence of PCDD/PCDF in all monitoring matrices
- Insufficient data on POPs occurrence in the air

Solving of these problem areas can transform into following measures:

1. Establishment of a POPs monitoring working group
2. Processing of a methodology for unified system of POPs monitoring on national level
3. Securing execution and coordination of monitoring according to a plan prepared on national level
4. Analysis of the methodologies and securing coordination of laboratories for use of sufficiently precise and selective analytical methods
5. Securing the information flow between institutions responsible for monitoring and the institution/s responsible for reporting
6. Making the monitoring results accessible to expert and general public in sufficiently intelligible form
7. Supporting the research in areas related to design and operation of monitoring on national and international level

2.3.6 Reporting and information exchange

Author of the chapter: Ing. Monika Kissová

2.3.6.1 Introduction

Slovak Republic has a system of reporting on some of the POPs chemicals on national and international levels, as a result of its participation in several international conventions, such as Convention on Long-Range Transboundary Air Pollution and Protocol on persistent organic pollutants (further referred to as POPs protocol) to this convention and Basel Convention on regulation of transboundary transfer of hazardous wastes and their disposal.

Stockholm Convention on POPs, ratified by Slovakia in august 2002, states general obligations of reporting to the Conference of Parties and Secretariat of the Stockholm Convention and information exchange through the national focal point without any further specific dates and procedures.

As a part of Slovak preparation for membership in the EU, it is necessary to adopt obligations following from the most recent EU legislation. Currently, there is a proposal for European Parliament and Council Regulation on POPs (Regulation) and on change of Directives 79/117/EEC and 96/59/EC. This proposal, which is in the legislative process, also implies reporting obligations for the member countries to submit reports on POPs to European Commission via National Competent Body. This body will also act as a national focal point for Stockholm Convention.

One of the measures Slovakia is to undertake based on Stockholm Convention and the Regulation, is to establish national focal point or National Competent Body for exchange of information and reporting on POPs.
As the action plan for reporting is a part of the obligations following from the Stockholm Convention, the institution will be further referred to as national focal point (NFP-POPs) which will have functions according to Articles 9 and 15 of the Convention.

2.3.6.2 Stockholm Convention requirements

Stockholm Convention specifies duties for all it Parties relating to exchange of information and reporting (Articles 9 and 15).

In terms of Article 9 of the Stockholm Convention, each Party shall:

a) facilitate or undertake the exchange of information relevant to reduction or elimination of the production, use and release of POPs; alternatives to POPs including information relating to their risks as well as to their economic and social costs.

The exchange of information will take place either directly or through the Secretariat.

b) establish a national focal point for the purposes of subparagraph a);

c) For the purposes of the Convention, information on health and safety of humans and the environment shall not be regarded as confidential. Parties that exchange other information pursuant to this Convention shall protect any confidential information as mutually agreed.

According to Article 15 of the Convention shall Slovakia submit reports in regular intervals and in format decided by the Conference of Parties at its first meeting to:

a) Conference of the Parties:

- about measures taken to implement provisions of the Convention and on effectiveness of such measures in meeting the objectives of this Convention.

b) the Secretariat:

- statistical data on its total quantities of production, import and export of each of the chemicals listed in Annexes A and B or a reasonable estimate of such data;
- 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.

According to Annex A, part II of the Stockholm Convention will Slovakia every 5 years submit to Conference of the Parties reports on progress of PCB elimination.

2.3.6.3 Situation in the Slovak Republic

Institutional coverage of POPs management that can take care of reporting activities pursuant to the Stockholm Convention (Articles 9 and 15) is currently spread between several institutions belonging under different ministries in Slovakia. Moreover, it must be noted that current reporting system on POPs that is a shared responsibility of these various institutions is content wise not sufficient for the purposes of the Convention requirements.

Fulfillment of the Stockholm Convention requirement on provision of information and reporting in the area of import, export, use and releases of POPs (excluding production) is in Slovakia partially covered as a part of pursuing the obligation from international conventions and existing laws such as:

- Convention on Long-Range Transboundary Air Pollution and Protocol on POPs to this convention;
- Basel Convention on Regulation of Transboundary Transfer of Hazardous Wastes and their Disposal;
- Act No. 163/2001 Coll. on chemicals and chemical appliances, as amended;
- Act No. 223/2001 Coll. on waste and on amendment and complementation of other laws, as amended;
- Act No. 285/1995 Coll. on plant-medical care, as amended;
- Act No. 245/2003 Coll. on integrated prevention and control of environment pollution and on amendment and complementation of other laws;
- Act No. 478/2002 Coll. on air protection that amends and complements Act No. 401/1998 Coll. on fees for air pollution, as amended;
- Act No.184/2002 Coll. on waters and on amendment and complementation of other laws (Water Act)

Institutions in Slovakia that pursuant to these legal norms cover the issues related to chemicals (that may include POPs) and have information that partially allows for fulfillment of requirements of the Articles 9 and 15 of the Stockholm Convention:

- Ministry of Industry SR (MI SR);
- Ministry of Agriculture SR (MA SR) ;
- Ministry of Environment SR (ME SR);
- Ministry of Healthcare SR (MH SR);
- Center for Chemical Compounds and Preparations (CChCP);
- Central Control and Testing Agricultural Institute (CAITI);
- Slovak Environmental Agency (SEA);
- Slovak Hydrometeorological Institute (SHMI);
- Customs Directorate SR (CD SR);
- Toxicological Information Centre (TIC);
- Slovak Commercial Inspection (SCI);
- Slovak Environmental Inspection (SEI);

Based on the analysis of Stockholm Convention requirements, it is necessary to establish a national focal point within the existing institutional structure. This focal point will be responsible for reporting to Secretariat of the Convention. The reports should contain, among others, statistical data or estimates on produced, imported and exported POPs listed in Annexes A and B of the Convention.

Regarding the fact that not all POPs are covered in national databases, it will be necessary to amend some existing laws that shall enable more effective monitoring and control of exports, imports, release and use of chemicals in Slovakia (including POPs).

POPs compounds are currently not produced in Slovakia and therefore there is no established system for reporting of their production. However, it must be noted that there is no legal prohibition of POPs production. This means that the public administration bodies carrying out the environmental impact assessment (Act No. 127/1994 on EIA, as amended) by proposed buildings, establishments and other activities (e.g. complex chemical establishments for industrial chemical production of halogen hydrocarbons, etc.), have no legal support to prohibit production of POPs or POPs-like compounds. It may be stated, based also upon this fact, that no production of prohibited POPs, or POPs-like compounds has been allowed during approval procedures of new production facilities. For proving the report on factual non-production of POPs compounds, we propose that appropriate control institutions, such as Slovak Environmental Inspection carries out a targeted research focused on production of chemicals.

The reporting mechanism for submitting reports on referenced chemicals in the Slovak market (Act No. 163/2001 Coll. on chemical compounds and appliances) exists only in relation to reporting to currently competent institutions, i.e. Center for Chemical Compounds and Appliances (CChCP) to the MI SR, MH SR and ME SR.

Based on the inventarization of chemicals introduced to Slovak market in years 1999, 2000, and 2001, carried out by CChCP, none of them was listed among POPs in Annex A or B of the Stockholm Convention.

Cards with safety data on all dangerous chemicals introduced to Slovak market are kept by Toxicological Information Center.

Slovak Trade Inspection is a control body for this area and it submits reports from its controls to MI SR. There is an amendment of Act No. 163/2002 Coll. under preparation, as a result of which this control will be carried out also by SEI and its results will be submitted to ME SR.

Permission process for the appliances for plant protection for the purposes of their introduction to the Slovak market is under jurisdiction of MA SR, specifically Registration Commission to MA SR. This commission receives and records requests for registration from entities that intend to introduce a plant-protecting appliance to the Slovak market. CAITI also collects data on amounts and types of registered appliances for plant protection that are in circulation in Slovakia, as well as data on the consumption of these appliances by individual entities.

Among legal norms currently in force in Slovakia Decree of MA SR No. 3322/3/2001-100, to Act No. 285/1995 Coll. on plant-medical care as amended, currently exists a 'List of prohibited active substances' which may not be contained in any of the permitted plant protecting appliances and none of the POPs is present. There is however a law (Act No. 163/2001 Coll. on chemical products and appliances) that prohibits market introduction of chemicals for the purposes of plant protection. Among chemicals prohibited by this law are also following POPs: aldrin, chlordane, dieldrin, DDT, endrin, heptachlor, hexachlorbenzene, toxaphene and appliances containing more than 1g/kg DDT. This list does not contain mirex.

Similarly, as a part of the PIC procedure, import of following POPs into Slovakia is prohibited: aldrin, chlordane, dieldrin, heptachlor, hexachlórbenzene, DDT. Following compounds are missing from this list: endrin, mirex and toxaphne.

In terms of the Act No. 163/2001 Coll. on chemical compounds and appliances, market introduction or use of PCB and HCB is restricted/forbidden. The mechanism of tracking of PCB use is provided by the Act No. 24/2004 Coll. that amends and complements Act No. 223/2001 Coll. on waste and amendment and complementation of other laws, as amended and amendment and complementation of other laws. The purpose is to totally exclude from use and destruction of contaminated equipments with PCB content over 0,005% of weight until the end of 2010.

Organizations authorized by ME SR for management and actualization of these contaminated equipments are Slovak Environmental Agency and Waste and Environment Management Center Bratislava (SEA, WEMC).

Mechanism for tracking the use of HCB (other than in plant-protecting appliances) in Slovakia does not exist. HCB may not be contained in: human and veterinary medicaments, cosmetic appliances, motor fuels, oil products that are to serve as fuels to mobile or stationary combustion equipment, fuels sold in closed packing (e.g. bottles with liquid gas) and in colors used by artists.

Mechanism relating to use (or rather not use) of POPs appliances for plant protection exists as a part of control carried out by CAITI.

Mechanism for reporting on real imports and exports of POPs in Slovakia does not exist. POPs listed in Annexes A and B of the Convention (except for mirex) are subject to export/import permission process. During this process, MI SR gives a preliminary permission

for import/export of POPs (after statement of ME SR, MH SR and MA SR). However it is not possible to identify amount of POPs that has actually been imported/exported, due to different methodology of monitoring import and export by Customs, who have their own classification of goods, which does not specify POPs.

MI SR is the institution that has within the PIC procedure the authority to decide on imports of POPs, apart for endrine, mirex and toxaphene. Import of POPs to Slovakia is prohibited, with the exception of endrine, mirex and toxaphene.

Mechanism of reporting on the old reserves of the plant-protecting appliances after the end of their effectivity period does not exist. Only CAITI has data about old deposits of appliances for plant protection after the end of their effectivity period. This data were obtained within the surveys in the years 2000 and 2003 (there is 28 tons of POPs appliances for plant protection after the end of their effectivity period. 98% of known warehouses were controlled during the survey.

Base upon the control results, CAITI has also data on total amount of already disposed old reserves of plant-protecting appliances (including POPs). In the context of current legal mechanism for tracking of origin and use of waste (by means of RWIS), it is not possible to identify waste from POPs plant-protecting appliances (old reserves of POPs plant-protecting appliances after the expiry).

Mechanism for tracking of POPs waste origin, handling, imports and exports does not exist for all of the Stockholm Convention POPs. As there exist different classifications of waste for:

- origin and handling of waste (Decree of ME SR No. 284/2001 Coll. that establishes Catalogue of Wastes),
- import/export of waste (Decree of ME SR No. 234/2001 Coll. on classification of waste into Green list of waste, Yellow list of waste and Red list of waste and on model documents required for transport of waste, and Basel Convention on regulation of transboundary transfer of hazardous wastes and their disposal),

it is not possible to follow real amounts of originated, imported and exported POPs wastes within the actual regional waste information system (RWIS). RWIS is operated by Center of Waste and Environmental Management of Slovak Environmental Agency (CWEM SEA). CWEM also fulfills the function of focal point for Basel Convention.

As a part of international obligations following from the Convention on Long-Range Transboundary Air Pollution and its POPs Protocol, ME SR annually publishes a report on yearly emissions of all POPs. Primary data for ME SR are prepared by Slovak Hydrometeorological Institute (SHMI). Pursuant to the Act No. 245/2003 on integrated prevention and control of environment pollution, a new mechanism for providing information on emissions is currently being implemented. This provides information on PCDD/PCDF emissions to the air and HCB emissions to air and water, to the Integrated registry of the information system for the European Commission (EC). These data will be processed by SHMI and the Slovak Environmental Agency in Banska Bystrica will be responsible for the reporting to EC. First information will flow to the Integrated Registry of the Information System in the year 2005.

2.3.6.4 Problem identification

Priority problems in the area of POPs reporting pursuant to the requirements of the Articles 9 and 15 of the Stockholm Convention, are the absence of one single institution that could supply comprehensive information and reports on POPs in Slovakia to the Stockholm Convention Secretariat.

Problem areas:

1. Establishment of the national focal point for fulfillment of the requirements of Articles 9 and 15 of the Stockholm Convention, this being a part of already existing organization (or institution) keeping record on some POPs
2. Establishment of a procedure and mechanism for flow of partial information on POPs from competent national institutions to NFP-POPs
3. Obtaining of complete and relevant data on (production, imports, exports, use, … of) POPs from the national competent institutions; this data should be in format appropriate for processing of a report for Stockholm Convention Secretariat
4. Legal regulation for POPs specification and following possibility of their tracking in terms of appropriate law.

Addressing of following issues may prove problematic in Slovakia:

- Appointment of the institution that will apart from its current duties become NFP-POPs,
- Cooperation of competent national institutions for POPs reporting to NFP-POPs (introduction to the market, use, imports, exports, origin/handling and imports/exports of POPs wastes)
- Definition of procedures and mechanisms for submitting of partial reports to NFP-POPs
- Establishment of measures for control of chemicals production in Slovak market and of POPs production (rather non-production) reporting mechanism to NFP-POPs
- Establishment of measures for control of use of products, which should not contain HCB
- Definition of effective measures for monitoring of real amounts of POPs exports and imports
- Definition of effective measures for monitoring of origin, handling, imports and exports of all POPs wastes
- Development of effective measures for monitoring of old reserves of POPs plant-protecting appliances as well as for control of their handling
- Adjustment of existing partial POPs record systems according to Stockholm Convention needs

2.3.7 Raising of public awareness on POPs

Authors of the chapter: RNDr. Juraj Gavora, Mgr. Katarína Lipovská

2.3.7.1 Introduction

Public participation on addressing the POPs-related issues belongs to indirect tools for elimination of problems with persistent organic pollutants. It consists of two basic interconnected processes:

- sufficiency of information available to expert and general public – passive reception (information, education)
- public participation on implementation of measures – active participation (facilitation, voluntary tools)

It is not possible to expect active participation of public on POPs elimination without available and comprehensible information. This statement is valid for both, expert workers (e.g. in relation to elimination of PCB-containing equipments, including training of operating such equipments regarding the work safety) as well as general public (e.g. education relating to burning waste in domestic fire places).

2.3.7.2 Stockholm Convention requirements

Stockholm Convention puts significant emphasis on public participation and defines areas where public participation is recommended:

1. awareness raising among policy and decision makers
2. provision of information to the public
3. implementation of education programs aimed at specific target groups
4. public participation on solutions and on development of measures for implementation of the Convention provisions
5. training of workers, scientists, and technical and managerial personnel
6. development of educational materials
7. implementation of educational and training programs
8. making accessible the information on social and economic impacts of POPs elimination.

2.3.7.3 Situation in Slovak Republic

Environmental education is one of possible ways how to satisfy Stockholm Convention requirements relating to work with public for securing public information, education and general awareness raising on POPs by target groups defined by the Convention. This environmental education does not constitute a specially codified or accentuated issue within the EU policies. EU policy is focused on education as such, its availability, quality, non-discrimination, cooperation, etc. This also means that it was not a priority during the SR and EC negotiations. Partially relevant issues are addressed in the chapters Environment and Consumer and Health Protection. It can be assumed that after ratification of the Convention, there will be increased attention paid to the issue of environmental education.

Basic documents on EU level that currently and indirectly address the issues of environmental education, awareness raising and public participation on environmental decision making, are: Aarhus Convention (AC), EP&C Directive 2003/4EC on public access to environmental information and on cancellation of the EC Directive No. 90/313/EHS (in force since 14 02 2005), and the Action Plan for the Environment and Constituting Contracts of the European Community. However, SR is not yet party to AC, so it is difficult to identify possible cumulative effect of the obligations relevant to securing of the information standard in Slovakia, be it on the environment in general or in specific area of POPs.

Measures for the accession are gradually implemented. On December 17, 2003, Slovak government passed a proposal of the Act on environment information gathering, keeping and disseminating. This Act will apart for the provisions of the first pillars of AC partially transpose also the EP&C Directive 2003/4/EC. The proposal of this law started a serious discussion on the information provision in Slovak Republic. Most of the important remarks represented disagreement with special mode of provision of environmental information in passive reception. Generally valid Act of NC SR No. 211/2000 Coll. on the freedom of information is according to opinions of most commentators sufficient and ME SR initiative is considered to be restrictive. As a result of commenting procedure, the passed proposal of the Act thus covers only area of gathering and keeping of the information, including basic provisions. Area of making the environmental information accessible is changed to dissemination of environmental information. In making the environmental information accessible, Act No. 211/2000 Coll. on the freedom of information will be the applicable law.

With respect to evaluation of the situation in the area of public rights pursuant to Article 10 of the Stockholm Convention, it is necessary to list some of the principles of government proposal of the Act on gathering, keeping and dissemination of environmental information. This proposal is currently negotiated within the bodies of Slovak Parliament, under parliamentary print code 505. This act
This act adopts the first pillar of Aarhus Convention and partially transposes the EP&C Directive 2003/4EC on public access to environmental information and on cancellation of the EC Directive No. 90/313/EHS. The proposal of this act deals with following:

a) There is a broad and precise definition of the term “environmental information” (including POPs, their effects, their handling, etc.);
b) It defines so-called obligatory subjects and their obligations, especially to:
    1. gather, keep and if necessary update environmental information relating to performing of their public functions; this should be done in a way that will best enable transparent and effective public access to the environmental information;
    2. disseminate environmental information that are at their disposition – this should be done with preference on public communication networks (especially the Internet);
c) It requires ME SR to keep and actualize so-called metadata catalogue, list of obligatory subjects with specification of types of environmental information that they keep,
d) It requires establishment and maintenance of the National Pollution Register, as a structured database based on obligatory periodic (yearly) reporting from the operators of relevant companies. Data on pollutants release and their transfer outside the source area will be in this register kept in a way that will allow search by:
    1. pollution source and its location,
    2. activity
    3. operator

4. pollutant or waste
5. element of environment into which the pollutant is released,
6. target of the pollutant or waste transfer outside the source are, or according to whether the aim is their disposal or recycling.

e) It deals with monitoring of:
   1. release of 86 chemicals into the air, water and soil – among them are all POPs from the Annexes A to C of the Stockholm Convention, as well as
   2. transfer of wastes (including POPs-polluted wastes) outside the plant,

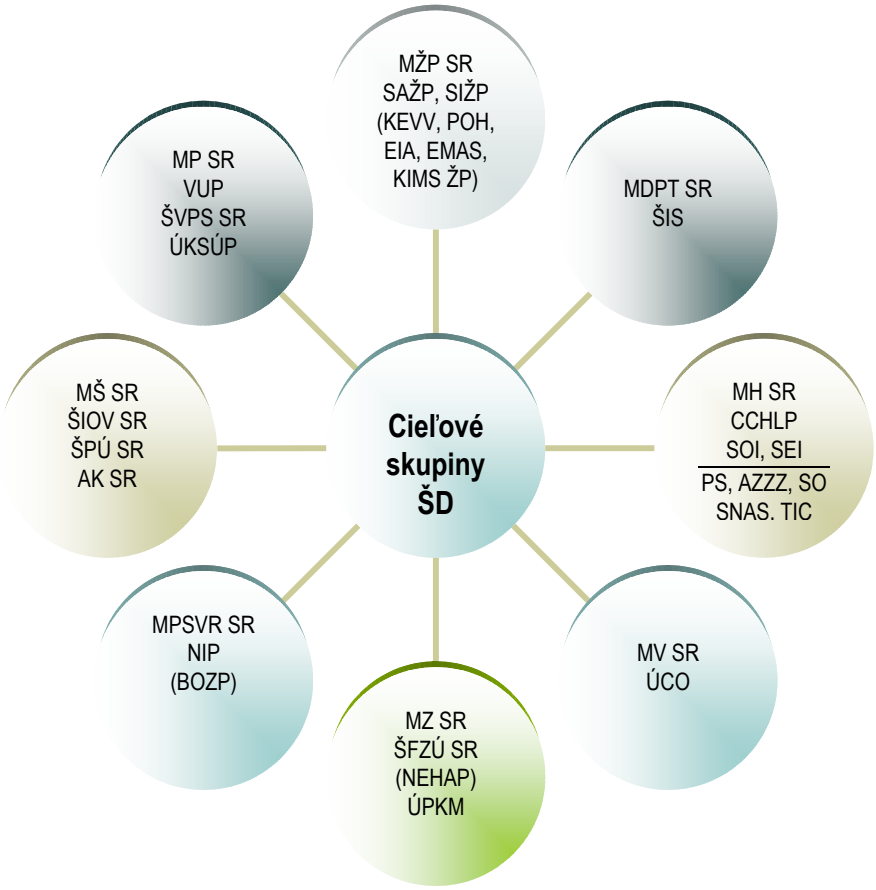
   from the plants meeting the criteria in the Annex 2 of this Act and from diffuse sources, if release or transfer of pollutant or waste exceeds appropriate threshold values.

   This register is so-called PRTR (Pollutants Release and Transfer Register) in terms of Article 5, paragraph 9 of the Aarhus Convention. Its legal specification in the government proposal of the Act is fully compatible with the Protocol on pollutant release and transfer to the Aarhus Convention. This protocol was signed in Kiev in May 2003 – Slovakia is not a party to this protocol.

According to Stockholm Convention aims, public awareness on POPs represents a methodical procedure of making the information on POPs accessible to individual target groups. The content of this procedure will be complementary connected to the outputs of monitoring and reporting and information exchange systems. It reflects up to now non-existent unified monitoring and reporting system on chemicals in general; also the system of informing the public on POPs has a similar character.

Competency overlaps and numerous interference points may be identified from the scheme of relationships that includes public administration bodies, institutions under their management and their relevant documents and programs. This scheme also introduces positions of potential partners that should participate in implementation of the Stockholm Convention provisions. Position of the Stockholm Convention target groups is therefore central, from this point of view.

Scheme: Institutional context of the POPs issues



This situation is also complicated by the undergoing economic transformation (which is connected also with the reform of the education system), which apparently lacks effective economic tools for stimulation of environmental education activities. The importance of building the environmental awareness of the population and forming of the 'eco-social competences of the individuals' is also underestimated.

When preparing the proposal for fulfillment of the Stockholm Convention requirements in the areas of informing and education, it is necessary to consider the alternative of implementing the proposed system into other, already existing information and education systems. It must be considered, whether a separate 12 chemical information system would not be too narrow, as analogous and broader systems exist or are built (chemicals, dangerous chemicals, or implementation of the Directive on Integrated control and prevention of pollution, Framework Water Directive, etc.). Strategic documents for education, like Conception for environmental education and Conception for work safety and health protection, are prepared. It is also necessary to take into account the finalizing public administration form, which will affect mainly the institutional context of implementation of such system.

The results of initial analysis clearly show that there is no integrated system for the area of public involvement (i.e. securing the informing of expert and general public, public participation on decision making, etc.). Public receives information on POPs and other dangerous chemicals at random and there are no systematic education programs for the specialists. The absence of coordinated information system is partially compensated by the outputs of the research tasks and partial projects within different programs.

Situation in Slovakia has further specifics:

1. There no POPs currently produced or used in Slovakia (with the exception of existing PCB in electrical equipment
2. No POPs are currently imported to SR
3. POPs occurrence in the natural and working environment constitutes a problem only relating to PCB, in the natural environment, the region of Zemplin dominates
4. Unintentional POPs production occurs (apart for a few specific production technologies) by burning of waste at domestic fire places.

Regarding the above, priority objectives and activities crucial for fulfillment of the Stockholm Convention provisions were proposed for the action plan for work with public. These objectives are divided on short-term, medium-term and long-term (chap. 3.2.7). Starting points listed in the next chapter were used for their identification.

2.3.7.4 Problem identification

- General absence of systematic approach to information dissemination and public participation on decision-making process; insufficient cooperation among responsible sectors, government departments, competent bodies and institutions
- Lacking public awareness of pollution levels in the particular components of environment and food in the contaminated Zemplín area
- Need to raise awareness among plant inspectors and customs officers on the possibility of imports of non-permitted plant protection preparations containing POPs
- Insufficient knowledge in the industrial sectors about hazardous properties of POPs containing equipment and about the way of handling with them, including their sound destruction
- Low public awareness concerning unsuitability of certain wastes burning in household stoves
- Need to include the issues of POPs (and other hazardous chemicals) in appropriate manner into the curricula at all levels of the educational process structure

3. Strategies and Action Plans

3.2 Detailed Strategies and Action Plans

3.2.1 Action Plan: POPs Pesticides

Author of the chapter: PaedDr. Martin Murín

3.2.1.1 Setting of priorities

Based on the assessment of results of the POPs pesticides inventory in Slovakia, considering the Stockholm Convention provision as well as the agreed priority setting criteria, the following action plan measures are proposed:

1. To assure inventorying of POPs pesticides; elaborate and implement a state support scheme for this problem area;
2. To secure environmentally sound destruction of POPs pesticides in Slovakia with respect to BAT/BEP;
3. To set up and implement a public awareness raising information campaign; in particular adequate training of those, performing inventory of obsolete pesticide stockpiles and wastes in the agricultural sector.

The proposed priorities are elaborated in more detail in the following text. Each chapter ends with a table containing the proposed activities (column 1) in order to meet the requested outputs (column 2) the assumed timeframe (column 3), proposed institution/body responsible for the implementation (column 4) and a reference to further details and annexes of the NIP (column 5).

3.2.1.2 Measures proposed

1. To assure inventorying of POPs pesticides; elaborate and implement a state support scheme for this problem area;

Need for detailed inventory of POPs pesticides is implied by the Stockholm Convention provisions, but is also a pre-requisite for final long-term storing of hazardous substances, having high risk of possible contamination. The State support is an effective targeted measure to prevent uncontrolled releases of obsolete stocks to landfills, or even directly to the environment.

An overview of particular proposed measures, proposed responsible organization, timeframe for implementation of the measure and the relevant reference, are listed in the table below.

	Activity	*Requested output / indicator of success*	*Timeframe*	*Responsible institution /body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1.	***To assure inventorying of POPs pesticides; elaborate and implement a state support scheme for this problem area;***				
1.1	Elaborate and adopt a strategy for inventory completion, collection, and disposal of obsolete pesticide stocks, with state contribution	Elaboration and adoption of the program	Jun 2004	MA SR, ME SR	
1.2	Elaborate control mechanisms and cooperation of inspection bodies to oversee POPs wastes	Agreement of inspection bodies	Jun 2004	MA SR, ME SR	
1.3	Discuss and develop schemes of positive influence onto entities, having active roles and responsibilities in this area, mainly on small-scale agricultural companies	Elaboration and implementation of an information campaign	Ongoing	MA SR	

2. To secure environmentally sound destruction of POPs pesticides in Slovakia with respect to BAT/BEP;

From the point of view of their sound destruction/disposal, POPs pesticides create a problem due to their chlorine content and thus the possibility of dioxin and furan generation during incineration processes.

Slovakia is participating in the international program supporting non-combustion techniques for POPs destruction *(„Demonstration of viability and removal of barriers that impede adoption and effective implementation of available, non-combustion technologies for destroying POPs)“,* and aims at obtaining of a non-combustion POPs destruction unit in it's framework.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
2.	***To secure environmentally sound destruction of POPs pesticides in Slovakia with respect to BAT/BEP;***				
2.1	Secure effective support of the program on non-combustion technologies for POPs destruction	Adoption and implementation of the project	2004 - 2010	ME SR, MA SR	GEF project
2.2	Creation of the necessary legal framework to apply the non-combustion technologies for final disposal of POPs pesticides	Amendment of the decree	2004	ME SR	Reduction of exports, incineration prevention
2.3	Disposal of POPs pesticides in Slovakia with state contribution	Destruction of stockpiles in Slovakia	Until 2007	Governm ent of Slovakia	Supporting safe collection and disposal

3. To set up and implement a public awareness raising information campaign; in particular adequate training of those, performing inventory of obsolete pesticide stockpiles and wastes in the agricultural sector

The need of raising knowledge about POPs and other hazardous chemicals in the agricultural sector relates, among other things, also with broad changes, which took place in the agricultural sector during the last years.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
3.	***To set up and implement a public awareness raising information campaign; in particular adequate training of those, performing inventory of obsolete pesticide stockpiles and wastes in the agricultural sector***				
5.1	Define short-term, middle-term and long-term government policy goals in this area, and appropriate tools to ensure implementation of activities leading to decreasing of health and environmental hazards	Adoption of a program to prevent creation of obsolete pesticide stockpiles	31 12 2004	MA SR	

3.2.1.3 Time and financial plan

To calculate the financial needs of implementation of the Action Plan: Pesticides, most important is the measure 2: *Environmentally sound destruction of POPs pesticides in Slovakia with respect to BAT/BEP*.

When calculating the financial needs, destruction of POPs-containing pesticides, utilizing non-combustion technology in the framework of the GEF-supported UNIDO project was considered.

Included into the total costs are also costs of waste logistics to the disposal site. However, regulated waste haulage has been assumed. In case of non-regulated waste haulage the costs of logistic will be higher.

Substantial state contribution supporting implementation of this action plan is assumed, mainly for pesticide destruction by subsidizing of the destruction up to 100% of the destruction price. It is assumed that destruction price per one kilogram of waste will be up to Sk 64. Total destruction costs are estimated to amount 1,926 mil Sk, out of which the amount 1,622 mil Sk should be included in the state budget under the budget category of the Ministry of Agriculture. The respective stockpiles keepers will cover the costs of pesticide transport to the destruction site.

	Measure / Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Private sector*
1	**Inventorying of POPs pesticides; elaboration and implementation of a state support scheme for this problem area**	**0**	**587 000**	**0**	**0**	**0**	**0**	**0**	**587 000**	**587 000**	**0**	**0**
1.1	Elaborate and adopt a strategy for inventory completion, collection, and disposal of obsolete pesticide stocks, with state contribution		337 000						337 000	337 000		
1.2	Elaborate control mechanisms and cooperation of inspection bodies to oversee POPs wastes		250 000						250 000	250 000		
1.3	Discuss and develop schemes of positive influence onto entities, having active roles and responsibilities in this area, mainly on small-scale agricultural companies (not figured, included in 1.1)								0			
2	**Environmentally sound destruction of POPs pesticides in Slovakia with respect to BAT/BEP**	**36 000**	**0**	**0**	**1 890 000**	**0**	**0**	**0**	**1 926 000**	**1 622 700**	**0**	**303 300**
2.1	Program for POPs pesticides destruction	36 000			1 890 000				1 926 000	1 622 700		303 300
3	**Information campaign to raise knowledge – see public relations**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			
	Measures in total	**36 000**	**587 000**	**0**	**1 890 000**	**0**	**0**	**0**	**2 513 000**	**2 209 700**	**0**	**303 300**
	State budget	36 000	587 000	0	1 586 700	0	0	0	2 209 700			
	Regional budgets	0	0	0	0	0	0	0	0			
	Private sector	0	0	0	303 300	0	0	0	303 300			

3.2.2 Action plan: Equipment and Wastes Containing PCBs

Author of the chapter: PaedDr. Martin Murín

3.2.2.1 Setting of priorities

Based on assessment of results of the PCBs containing equipment and wastes inventory in Slovakia, considering the Stockholm Convention provisions and EU Directives as well as the agreed priority setting criteria, the following action plan measures are proposed:

1. To assure inventorying of PCBs containing equipment;
2. To secure environmentally sound destruction of PCBs in Slovakia, with respect to BAT/BEP;
3. To assure and carry out decontamination of polluted areas;
4. To assure elaboration and implementation of technical standards concerning analysis, transportation, storage, exchange, decontamination and destruction of PCBs;
5. To set up and implement a public awareness raising information campaign; in particular adequate training of public as well as private sectors.

The proposed priorities are elaborated in more detail in the following text. Each chapter ends with a table containing the proposed activities (column 1) in order to meet the requested outputs (column 2) the assumed timeframe (column 3), proposed institution/body responsible for the implementation (column 4) and a reference to further details and annexes of the NIP (column 5).

3.2.2.2 Measures proposed

1. To assure inventorying of PCBs containing equipment;

Need for detailed inventory of POPs pesticides is implied by the Stockholm Convention provisions as well as by the provisions of EU directives, but also by the necessity of preventing that PCBs contaminated equipment is deposited on landfills in uncontrolled way, without previous safe and environmentally sound disposal.

According to the current proposal of a ministerial decree, this task is assigned to the Slovak Environmental Protection Agency. The responsible department needs personal as well as technical strengthening in order to fulfill this function. Moreover, on-site inspection of registration, recording and labeling of PCBs containing equipment needs to be ensured. Collaboration of two inspection bodies – The Slovak Environmental Inspection and the Slovak Energy Inspection is anticipated.

Important is to ensure full involvement of the state administration, so that also sectors and state institutions, which did not have the necessary capacities, possibilities and ambition to carry out a detailed inventory until now, will be obliged to allocate the necessary financial and

human resources so as to ensure complete inventory of PCBs, as well as PCBs containing equipment they are using or storing.

This process is taking place already several years, therefore some of the provisions are already included in the current legislation, or legislation currently being approved in Slovakia. Prepared amendment of the Act No 24/2004 Coll. is already including the requirements to coordinate ongoing inventorying of PCBs containing equipment as well as of state and movements of PCBs wastes; the requirements concerning haulers, transporters, storekeepers and organizations that are handling with PCBs, and analyzing them in various media. (Proposal of ME SR Decree No...../200x, that amends and complements ME SR decree No. 283/ 2001 Coll. on effecting of some provisions of the Act on Wastes in terms of the ME SR Decree No. 509/2002 Coll. and proposal of the ME SR Decree No...../200x on decontamination of PCBs-containing equipments).

Analysis of present situation with regard to PCBs equipment and PCBs wastes and stockpiles, clearly indicates that it is necessary: to revise collaboration with organizations responsible for regulating, inspecting and replacing of equipment in operation (the Slovak Energy Inspection); with organizations responsible for regulating and inspecting of importing and exporting PCBs containing equipment and PCBs wastes; and to revise provisions for reporting of stockpiles as well as of state and amount of PCBs wastes, deposited in the landfills. It is also necessary to support the Slovak Environmental Inspection, role of which will be recording and exchange of information and reports. This means not only legislative back up of obligations the particular entities have assigned, but also their sufficient financing (for example to trace back reports on analytical results of PCBs content in certain media).

Not less important are steps concerning providing information on new obligations stipulated by the legislation; professional education and training of people professionally handling PCBs; and broad public awareness raising on PCBs. (Concerns SEA, National Inspectorate of Labor, organizations providing trainings as well as NGOs).

An overview of the particular proposed measures, proposed responsible organization, timeframe for implementation of the measure and the relevant reference, are listed in the table below.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1.	***To assure inventorying of PCBs-containing equipment;***			ME SR	
1.1	Prepare the Slovak Environmental Agency to take over the function of central state agency responsible for operating the database of registered PCBs containing equipment	Launching of full operation of the agency	June 2004	ME SR / SAZP	
1.2	Develop inspection mechanisms and collaboration of inspection bodies, which are responsible for handling with PCBs and PCBs wastes in the Slovak Republic	Memorandum of Understanding between the inspection bodies – signed and implemented in Plan of the Inspections	September 2004	ME SR, SEI, SEI	A functioning inspection mechanism is necessary to oversee the implementat

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
					ion
1.3	To prepare the Slovak Environmental Inspection to carry out inspection in this field, after the new legal instruments enter into force (including sufficient funds to carry out analytical inspection)	Elaborated and implemented Inspection Plan	January 2005	ME SR, SEI	
1.4	Ensure availability of analytical methods to determine presence of PCBs, and sufficient capacities to carry out sampling, analyses and handling with probes, including their disposal	Adoption of guidelines on analytical methods; organization of inter-laboratory analytical testing	December 2004	SNAS	
1.5	Discuss and develop schemes of positive influence onto entities, having active roles and responsibilities in this area, mainly on small and middle-scale companies	Implementation of the information campaign	December 2004	ME SR, MI SR	
1.6	Supplement missing information concerning registered equipment in case of inaccurate or missing data, not enabling exact classification of PCBs type, amount and concentration	Supplementing of the database on the base of more precise information	Ongoing	SEA	
1.7	Extend the inventory also to equipment containing volumes les than 5 dm^3, which constitute the majority of PCBs equipment in operation; amend and supplement the *PCBs Equipment Inventory Guidance in Slovakia* according to the recent experiences	Adoption of the decree	31 12 2005	ME SR	

2. To secure environmentally sound destruction of PCBs in Slovakia, with respect to BAT/BEP;

From point of view of their sound destruction/disposal, POPs pesticides create a problem due to their chlorine content and thus the possibility of dioxin and furan generation during incineration processes. Environmentally sound disposal relates besides the final destruction of PCBs also to safe decontamination of PCBs containing equipment such as transformers, capacitors, hydraulic systems and other devices. A separate problem will be probably disposal of capacitors, more than 30,000 of which are currently registered in Slovakia. In general, three problem areas are to be considered:

1. Final disposal of PCBs
2. Decontamination of equipment
3. Disposal of PCBs capacitors

Slovakia is participating in the international program supporting non-combustion techniques for POPs destruction *(„Demonstration of viability and removal of barriers that impede adoption and effective implementation of available, non-combustion technologies for destroying POPs)",* and aims at obtaining of a non-combustion POPs destruction unit in it's framework.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
2.	***To secure environmentally sound destruction of PCBs in Slovakia, with respect to BAT/BEP;***				
2.1	Secure effective support of the program on non-combustion technologies for PCBs destruction	Adoption and implementation of the project	2004 - 2010	ME SR	
2.2	Elaborate a strategy for decontamination and sound disposal of PCBs in Slovakia; active state promotion to ensure its implementation with respect to obligations pursuant to relevant EU Directives; allocation of funds to decontaminate PCBs containing equipments in the state and public sectors and for the minute owners of such equipment	Adoption and implementation of a program for state promotion of collection, safe storage and final disposal of PCBs	31 12 2010	Slovak government	
2.2	Creation of the necessary legal framework to apply the non-combustion technologies for final disposal of PCBs	Amendment of the decree	2004	ME SR	Restriction of exports, prevention of incineration
2.3	Disposal of PCBs in Slovakia with state contribution	Destruction of stockpiles in Slovakia	Till 31 12 2010	Slovak government	Promotion of safe collection, storage and final disposal
2.3	Ensure elaboration of technical standards for decontamination of PCBs containing equipment and their enforcement through organizations authorized to carry out these activities. This task relates also to obligations of Slovakia to implement the relevant EU standards (EN)	Elaboration and adoption of technical standards	December 2004	ME SR SNAS	
2.4	Ensure elaboration of technical standards for decontamination of PCBs containing capacitors and their enforcement through organizations authorized to carry out these activities. This task relates also to obligations of Slovakia to implement the relevant EU standards (EN)	Elaboration and adoption of technical standards	December 2004	ME SR SNAS	

3. To assure and carry out decontamination of polluted areas

To ensure decontamination of contaminated sites is the most problematic as well as expensive but at the same time, also the most important task with regard to environmental burden, population exposure and health risk in the concerned localities. Major problem is the pollution of open waste-water channel in Strážske locality, and resulting pollution of the Laborec River and the Zemplínska Šírava water reservoir, as consequence of previous PCBs production in the Chemko Strážske company.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
3.	***To assure and carry out decontamination of polluted areas***				
3.1	To ensure continuation of monitoring in the contaminated sites, in order to assess the contamination range and to set up the decontamination procedures	Monitoring	ongoing	Slovak government	
3.2	Elaborate a strategy for decontamination of the contaminated sites	Adoption and implementation of the strategy	31 12 2004	Slovak government	
3.3	Gradual decontamination of the contaminated sites; allocation of the necessary funds	Launching and successful termination of the decontamination	31 12 2015	Slovak government	

4. To assure elaboration and implementation of technical standards concerning analysis, transportation, storage, exchange, decontamination and destruction of PCBs.

Important component of management of the PCBs wastes is implementation of technical standards and of procedures to authorize organizations, which are carrying out activities according to these standards.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
4.	***To assure elaboration and implementation of technical standards concerning analysis, transportation, storage, exchange, decontamination and destruction of PCBs***				
4.1	Elaborate a system and technical standards to exchange PCBs containing equipment in use	Technical standards	31 12 2004	ME SR, SNAS	
4.2	Elaborate a decree to exchange PCBs containing equipment in use	Decree	31 12 2004	ME SR	
4.2	Elaborate procedures for inspection and labeling of decontaminated equipment	Technical standards	31 12 2004	ME SR, SNAS	
4.3	Create a network of organizations authorized for special handling with PCBs, such as disassembly of capacitors, recycling (cleaning up) of the transformers	Implementation of authorization	31 12 2004	ME SR	

5. To set up and implement a public awareness raising information campaign; in particular adequate training of public as well as private sectors

Pursuant to the recent strategy for dioxins, furans and PCBs of the European Council and to the resolution of the European Parliament concerning implementation of the *Directive 96/59/ES on disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (200/2112(INI))* it is necessary to elaborate positive influencing schemes targeted

to organizations, which are actively involved into relevant activities, within the state, public as well as private sectors. It is necessary to include handling with PCBs into the National Environment and Health Protection Strategy (decrease of population exposure and decrease of pressure on components of environment), the national management of chemicals, and into schemes of voluntary participation in environment protection.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
5.	***To set up and implement a public awareness raising information campaign; in particular adequate training of public as well as private sectors***				
5.1	Define short-term, middle-term and long-term governmental policy goals in this area, and appropriate tools to ensure implementation of activities leading to decreasing of health and environmental hazards	Adoption and implementation of the information campaign	31 12 2004	ME SR	

3.2.2.3 Time and financial plan

This particular action plan is one of the most financially demanding action plans in the NIP context. It is based on results of the inventory of PCBs-containing equipment, according to which 3 500 tons of such equipment were registered. Obligation to decontaminate these equipments requires substantial funds from the side of private sector. To support the success of the decontamination activities; i.e. that they are really implemented, and no contradiction between the "law" and "reality" will take place, the financial plan anticipates also state support corresponding to decontamination of 1 500 tons of equipment, what is equivalent to 116,041 mil. Sk. The private sector has to cover 147,692 mil. Sk, including also the haulage to the destruction site. The destruction site is anticipated in Strážske. In case the waste will be disposed abroad, the costs of logistic will increase by further approximately 9 mil Sk.

This measure is envisaging also expenditures of the regional budgets. It concerns expenditures connected with decontamination of PCBs containing equipment in the ownership of schools and hospitals. Costing of these expenses is based on the inventory of such equipment; however, this inventory was, particularly in the education sector, not complete. This fact is considered as uncertainty of the expenditure costing, and it is expected that the real expenses may be 2-3 times higher.

Other expenses related to implementation of this action plan amount to 5,88 mil. Sk and are connected with elaboration of the necessary technical standards for handling, decontamination and labeling of equipment containing PCBs.

	Measure / Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Private sector*
1	**Inventorying of equipment containing PCBs**	**720 000**	**2 000 000**	**720 000**	**500 000**	**720 000**	**500 000**	**720 000**	**5 880 000**	**5 880 000**	**0**	**0**
1.1	Prepare SEA to take over the function of central state agency responsible for operating the database of registered PCBs containing equipment *								0	0		
1.2	Develop inspection mechanisms of PCB equipment and wastes	250 000							250 000	250 000		
1.3	Prepare SEI to carryout inspection in this field	20 000		20 000		20 000		20 000	80 000	80 000		
1.4	Ensure availability of appropriate analytical methods to determine PCBs	200 000		200 000		200 000		200 000	800 000	800 000		0
1.5	Develop schemes of positive influence onto entities, having active roles and responsibilities in this area, mainly on small and middle-scale companies		1 000 000	500 000	500 000	500 000	500 000	500 000	3 500 000	3 500 000		
1.6	Information campaign to raise knowledge *	250 000							250 000	250 000		
1.7	Inventory of equipment containing volumes les than 5 dm^3		1 000 000						1 000 000	1 000 000		
2	**To secure environmentally sound destruction of PCBs in Slovakia, with respect to BAT/BEP**	**750 000**	**1 215 000**	**54 179 000**	**52 874 000**	**53 686 000**	**53 686 000**	**53 686 000**	**270 076 000**	**116 041 000**	**6 343 000**	**147 692 000**
2.1	Elaboration of a program for disposal of equipment containing PCBs	0	1 215 000	54 179 000	50 984 000	53 686 000	53 686 000	53 686 000	267 436 000	113 401 000	6 343 000	147 692 000
2.2	Elaboration of a strategy for decontamination and disposal of PCbs in Slovakia	250 000							250 000	250 000		

	Measure / Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Private sector*
2.3	Ensure elaboration of technical standards for decontamination of PCBs containing equipment and their enforcement through authorized organizations	250 000							250 000	250 000		
2.4	Ensure elaboration of technical standards for decontamination of PCBs capacitors and their enforcement through authorized organizations	250 000			1 890 000				2 140 000	2 140 000		0
3.	**Clean up of contaminated sites - see Action Plan: Contaminated sites**								**0**			
4.	**Elaboration and implementation of technical standards concerning determination, transport, storage…of PCBs**	**300 000**	**0**	**0**	**0**	**0**	**0**	**0**	**300 000**	**300 000**	**0**	**0**
4.1	Elaborate a system and technical standards to exchange PCBs containing equipment in use	100 000							100 000	100 000		
4.2	Elaborate procedures for inspection and labeling of decontaminated equipment	100 000							100 000	100 000		
4.3	Create a network of organizations authorized for special handling with PCBs...	100 000							100 000	100 000		
5	**Information campaign to raise awareness ***											

*not included – included in the Action plan: Raising Public Awareness on POPs

		2004	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Private sector*
	Measures in total	**1 770 000**	**3 215 000**	**54 899 000**	**53 374 000**	**54 406 000**	**54 186 000**	**54 406 000**	**276 256 000**	**122 221 000**	**6 343 000**	**147 692 000**
	State budget	1 770 000	2 000 000	23 593 000	23 894 000	23 729 000	23 509 000	23 729 000	122 224 000			
	Regional budgets	0	0	0	6 343 000	0	0	0	6 343 000			
	Private sector	0	1 215 000	31 306 000	23 137 000	30 677 000	30 677 000	30 677 000	147 689 000			

3.2.3 Action Plan: Unintentionally Produced POPs

Authors of the chapter: Ing. Katarína Magulová, Ing. Viera Fecková PhD.

3.2.3.1 Setting of priorities

Based on the assessment of results of the POPs inventory and on the overview about the status of current technologies used in Slovakia, with respect to BAT; considering the Stockholm Convention provisions as well as the agreed priority setting criteria, following action plan measures are proposed:

1. To consistently enforce the requirement of operating certain activities in compliance with BAT & BEP for new sources and gradual implementation of BAT & BEP in existing sources (See also Action plan: Institutional and legal measures)

2. To set up a framework for monitoring and mitigation of total releases of chlorine or other halogens containing pollution (target based management of pollution sources)

3. To reach compliance in the pulp bleaching technology, based on molecular chlorine, with IPPC BAT requirements within the period of ten years

4. To eliminate uncontrolled thermal destruction of organic coatings from recycled raw materials for secondary metal production; to promote non-thermal mechanic de-coating methods

    a.. Require BAT implementation

    b. Consider this measure also in the Waste Management Program

    c. Support the measure via the Recycling Fund

5. To modify current reporting methods and means concerning waste production, air emissions, wastewater production as well as consumption and use of hazardous substances, in order to optimize their monitoring and to ensure:

    a.. effective monitoring of unintentionally produced POPs

    b. reporting obligations of Slovakia

    At the same time, amend the Act No 245/2003 Coll. on Integrated Pollution Prevention and control as well as the enforcement documents with regard to possible POPs releases

6. To develop and implement an education, training and course system, dedicated to employees working at various levels of the relevant sectors.

7. To develop a project to assess the amount of unintentionally produced POPs, generated by waste-wood incineration and to appraise the seriousness of this problem in Slovakia

8. To promote non-oxidative processes and BAT for destruction of wastes containing POPs and for destruction of wastes containing chlorine

9. To promote research in the following areas:

   a. Alternative technologies to produce chemicals, which are currently produced by technologies based on chlorine, and/or radicals of chorine, or other halogen substances

   b. Identification an definition of BAT for the particular sectors/technologies

10. To develop and implement a public campaign to promote reduction of emission releases from uncontrolled open combustion and combustion in households (Solved in the framework of the Action Plan: Public Relations)

The proposed priorities are elaborated in more detail in the following text. Each chapter ends with a table containing the proposed activities (column 1) in order to meet the requested outputs (column 2) the assumed timeframe (column 3), proposed institution/body responsible for the implementation (column 4) and a reference to further details and annexes of the NIP (column 5).

3.2.3.2 Measures proposed

1. To enforce consistently the requirement of operating certain activities in compliance with BAT & BEP for new sources and gradual implementation of BAT & BEP in existing sources

For certain source categories this requirement is already in force. It is already in place for all new sources of selected source categories. For selected existing sources, a so-called transition period is established. From POPs releases reduction point of view, greatest emphases to implement BAT and BEP is in the sectors of ferrous and nonferrous metallurgy and in the sectors of waste incineration and co-incineration, where more than 90% of PCDD/PCDF air emissions are generated; as well as in the pulp and paper industry and chemical industry, where the majority of unintended POPs by products is generated, which is polluting other components of environment. Promotion of research in the area of BAT definition is subject to the measure No 9.

Based on the situation analysis of current state of technologies used in Slovakia, with regards to BAT may be stated, that in the primary iron and steel industry remarkable environmental investments took place in the recent years and consequently, the technologies used will comply with BAT by the year 2004. Similarly, the electrolytic aluminum production complies with BAT since the reconstruction in 1995. The secondary production of iron and color metals is subject to the measure No 4.

Analogically, the process industry – production of chemicals, pulp and paper, building materials, etc. already made remarkable environmental investments, or is in the process of doing so. Technology exchange is triggered not only by the pressure of new environmental legislation (they are falling under IPPC Directive), but also by the effort of maintaining competitiveness.

In the waste incineration sector at present only 18 of the currently existing waste incineration plants meets the stringent emission limits for waste incineration; three of them are under

reconstruction. All waste incinerating or co-incinerating plants shall comply with the emission limits, including the emission limit for PCDD/PCDF (0,1 ng TEQ /m^3), by 31 12 2006, or they will have to cease their operation.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1.	**To enforce consistently the requirement of operating certain activities in compliance with BAT & BEP for new sources and gradual implementation of BAT & BEP in existing sources**		ongoing	ME SR	Included in the current legislation
1.1	Emission limits for waste incineration		January 2006	ME SR	Included in the current legislation.

2. To set up a framework for monitoring and mitigation of total releases of chlorine or other halogens containing pollution (target based management of pollution sources)

Chemical as well as pulp and paper industry are main sources of pollution which is being released into more components of environment.

Except for chlorine ions, we may assume that any other chlorine content in wastes or products may potentially lead to further unintended POPs releases (from land filled or incinerated waste). The presence of chlorine is also unfavorable from the environmental point of view, disregarding the POPs issues.

Having in mind economically effective control of polluters, it is suggested to apply the mechanism of voluntary agreements, targeted first of all at maximum closing of the „chlorine cycle“ in the respective companies what means, balancing and subsequent minimization of chlorine loses into all components of environment.

After discussions with the main sources of unintended POPs releases in the relevant sectors as well as with the Association of Chemical and Pharmaceutical Industry (ZCHFP) and with the Association of Pulp and Paper Industry (ZCPP), this seems to be the most feasible way from both economical and environmental point of views.

Alternatively, in case the voluntary agreements would not take place, or would not lead to requested release reduction, the government could impose obligatory POPs release monitoring and POPs emission charges. However, in this way, the secondary POPs releases from wastes and mainly from uncontrolled combustion or incidental fires would not be affected.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
2.	***To set up a framework for monitoring and mitigation of total releases of chlorine or other halogens containing pollution (target based management of pollution sources)***		Ongoing	ME SR	
2.1	Set targets for the period of 5-10 years	Total looses of chlorine into the environment expressed in per cents	After 6 months	ME SR	
2.2	Draft the text and develop a mechanism of voluntary agreement with the chemical industry	Signed voluntary agreement and existing mechanisms for reporting and verification	After one year	ZCHFP	
2.3	Draft the text and develop a mechanism of voluntary agreement with the pulp and paper industry	Signed voluntary agreement and existing mechanisms for reporting and verification	After one year	ZCPP	
2.4	Elaboration of balances, reports and program proposals for the particular companies and associations	Proposal of programs for reduction of chlorine pollution	Within one year after adoption of the agreement	Associations and companies	
2.5	Agreement and publishing of the programs	Published Association programs	After two months	ME SR	
2.6	Monitoring of implementation, adjustment of the targets, ongoing verification	Reduction of halogen compound releases into the environment	Ongoing	ME SR /authorized organization	

Utilization of chlorine in industrial processes is one of the primary reasons for generation of unintended releases of the mostly known POPs. With regard to the properties of the remainder halogen substances (fluorine, brome and iodine) as well as their related chemism, it is appropriate to apply the precaution principle, and minimize in long term also the releases of other organic halogen compounds. This would mean expansion of the voluntary agreements also to other halogens and relevant industrial sectors (metallurgy, for example).

The problem of chlorine content in products is broader and relates also to measures No 8, 9 and 10.

3. To reach compliance in the pulp bleaching technology, based on molecular chlorine, with IPPC BAT requirements within the period of ten years

Pulp bleaching based on elementary chlorine is a technology with substantial potential for industrial accidents, difficult to operate, non-effective and non-competitive, as most of the developed markets are demanding pulp, which is not bleached by elementary chlorine.

This measure is in Slovakia currently concerning one company, where it could facilitate the investment decisions and at the same time would prevent possible efforts to import such an obsolete technology to Slovakia.

With regard to demanding preparation and financing of such a project for a company, a timeframe by the year 2010 is suggested.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
3.	***To reach compliance in the pulp bleaching technology, based on molecular chlorine, with IPPC BAT requirements within the period of ten years***			ME SR	
3.1	Stipulated in the legislation		2007	ME SR	
3.2	Entering into force		2010	ME SR	

4. To eliminate uncontrolled thermal destruction of organic coatings from recycled raw materials for secondary metal production, to promote non-thermal mechanic de-coating methods

PCDD/PCDF emissions from secondary steel production using scrap as raw material are up to 50 times higher than PCDD/PCDF releases from primary steel production using pig iron as raw material. The reason is contamination of the iron scrap with certain organic matters (rests of coatings, paints, grease and plastics). Particularly in case of non-ferrous metals, this organic components needs to be taken of the metals and the metallic components adequately separated prior to the melting process. In Slovakia, secondary copper production is currently operating, and certain color metals (bras for example) are melted in small units (with capacity around 10 000 tons per year). The IPPC Directive does not control these small units; hence, no legal obligation to comply with BAT/BEP is stipulated for them

Problematic is mainly the de-coating of the organic coatings (paints, plastic) from the treated metals. To separate the plastic coatings from cables often improper methods such as cable smoldering are used, being exceptionally unfavorable from POPs emissions point of view. Currently, the branch of separation and treatment of metal scrap (for example environmentally sound separation of metallic and nonmetallic fraction) is only constituting in Slovakia. In addition, producers from Slovakia are offering appropriate equipment for mechanical non-thermal scrap treatment.

Importance of this sector will still grow mainly in view of the efforts to maximize the recycling of electronic as well as car scrap. Considering the constantly growing pressure to utilize secondary raw materials and to increase the volume of recycled materials, it is reasonable to assume that similar installations will gradually rise. In addition, electronic scrap (electric and electronic waste) and obsolete cars, being priorities from the point of view of metal separation, are included as commodities in the mandatory part of the Waste Management Program as well as among the priorities of the Recycling Fund (RF). It is necessary to prevent unfavorable practices while this branch is formed and in contrary, promote implementation of best available technologies by support from the recycling fund.

The available documents (BREF and Annex V to the POPs Protocol) recommend as BAT/BEP the following techniques:

- Pre-sorting scrap in order to fit the utilized technology, and separate the organic contaminants;
- Pre-treating scrap, for example stripping of plastic or PVC coatings, pre-treating cable scrap using only cold/mechanical methods;
- Quenching hot waste gases (providing utilization of heat), to reduce residence time in the critical region of temperature in the waste gas system;
- Using oxygen or oxygen-enriched air in firing, or oxygen injection in the shaft kiln (providing complete combustion and minimization of waste gas volume);
- Adsorption in a fixed bed reactor or fluidized jet stream reactor with activated charcoal or open-hearth coal dust; and
- Catalytic oxidation of of-gases.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
4.	***To eliminate uncontrolled thermal destruction of organic coatings from recycled raw materials for secondary metal production, to promote non-thermal mechanic de-coating methods***		Ongoing	ME SR	
4.1	For thermal treatment of metal scrap set the same BAT requirements as for waste incineration		2006	ME SR/SEI/MI SR	
4.2	Include this measure in the updated Waste Management Program		2007	ME SR	
4.3	Use the recycling Fund to support this measure		Ongoing	Recycling Fund	Commodity program OEEZ

5. To modify current reporting methods and means concerning waste production, air emissions, wastewater production as well as consumption and use of hazardous substances.

The current procedures of environmental impacts reporting to be provided by the polluters are fragmented, often duplicate, and demand extensive administration. Hence, they are expensive for the polluters as well as for the state administration.

Nevertheless, they do not provide sufficient information to the state administration to ensure sufficient information about pollution sources in the most cost-effective way in order to ensure the following:

a. Effective monitoring of POPs by-products

b. Reporting commitments of Slovakia

Act No. 245/2003 Coll. on Integrated Pollution Prevention and Control with regard to the related enforcement documents, concentrates almost exclusively to air and water pollution (Annexes 1 and 2 of Decree 391/2003 Coll.). The mandatory reported data do not even allow assessment of compliance with BAT parameters, because the data on production volumes are voluntary and data on material and energy intensity are not required at all. Specific activity

data, needed for emission estimation with the help of emission factors are also not required, what complicates the application of standard inventory methods.

It is suggested to amend the regulation and enlarge the mandatory reporting and specify the units/formats of the reported data related to particular sectors, so as to have possibility to assess potential for POPs releases already during the permission procedure (not only to air and water). Regular reporting into the Integrated Information System Registry, hence, monitoring of unintentional POPs production in Slovakia and reporting under the international treaties will be enabled as well.

It will be necessary at the same time adjust and enlarge the Integrated Information System Registry.

With regard to the typical POPs pollution sources as well as kind of generated POPs pollution, it is not recommended to require legally binding POPs release measurements.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
5.	**Modif Act No. 245/2003 Coll and its implementing regulations regarding data reporting on pollution and environmental impacts**			ME SR	
5.1	Preparation , review and adoption of a legally binding instrument	Regulation / legal document	2005	ME SR	
5.2	Adjustment of the Integrated Information System registry	Functioning register, providing data on unintended POPs releases	2005	SEA	

6. To develop and implement an education, training and course system, dedicated to employees working at various levels of the relevant sectors.

Main factors influencing the unintentional POPs generation during the industrial processes, is the manner and particular technology operated e.g. setting and maintaining the critical parameters of the technology (retention time, temperature, oxygen excess, etc.)

Awareness about the possible consequences: generation of POPs and their impact on humans and environment as well as of consistent controlling of parameters, which might not be essential with regard to production quality or volume, but are important from point of wiew of POPs, are considered as main factors influencing operation in compliance with best environmental practices (BEP). BEP implementation is sector specific, and in order to be successful, it must be systematically and consistently demanded, and audited by the management.

It is suggested to develop sector specific training packages, particularly for the chemical and pharmaceutical industry, pulp and paper production, primary and secondary metallurgical industry, etc., which would contain individual modules for various management levels (strategic, executive and lower management) and for the workers, including guidance materials for trainers, and make them available to the enterprises.

At the same time, it is necessary to require that environment polluters which may unintentionally generate POPs, shall implement an education, training and course system for their employees.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
6.	***To develop and implement an education, training and course system, dedicated to employees working at various levels of the relevant sectors***				
6.1	Identification of the sectors	List of concerned sectors/enterprises	2004	ME SR	
6.2	Definition of BEP-requirement, including requirements for those, providing training on BEP	Legally binding requirement concerning training for selected processes/sectors	2004 valid since 01 01 2006	ME SR	
6.3	Ensuring elaboration, review and finalization of sector-specific training packages	Sector specific training packages	10 2005	ME SR	
6.4	Publishing and distribution of the training packages	Publicly available training packages (printed and electronic)	12 2005	ME SR	
6.5	Inspection of implementation in the relevant industry		Ongoing since 2006	SEI	

7. To develop a project to assess the amount of unintentionally produced POPs, generated by waste-wood combustion and to appraise the seriousness of this problem in Slovakia

Biomass burning, including industrial waste-wood combustion is gradually spreading, and further increase of number and capacity of the industrial installations may be expected. Critical influence on this trend have in particular:

- Requirement and promotion to increase the share of renewable sources for energy production and
- Increasing energy prices and prices of gas and electricity, in particular for the smaller consumers.

It is likely, that this trend will still continue aso with regard to international commitments of Slovakia concerning climate change, environmental requirements and the energy policy of EU.

According to some information sources, one of the important POPs by-products sources is waste wood or wood treated by organo-hallogenous compounds including DDT.

Information and measurement, which would allow assessing the importance level of this problem for Slovakia, are missing at present.

Therefore development of a program is proposed, which would allow to assess the following:

- Analysis of current status and trends
  - In biomass combustion,
  - Characteristics of fuel-wood used
  - Their potential for POPs generation
- Including sampling and test analyzing.

Based on their findings, recommendations of relevant activities, and the conditions, by when they will be needed.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
7.	***To develop a project to assess the amount of unintentionally produced POPs, generated by waste-wood incineration and to apprais the seriousness of this problem in Slovakia***		12 2005	ME SR	
7.1	Development of a program and securing of the necessary funds	Program	2004	ME SR	
7.2	Implementation of the program	Report, analysis of the present situation , Report – Proposal of measures	12 2005	ME SR	
7.3	To take decision on the measures		2006	ME SR	

8. To promote non-oxidative processes and BAT for destruction of wastes containing POPs and for destruction of wastes containing chlorine

Besides unintended generation of POPs during industrial processes, major source of POPs releases are waste incineration-oxidation processes and handling with wastes, containing POPs, chlorine or other halogenous compounds, as already described in Measure 2.

It is considered necessary to set up an economic and legal framework to promote implementation of alternative non-combustion BAT-technologies for handling with such wastes. As these technologies are quite new, with only limited number of suppliers, their prices are higher when compared to combustion technologies. Hence, the unit price of treated waste is also higher.

It is recommended to set up in cooperation with the Ministry of Finance and the Recycling Fund favorable conditions, which would economically motivate generators and owners of such wastes to use non-oxidative processes for their disposal.

Besides taxes and fees, also direct Recycling Fund support for the disposal companies could be considered. With regard to other measures as proposed in this action plan, also a special program in the framework of the Recycling Fund could be considered to prevent or minimize unintended POPs production.

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
8.	**To promote non-oxidative processes and BAT for destruction of wastes containing POPs and for destruction of wastes containing chlorine**		Ongoing	ME SR	
8.1	To set up a working group (WG) comprising representatives from ME SR, MF SR a RF	A Working Group with clear mandate and task	12 2004	ME SR	
8.2	To propose measures and programs, including the necessary amendments of legal documents (if relevant)	Program proposal	06 2005	Working group	
8.3	To launch the implementation of the program		2006	ME SR/ MF SR /RF	

9. To promote research in relevant areas

POPs are generated not only by processes where chlorine-containing products are produced (e.g. pesticides), or chlorine-containing compounds are used as reagent (e.g. bleaching of pulp), but also by processes, mainly in chemical and pharmaceutical industry, where so-called chlorine reaction pathway is applied. While chlorine is present in some of the reaction steps in form of radical or salt, it has not necessarily to come up in the product.

With regard to specific properties of chlorine, such as reactivity and oxidizing properties as well as to a certain tradition, for some of the products, practically do not exist alternative chlorine-less methods, which would be tried out on industrial level.

Identification and testing of alternative production processes is predominantly the role of basic and applied research in the area of organic chemistry, pharmacy, chemical technology and chemical engineering.

The concept of best available techniques and technologies as well as requirements for their implementing, are today embedded in several legal documents and decrees predominantly in the environment protection – air (e.g. waste incineration plants), wastes (handling with wastes, land filling) and management of polluters – Act on Integrated Pollution Prevention and Control, Framework Water Directive and others.

However, practical definition of what is still considered as BAT parameter and what is not, may be a problem as for different sectors BAT reference documents are entirely missing. Also in the existing BAT reference documents – BREF – the issue of unintended POPs production is very limited and usually not specified. Reference values as well as technical and technological specifications for unintended POPs production are missing.

For this reasons it is proposed to promote research in the following areas:

a. Alternative technologies to produce chemicals, which are currently produced by technologies based on chlorine, and/or radicals of chorine, or other halogen substances
b. Identification and definition of BAT for the particular sectors/technologies.

Standard tool for this purpose is the Agency for Promotion of Science and Technology

	Activity / action	*Requested output / indicator of success*	*Timeframe*	*Responsible institution/ body/sector*	*Note*
0	*1*	*2*	*3*	*4*	*5*
9.	**To support basic and applied research**			MEdu SR	
9.1	Allocate funds and develop a plan		2005 ongoing	MEdu SR ME SR	
9.2	Elaborate and publish a call for projects	Call for organizations of research and development	ongoing	Research support agency	
9.3	Gather research results and update information resources, participate in project selection, set up of priorities and research		ongoing	SCCP, SEI	

3.2.3.3 Time and financial plan

This financial plan for the Action plan Unintended POPs production includes only costs of measures with regard to this particular plan. Costs of measures, which are addressed within other action plans, are included in their costs assessment.

Measure 2. To set up a framework for monitoring and mitigation of total releases of chlorine or other halogens containing pollution does not require significant costs, even if its practical application is important. Costs of this measure are estimated for the whole period 7,376 mil Sk, out of which the majority is allocated for the Measure 2.6 Monitoring of implementation, adjustment of the targets, ongoing verification" represent major part of the costs with regard to their permanent character (5,920 mil Sk). It is assumed that major part of these costs will be covered by the state budget (4,736 mil Sk) in the budget of the Ministry of Environment. Part of the costs will be covered by the private sector. (1,184mil Sk).

Measure 3. Cessation of pulp bleaching technology, based on molecular chlorine, by 2010 will trigger social impacts in the area of Zemplín region, where the concerned factory Bukocel Vranov is located, as job possibilities will be cancelled. Investments into this production are from the financial point of view questionable, among other reasons also because of ineffective energy husbandry of this enterprise.

Costs related to measure No. 4 regarding the requirement of elimination of the uncontrolled organic compounds removal from the recycled raw materials, was calculated based upon the expectation of modernized technology for removal of coating from these materials. According to available data, there are approximately 200 companies in Slovakia, which have collection, modification or processing of recycled metals as their main business. Out of these, 20 are expected to invest 5 mil. Sk into non-thermal processing technology for metal scrap treatment. Further 30 smaller companies are expected to increase their competitiveness by purchase of a similar technology worth 1,5 mil. Sk. This analysis is based on the presumption that Stockholm Convention will enter into force in 2007 and these companies will have two year transition period. Business sector costs related to investments into technologies will be 145 mil. Sk.

The impact of further measures is not calculated, as they are part of the other action plans or existing activities within the legislation process or inter-ministry discussions.

	Measure / Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*State budget*	*Regional budgets*	*Private sector*	*State budget*
1	**To enforce consistently the requirement of operating certain activities in compliance with BAT & BEP – not costed, implied by existing legislation**	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**0**
2	**To set up a framework for monitoring and mitigation of total releases of chlorine or other halogens containing pollution**	**1 456 000**	**987 000**	**987 000**	**987 000**	**987 000**	**987 000**	**987 000**	**7 378 000**	**4 737 600**	**0**	**2 640 400**
2.1	Setting of targets for the period 5-10 years	339 000	0						339 000	0		339 000
2.2	Draft the text and develop a mechanism of voluntary agreement with the chemical industry	555 000	0						555 000	0		555 000
2.3	Draft the text and develop a mechanism of voluntary agreement with the pulp and paper industry	185 000	0						185 000	0		185 000
2.4	Elaboration of balances, reports and program proposals for the particular companies and associations	377 000	0						377 000	0		377 000
2.5	Information campaign to raise awareness *								0	0		0
2.6	Monitoring of implementation, adjustment of the targets, ongoing verification		987 000	987 000	987 000	987 000	987 000	987 000	5 922 000	4 737 600		1 184 400
3.	**To reach compliance in the pulp bleaching technology, based on molecular chlorine, with IPPC BAT requirements within the period of ten years – calculation considering social impact***	**0**	**0**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**0**
4.	**To eliminate uncontrolled thermal destruction of organic coatings from recycled raw materials for secondary metal production, to promote non-thermal mechanic de-coating methods**	**0**	**0**	**50 000 000**	**40 000 000**	**40 000 000**	**15 000 000**	**0**	**145 000 000**	**0**	**0**	**145 000 000**

	Measure / Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*State budget*	*Regional budgets*	*Private sector*	*State budget*
4.1	For thermal treatment of metal scrap set the same BAT requirements as for waste incineration		0	50 000 000	40 000 000	40 000 000	15 000 000		145 000 000	0		145 000 000
4.2	Include this measure in the updated Waste Management Program**											
4.3	Use the Recucling Fund to support this measure – not costed											
5.	**Amend Act No.245/2003**	**0**	**165 000**	**0**	**0**	**0**	**0**	**0**	**165 000**	**165 000**	**0**	**0**
5.1	Elaboration of the legal document **											
5.2	Adjustment of the Integrated Information System Registry *		165 000						165 000	165 000		
6.	**Education and training ***	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7.	**Develop a project to assess the amount of unintentionally produced POPs generated by waste-wood incineration ***		**0**									
8.	**To promote non-oxidative processes and BAT for destruction of POPs containing wastes ****	**0**	**0**	**0**	**0**	**0**	**0**	**0**				
9.	**To support basic and applied research *****	**0**	**0**	**0**	**0**	**0**	**0**	**0**				
	Measures in total	**1 456 000**	**1 152 000**	**50 987 000**	**40 987 000**	**40 987 000**	**15 987 000**	**987 000**	**152 543 000**	**4 902 600**	**0**	**147 640 400**
	Stare budget	0	954 600	789 600	789 600	789 600	789 600	789 600	4 902 600			
	Regional budgets	0	0	0	0	0	0	0	0			
	Private sector	1 456 000	197 400	50 197 400	40 197 400	40 197 400	15 197 400	197 400	147 640 400			

*not evaluated – included in the Action plan: Raising of Public Awareness

. ** not evaluated – included in the Action plan: Institutional and Legal Measures

*** not evaluated – problem area dealt with in the inter-ministerial committee on science management

3.2.4 Action plan: Polluted Areas and Releases from Storages and Wastes

Authors of the chapter: RNDr. Ivan Čop, RNDr. Milan Deščík

3.2.4.1 Priority setting

In the POPs-polluted areas, most attention is to be paid to most common pollutant – PCBs (largest amount of reliable data, known areas of occurrence, strongest impact on biota and human organism).
Based upon actual data, most attention needs to be paid to:

1. **PCB production facilities in Chemko, a. s. Strážske (including surrounding area) flux of the wastewater channel from PCB production plant, the area of Zemplínska Šírava, Laborec river in adjacent areas, including feeding channel**
2. **areas of former asphalt mixing plants in whole Slovakia.**

1. Strážske Area

PCB occurrence in the Strážske area is caused by its production in Chemko Strážske during the period 1959 – 1984. Current contamination demonstrations come from the plant itself as well as from releasing PCB from the contaminated soil in the plant and its surrounding and from the waste PCB dumps. This contamination currently manifests itself also in broader area of these sources also because of the pollutant transport through wastewater channel to Laborec River and Zemplínska Šírava.
This area has been regularly (and also irregularly) monitored on PCBs occurrence in all elements of the environment including biota and human population. The results of this monitoring contain several hundreds of PCBs-content analyses in all monitored 'commodities.'
These analyses lead consistently to conclusions that the monitored 'commodity' exceeds or highly exceeds health (ecological) limits. They describe the source of contamination (former PCBs production plant Chemko Strážske) with its technology, waste dump, drain away channel and Laborec river and Zemplínska Šírava.
The level of contamination of this area can be documented by the following (Kočan 1999):

- 20 times higher PCBs concentration in the ambient air around the former PCBs production plant in Strážske in localities Strážske and Voľa, and on the plant waste dump site, than in the control area.
- Very high PCBs content (2-4 $mg.g^{-1}$ dry matter) in sediment samples from several km long wastewater channel from Chemko, a. s. Strážske mouthing to Laborec river. Sediments in Laborec river contained 100-2000 times higher concentrations of PCBs than sediments in control areas (Ondava river and Domaša dam). The estimates are that contaminated waters in Michalovce district contain tithes of tons of PCBs.
- Contamination of different elements of the environment was clearly manifested by findings of increased PCBs content in wild animals (fish, game animals). Especially the fish caught in contaminated waters of Zemplínska Šírava a Laborec contain on average 100 times higher PCBs levels compared to fish from the control areas of Domaša and Ondava.
- The situation with domestically bred animals is analogous that have free coop and feed contaminated forage from the adjacent areas.

- Higher PCBs content in some types of foodstuff available in polluted Michalovce district inevitable had to lead to higher PCBs contents also in inhabitants of this district. This was measured by PCB concentration in the lipids isolated from the blood serum. Inhabitants of Michalovce district have this concentration more than 3 times higher than the inhabitants of control district Stropkov. By the workers directly exposed during the PCBs production, this content was more than 7 times higher than in control district.
- Measured PCBs concentration in the soil of one of the Chemko Strážske waste dumps was several hundred times higher than in the control area.

2. Areas of former asphalt mixing plants in whole area of Slovakia.

Bitumen mixtures coating plants are equipments for coating of different gravel fractions by bitumen. Bitumen is heated in double-cup containers with the heat-bearing medium (between the layers) is a PCBs-containing oil (Delotherm DH, or Delotherm DK). It is estimated that approximately 600 tons of Delotherm DH and DK had been used for this activity.
Bitumen coated mixtures has been used for strengthening of the dusty roads or for building of the new roads or their reparation.
Measurement in localities of former bitumen mixtures coating plants yielded following PCBs concentrations in the soil of individual localities:

Ľubiša	53 000	mg. kg^{-1}
Vechec	7,5	$mg.kg^{-1}$
Zbudza (Žabany)	0,043	$mg.kg^{-1}$
Zemplínska Široká	0,052	$mg.kg^{-1}$
Stropkov	38	$mg.kg^{-1}$
Mníchova Lehota	35	$mg.kg^{-1}$
Smolenice	0,7	$mg.kg^{-1}$

Apart from the above, there is potential threat of pollution in the are of the plant Istrochem, Bratislava, where pesticides were produced in the past.

3.2.4.2 Proposed measures

Following action plan measures have been defined for this area, in terms of relevant SH requirements, 'Recommendations for planning and implementing NIPs in terms of the Stockholm Convention' – Recommendation file No. 6: 'Analysis of POPs contaminated areas and action plan', and hitherto realized activities:

	Activity	***Required output/ Indicator of success***	***Time schedule***	***Responsible institution/ ministry/ body***	***Note***
0	*1*	*2*	*3*	*4*	*5*
1	**To secure ecological exploration in PCB contaminated areas in Strážske region and on the sites of former asphalt mixing plants**				
1.1	Prepare implementation strategy for these activities	Direction	March 04 – June 04	ME SR, MI SR, MA SR	
1.2	Prepare methodology of the exploration	Methodical direction	January 04 – March 04	ME SR	
1.3	Unify the analytical methods used in laboratories accredited for chemical analyses of soils and other PCB-containing matrices and secure their obligatory use	Methodical direction	January 04 – June 04	ME SR, MI SR, MA SR	
1.4	Secure capacities for implementation of such analytical work + carry out the analyses	Direction	January 04 – June 04	ME SR, MI SR	
1.5	In cooperation with specialized local governments secure entrance to contaminated areas that are subject to ecological examination	Direction	May 04 – June 04	ME SR, MInt. SR	
1.6	Secure cooperation with specialized local governments	Direction	continuous	ME SR	
1.7	Carry out the ecological examination		June 04 – October 05	ME SR, MI SR	
1.8	Secure regular monitoring of the examined area	Direction	Continuous (5 years after completion of the recovery activities	ME SR, MI SR	

Based on the examination results:

	Activity	***Required output/ Indicator of success***	***Time schedule***	***Responsible institution/ ministry/ body***	***Note***
0	*1*	*2*	*3*	*4*	*5*
2.	**Prepare strategy for contaminated area recovery**				
2.1	Prioritize contaminated areas for their recovery, taking into account mainly the effect of contamination on human organism or its danger to the environment	Strategy	October 05 – December 05	ME SR, MH SR, MI SR	
2.2	Process technical and economical indicators and technology requirements (procedure of decontamination) or the equipment for decontamination of the contaminated matrix (environment)	Ordinance	March 04 – December 04	ME SR, MI SR	

	Activity	***Required output/ Indicator of success***	***Time schedule***	***Responsible institution/ ministry/ body***	***Note***
0	*1*	*2*	*3*	*4*	*5*
3.	**Realization of the decontamination activities**				
3.1	Secure financing of the decontamination activities	Decision	January 05 – December 05	ME SR, MI SR, MA SR	
3.2	Process technological and technical work procedures	Direction	October 04 – March 05	ME SR	
3.3	Cooperate with the local government on popularization of this activity	Direction	March 05 – December 09	ME SR, MInt. SR	
3.4	Cooperate with NGOs	Direction	March 05 – December 09	ME SR, MInt. SR	
3.5	Medially promote this activity and, its results and impact on the environment	Direction	March 05 – December 09	ME SR, MK SR, MInt. SR, MA SR	
3.6	Carry out the decontamination activities		October 05 – December 10	ME SR, MI SR, MInt. SR, MA SR	

Exploration and land sanitation are activities that clearly follow one after another. Evaluation of the results of individual examination stages with various exploration techniques, or of the land sanitation together with quantities of administrative and legal activities and a variety of sanitation operations, requires coordination of these activities by a public body that is familiar with the NIP issues and objectives. In addition, representatives of the organizations that are most affected by the problem with contaminated area should be a part of this body. It would be local public administration representatives, affected landowners, local government representatives and representatives from the local NGOs.

It follows from the above that coordination of the tasks for the contaminated area will be assigned to a responsible body (group) which will partially consist of members that carry out this work during entire period and partially of members accredited by this work only for their areas (local public administration, local NGOs and affected local land owners).

In order to secure the above-described measures, as well as leadership, coordination, control and exchange platform for cooperating bodies and organizations, following measure is to be taken:

	Activity	***Required output/ Indicator of success***	***Time schedule***	***Responsible institution/ ministry/ body***	***Note***
0	*1*	*2*	*3*	*4*	*5*
4.	To establish a headquarters for leadership, coordination and control of exploration and sanitation activities, as well as for the communication with cooperating parties; to create statute of this body	Ordinance (+statute)	December 03 – January 04	ME SR, MA SR, MInt. SR ,MI SR	

	Activity	***Required output/ Indicator of success***	***Time schedule***	***Responsible institution/ ministry/ body***	***Note***
4.1	Activity of the headquarters		January 04 – December 10	ME SR, MA SR, MInt. SR, MI SR	
4.2	Evaluation of work and transfer of the agenda to successor institution		January 11 – March 11	ME SR, MA SR, MInt. SR, MI SR	

Permanent members of the headquarters would be:

- ME SR representative - chairman
- ME SR representative (SHMI Bratislava as realization institution of this project)
  - 1. vice-chairman, (executive)
- MI SR representative -2. vice-chairman
- MA SR representative – member
- NGO representative - observer

Non-permanent members of the headquarters depending on their relationship to individual addressed contaminated areas would be:

- VÚC representative – 3. vice-chairman
- representative of the specialized local public administration (environment) - member
- local government representative - member
- representative of the affected area land owner - member
- local NGOs representative - member

3.2.4.3 Time and financial plan

Financial plan for this action plan has been prepared for several alternatives. First action plan alternative calculates also with the decontamination activities, in the same way as the measures propose. The second alternative does not calculate expenses for carrying out the decontamination within the considered horizon, i.e. until 2010.

Version 1 – financial plan including decontamination activities

Total expenses of this alternative during considered time period– 694,713 mil Sk

The costs of measures 1 and 2 of the action plan, i.e. the identification of contaminated areas, preparing appropriate methodologies for assessing the level of contamination and of strategies and regular monitoring are estimated to be 81, 032 mil. Sk. Largest expense among these costs is the identification of the polluted areas, which assumes measurement under about 70 asphalt mixing plants and contaminated area in Zemplín which together amount to 70,4 mil Sk.

Headquarters costs – measure 4 of the action plan amount to 10,926 mil. Sk during the entire period. Financing of these costs is expected to come from the state budget in each relevant year, from the chapter of the Ministry of Environment SR.

Organizationally and financially much more demanding are the measures relating to the decontamination itself. This assumes implementation of version 1 from the action plan Pesticides and PCB-containing equipment; here installation of the UNIDO project technology provides opportunities for broader and better planned decontamination. This concerns mainly decontamination of the Zemplín region areas, specifically Zemplínska Šírava, selected parts of the Laborec river and especially wastewater channel of Chemko Strážske.

The financial plan assumes that costs of decontamination of this area will be covered by a consortium of Košice region, stakeholder towns Michalovce and Strážske, as well as Bodrog and Hornád basin, which was created for this purpose at the end of 2003. Decontamination-related costs are calculated based on UNIDO project results (Use of non-combusting technologies on waste decontamination in Slovak Republic). The financial plan, as well as this project assume financial coverage of this project by this consortium. Estimated time horizon for the decontamination of this area is the year 2016. Only proportion of the costs is listed in the financial plan.

Costs for the decontamination of the land under asphalt coating plants are estimated to total at 1 124 mil. Sk. Yearly contribution from the businesses in the amount 124 mil. Sk is expected. This expense was calculated consistent with TR2 results, Annex 7 to the Chapter 6, which assumes costs for decontamination of land under coating plant of Stropkov type to be 62 mil. Sk. Time horizon of 10 years (2015) was selected for the decontamination of expected 20 environmentally problematic coating plants. The proposed financial plan contains only proportional part of the costs.

Costs of decontamination until 2010 without discounting amount to 1 500 – 2 000 mil. Sk. Hence the expected yearly cost will be about 150 mil. Sk .

Version 2 – financial plan without the decontamination activities

Total cost of this alternative during considered time period– 92,408 mil Sk

Costs of this action plan alternative are decreased by the costs of the decontamination activities themselves. The costs of other activities remain to full extent as described in previous alternative.

	Measure/activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Contribution of businesses*
1	**To secure ecological exploration in PCB contaminated areas in Strážske region and on the sites of former mixing plants**	**0**	**24 432 000**	**24 300 000**	**18 800 000**	**9 500 000**	**2 000 000**	**2 000 000**	**81 032 000**	**81 032 000**	**0**	**0**
1.1.	Prepare implementation strategy for these activities		544 000						544 000	544 000		0
1.2	Prepare methodology of the exploration		816 000						816 000	816 000		0
1.3	Unification of analytical methods used in laboratories accredited for chemical analyses of soils and other PCB-containing matrices		272 000						272 000	272 000		0
1.4	Secure capacities for implementation of the analytical work *1								0	0		0
1.5	In cooperation with specialized local governments secure entrance to contaminated areas that are subject to ecological examination – costs not calculated – it is a part of the examination itself *									0		
1.6	Secure cooperation with specialized local governments on preparatory and implementation activities *								0	0		0
1.7	Carry out the ecological examination		22 300 000	23 300 000	17 300 000	7 500 000			70 400 000	70 400 000		
1.8	Secure regular monitoring of the examined area		500 000	1 000 000	1 500 000	2 000 000	2 000 000	2 000 000	9 000 000	9 000 000		
2.	**Prepare strategy for contaminated area recovery**	**0**	**250 000**	**200 000**	**0**	**0**	**0**	**0**	**450 000**	**450 000**		
2.1	Prioritization of the contaminated areas for their recovery			200 000					200 000	200 000		
2.2	Processing of the technical and economical indicators and technology requirements for the decontamination equipment		250 000						250 000	250 000		

	Measure/activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Contribution of businesses*
3.	**Realization of the decontamination activities**	**0**	**0**	**0**	**149 704 000**	**150 867 000**	**150 867 000**	**150 867 000**	**602 305 000**	**0**	**106 305 000**	**496 000 000**
3.1	Secure financing of the decontamination activities *								0		0	
3.2	Process technological and technical decontamination procedures – costs not calculated – part of the measure 2.2								0			
3.3	Cooperate with the local government on popularization of this activity **								0			
3.4	Cooperate with NGOs **								0			
3.5.	Medially promote this activity and, its results and impact on the environment **								0			
3.6.	Carry out the decontamination activities				149 704 000	150 867 000	150 867 000	150 867 000	602 305 000	0	106 305 000	496 000 000
4.	**Headquarters – its establishment and operation**	**556 000**	**1 665 000**	**1 690 000**	**1 715 000**	**1 741 000**	**1 768 000**	**1 796 000**	**10 931 000**	**10 931 000**	**0**	**0**
	Measures total	**556 000**	**26 347 000**	**26 190 000**	**170 219 000**	**162 108 000**	**154 635 000**	**154 663 000**	**694 718 000**	**92 413 000**	**106 305 000**	**496 000 000**
	State budget	556 000	26 347 000	26 190 000	20 515 000	11 241 000	3 768 000	3 796 000	92 413 000			
	Regional budgets				25 704 000	26 867 000	26 867 000	26 867 000	106 305 000			
	Contribution of businesses				124 000 000	124 000 000	124 000 000	124 000 000	496 000 000			

* costs not calculated – part of the headquarters

** costs not calculated – part of the Action plan Public Awareness Raising

3.2.6 Action plan: Reporting and Information Exchange

Author of the chapter: Ing. Monika Kissová

3.2.6.1 Priority setting

Based upon the Stockholm Convention requirements, overview of current POPs reporting mechanism in Slovakia, as well as agreed criteria for priority setting, following Action plan measures have been defined:

1. To establish a National Focal Point (NFP-POPs) responsible for reporting and information exchange pursuant to Articles 9 and 15 of the Stockholm Convention.

2. To introduce an effective system for provision of information by responsible institutions to the National Focal Point.

3. To Secure effective recording of the POPs compounds imports and exports on institutional level between MI SR and Customs directorate, as well as reporting mechanism on real amounts of POPs imports and exports for the NFP- POPs.

4. To secure flow of information between stakeholder institution and NFP-POPs on gradual elimination of the use of PCB-containing equipments in Slovakia.

5. To introduce an effective system for monitoring of handling with POPs-containing plant-protecting preparations after their expiry period.

6. To introduce an effective system for monitoring of origin and handling of the POPs-containing hazardous wastes as well as their imports and exports.

7. To introduce an effective system of chemical production monitoring, with the aim to eliminate production of POPs or chemicals with POPs properties in Slovakia.

8. To introduce effective measures for controlling the use of chemicals with prohibited HCB content (excluding plant-protecting preparations)

Further text describes these priorities in greater detail. A table is listed at the end of each chapter, which contains proposed activities (Column 1), required outputs/indicator of fulfillment (Col. 2), estimated time horizon (3), proposed responsible institution/body (4), and a note (5) with reference to further details and NIP Annexes.

3.2.6.2 Proposed measures

1. To establish a National Focal Point (NFP-POPs) responsible for reporting and information exchange pursuant to Articles 9 and 15 of the Stockholm Convention

Analysis of current situation in the institutions that record or hold information on some POPs, shows that there is no system sufficient for comprehensive POPs data collection.

As a part of its international commitments such as 'Basel Convention on regulation of transboundary transfer of hazardous wastes and their disposal', and 'Protocol on POPs to the Convention on Long-Range Transboundary Air Pollution' (POPs protocol), Slovak Republic regularly reports to international organizations via existing contact focal points. These are National Focal Point to the SEA for the Basel Convention and relevant institutions of the ME SR for the POPs Protocol.
In terms of Stockholm Convention requirements, we recommend to establish a National Focal Point on POPs within an existing focal point (either Basel Convention or POPs protocol). It will secure exchange of information and reporting to Secretariat of Stockholm Convention and Conference of Parties and other institutions processing the data on POPs (e.g. SEA, SHMI, CAITI, etc.), pursuant to the Stockholm Convention requirements.

It will be necessary to organize a meeting of involved ministries (ME SR, MA SR, MH SR) in order to agree on establishment of the NFP-POPs. This meeting will be called by the Ministry of Environment SR, as the body responsible for the implementation of Stockholm Convention in Slovakia. The purpose of this meeting will be discussion on current institutional, personnel, and technical situation, their tasks and consecutive mandate for enlargement of the existing national focal point for NFC-POPs and its statute. We recommend that this enlarged institution will be supported by new personnel and technical equipment in order to meet the demands of its enlarged agenda. The NFP-POPs employees will have to undergo basic training where they will gain information on already completed activities as well as on further obligations in terms of the Convention. This training will be organized by the ME SR. The establishment of NFP-POPs will be considered as successfully completed when it will be fully operating and will have a web page with basic information on its tasks, which will be updated and enlarged with the focal point's growing experience. Also good operation of NFP-POPs is important for reporting to the Stockholm Convention Secretariat.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1.	***To establish a National Focal Point (NFP-POPs) responsible for reporting and information exchange pursuant to Articles 9 and 15 of the Stockholm Convention***		February 05	ME SR	
1.1	Talks between the ministries with the purpose of NFP-POPs establishment	NFP-POPs with its statute	June 04 – July 04	ME SR	
1.2	Establishment of NFP-POPs – personnel and technical equipment,	Start of NFP-POPs' operation	November 04 –	ME SR	

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
	training, and its operation		January 05		
1.3	Establishment and operation of NFP-POPs web page	WWW portal NFP-POPs – information on NFP-POPs tasks, reports, actual information on POPs in SR.	February 05	NFP-POPs	

2. To introduce an effective system for provision of information by responsible institutions to the National Focal Point

For the purposes of preparation of reports on POPs production, use, imports, exports, storage and emissions will NFP-POPs receive partial information from the institutions having information on POPs. It is therefore imperative to legally establish the duty of responsible institutions to NFP-POPs. This is to be done by directions from individual ministries. Pursuant to the Article 15 of the Stockholm Convention, reporting format and periodicity will be agreed on the first meeting of the Conference of Parties. Following the definition of format on the first meeting of the Conference of Parties (probably 2004/2005), requirements and reporting mechanism for individual POPs areas according to the Stockholm Convention requirements will need to be defined in the form of methodologies. Reporting methodology should be prepared also for the areas (POPs production, use, exports, imports), where no POPs occurrence is expected in Slovak Republic because of currently valid norms. Affected institutions must make themselves familiar with these methodologies, so that they are prepared for carrying out the new tasks in the are of POPs and so that the time schedule can be set and their database systems can be adjusted.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution/ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
2.	***To introduce an effective system for provision of information by responsible institutions to the National Focal Point***		June 05	ME SR	
2.1	Discussions between ministries	Ministry directions to the responsible institutions for cooperation with NFP-POPs	January 05	ME SR	
2.2	Mechanism for provision of information on real amounts of imported, exported and produced POPs, POPs use, storage of POPs plant-protecting preparations after expiry date, origin, imports and exports of POPs waste, unintentional POPs production and POPs	Methodologies on provision of information on POPs /NFP-POPs	February 05 – May05	NFP-POPs	

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution/ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
	contaminated equipments				
2.3	Meeting of the stakeholder institutions and NFP-POPs with the aim to get familiar with the methodologies and information provision duties regarding POPs	Minutes from the meeting and proposal of further cooperation and following tasks	May 05 – June 05	NFP-POPs	[1]

3. To Secure effective recording of the POPs compounds imports and exports on institutional level between MI SR and Customs directorate, as well as reporting mechanism on real amounts of POPs imports and exports for the NFP- POPs.

Reporting mechanism on real amounts of POPs exports and imports does currently not exist. Exports/imports of POPs listed in the Annexes A and B of the Stockholm Convention (excluding mirex) are subject to permission procedure. Preliminary permission is given out by the MI SR (after sstatement of ME SR, MH SR and MA SR).

MI SR is, within the PIC procedure, also a body with the authority over import of POPs, with the exception of endrine, mirex and toxaphene. Import of POPs to Slovakia is prohibited, with the exception of endrine, mirex and toxaphene.

Registration of chemicals (e.g. POPs) imports and exports is carried out by both the MI SR and Customs authorities according to special laws and for different purposes. In terms of the Act No. 163/2001 Coll., MI SR provides issued licenses for import and export of chemicals to the customs authorities. Nevertheless, despite this announcement of permission to the Customs authorities record real export/import quantities according to their own identification codes (custom tariff codes).

Therefore we recommend to take appropriate measures to secure overview about real imported or exported quantities of chemicals and legally modify the mechanism of export/import control so that export or import of POPs will be definitely excluded; this is to be done despite the fact that POPs are not produced in Slovakia and there is ban on their import and export. It will be further necessary that MI SR together with Customs Directorate establish institution responsible for provision of information on exports and imports of chemicals to NFP-POPs and also define standard format for provision of this information to NFP-POPs.

In order to effectively control exports/imports of POPs currently not listed in chemical legislation (endrine, mirex and toxaphene), it will be necessary to amend existing laws (addressed in chapter 3.2.8).

[1] Deadline after definition of the format on the first Conference of Parties meeting

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution/ ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
3.	***To Secure effective recording of the POPs compounds imports and exports on institutional level between MI SR and Customs directorate, as well as reporting mechanism on real amounts of POPs imports and exports for the NFP- POPs***		August 05	MI SR	
3.1	Inter-ministry negotiations with the aim to define appropriate measures for effective registration of the real exported and imported quantities of POPs	Adjusted existing mechanism, amended Act No. 163/2001 Coll. and its implementing regulations	June 04-September 04	MI SR	
3.2	Modification of existing registration system for facilitating the provision of information on POPs exports and imports.	Adjusted system of POPs imports and exports registration	June 05-July 05	Responsible institution	
3.3	Definition of format for provision of information on actual quantities of imported and exported POPs to the NFP-POPs	Standard format (methodology) for provision of information on POPs exports and imports to the NFP-POPs	August 05	Responsible institution	
3.4	Definition of format for provision of information on POPs production in Slovak Republic	Standard format for provision of information on POPs production to NFP-POPs	July 05	Responsible institution	

4. ***To secure flow of information between stakeholder institution and NFP-POPs on gradual elimination of the use of PCB-containing equipments in Slovakia.***

Reporting mechanism on POPs use in Slovakia does currently not exist. The use of PCB and HCB is legally restricted by the Decree of MI SR No. 67/2002 Coll. Since 2004, there is a law establishing the control of the use of PCB-contaminated equipments until their disposal. Relevant data will be processed by the SEA and COHEM, Bratislava, which is an organization accredited by ME SR for the registration and updating of the records on contaminated equipments with PCB content.
In order to achieve an effective transmission of information from the inventarization of PCB-contaminated equipments to the NFP-POPs, we recommend that the existing registration system is modified and the output form for provision of the required information is defined.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /Ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
4.	***To secure flow of information between stakeholder institution and NFP-POPs on gradual elimination of the use of PCB-containing equipments in Slovakia***		September 05	Stakeholder institution	
4.1	Modification of the existing mechanism for registration of PCB-contaminated equipments and facilitation of provision of information to the NFP-POPs	Modified registration system	July 05-August 05	Stakeholder institution	
4.2	Definition of format for provision of information on the PCB-contaminated equipments in Slovakia	Standard format for provision of information on PCB-contaminated equipments to the NFP-POPs	September 05	Responsible institution	

5. To introduce an effective system for monitoring of handling with POPs-containing plant-protecting preparations after their expiry period.

CAITI has data on the quantities of plant-protecting preparations after their expiry period that were disposed of, provided by plant-inspectors. These data also include information on POPs containing preparations. We recommend that disposed POPs plant-protecting preparations after expiry date are identified during a control and compared with existing list of inventoried POPs plant-protecting preparations after the expiry date (addressed in chapter 3.2.1). Thus, POPs plant-protecting preparations after the expiry period are classified as wastes and the institution responsible for registration and processing of data on origin and disposal of wastes is the SEA. However, it is not possible to identify POPs plant-protecting preparations wastes using the RISO system.

Most efficient measure for registration of the POPs plant-protecting preparations after the expiry period quantity and means of disposal is the CAITI mandate to the plant-inspectors for control of the means of disposal with inventoried old POPs plant-protecting preparations after the expiry period.

It is also necessary to finish and modify existing registration of data on stocks of plant-protecting preparations after the expiry period and their disposal and to develop a standard format for provision of information to NFP-POPs according to the Stockholm Convention requirements.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
5.	***To introduce an effective system for monitoring of handling with POPs-containing plant-protecting preparations after their expiry period.***		September 05	CAITI	
5.1	Modification of the existing mechanism of registration of the stocks of POPs plant-protecting preparations after their expiry period in order to improve provision of information to the NFP-POPs.	Modified registration system	July 05-August 05	CAITI	
5.2	Definition of format for provision of information on POPs plant-protecting preparations after their expiry period stocks in Slovakia.	Standard format for provision of information on POPs plant-protecting preparations after their expiry period to the NFP-POPs.	September 05	CAITI	

6. To introduce an effective system for monitoring of origin and handling of the POPs-containing hazardous wastes as well as their imports and exports.

There exists a reporting mechanism on wastes exports and imports (from POPs it covers only PCB) for the purposes of meeting the requirements of Basel Protocol. The responsible organizations in Slovakia is SEA, COHEM Bratislava (national focal point for the Basel Convention). This organization also operates the Regional information system on wastes (RISO) that monitors origin of wastes and their handling in Slovakia.

The primary problem in registration origin and handling of wastes is the absence of codes of individual POPs (it is specific only for PCB) as well as different coding of wastes for imports and exports. Correction measures deal with modification of legal requirements that recommends specification of separate codes for different types of waste containing POPs (in Catalogue of waste) as well as including of these codes to the Red List of Wastes (for registration of the imports and exports).

We recommend that the existing registration system of the responsible institution is modified and standard format for provision of information to NFP-POPs is established.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
6.	***To introduce an effective system for monitoring of origin and handling of the POPs-containing hazardous wastes as well as their imports and exports.***		September 05	ME SR	
6.1	Modification of current legal requirements in order to achieve effective registration of POPs containing waste	Amended decree ME SR No.284/2001 Coll. Catalogue of Wastes, as well as Decree ME SR No. 234/2001 Coll. (imports, exports)	July 04 - January 04	ME SR	
6.2	Modification of the existing system of waste registration in Slovakia, in order to facilitate provision of information on POPs-containing hazardous waste handling, imports and exports to the NFP-POPs	Modified system of POPs imports and exports registration	July 05- August 05	SEA	
6.3	Definition of format for provision of information on POPs-containing waste	Standard format for provision of information on POPs-containing waste to the NFP-POPs	September 05	SEA	

7. To introduce an effective system of chemical production monitoring, with the aim to eliminate production of POPs or chemicals with POPs properties in Slovakia.

As there are no POPs currently produced in Slovakia, there is also no system for reporting their production.

However, it should be noted that POPs production is not prohibited by law. This means that during the environmental impact assessment process (Act No. 127/1994 Coll. on environmental impact assessment as amended) by prepared constructions, equipments and other activities (e. g. complex equipment for industrial production of chemicals for halogen hydrocarbons production, etc.), public bodies responsible for giving out the permission have no legal authority to prohibit production of POPs or POPs-like chemicals. Also because of this fact we may state that no production of banned POPs or POPs-like compounds was recently permitted in Slovakia.

Although we state that no POPs are produced in Slovakia, we propose a control of chemical factories for elimination of POPs compounds. The competent organization for single chemical production control would be Slovak Environmental Inspection. SEI would write a report on POPs production (or rather non-production) to the NFP-POPs. It will be necessary to authorize SEI to carry out this control and to create the control procedure and time schedule.

Pursuant to the Stockholm Convention requirements, it will be further necessary to create a standard format for provision of information on POPs production to NFP-POPs, despite the fact that they are not produced in Slovakia at all.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /ministry/ body*	*note*
0	*1*	*2*	*3*	*4*	*5*
7.	***To introduce an effective system of chemical production monitoring, with the aim to eliminate production of POPs or chemicals with POPs properties in Slovakia.***		September 05	ME SR	
7.1	Authorization of SEI to carry out a targeted control for elimination of POPs production in Slovakia	Authorization and defined control time schedule and procedure	February 05	ME SR	
7.2	Implementation of the control of chemical factories	Evaluation report on production of POPs in Slovakia	March 05-September 05	SEI	
7.3	Definition of a format for provision of information on POPs production (non-production of POPs in Slovakia	Standard format for provision of information on POPs production (non-production of POPs in Slovakia	September 05	SEI	

8. To introduce effective measures for controlling the use of chemicals with prohibited HCB content (excluding plant-protecting preparations)

Reporting mechanism on POPs use in Slovakia does currently not exist. The use of PCB and HCB is legally restricted by the Decree of MI SR No. 67/2002 Coll., which lists selected chemical compounds and preparations whose market introduction and use are either prohibited or restricted.

Mechanism for monitoring of HCB (excluding plant-protecting preparations) use in Slovakia does not exist.

HCB may not be contained in: human and veterinary medicaments, cosmetic appliances, motor fuels, oil products that serve as fuel for mobile or stationary combustion equipment, fuels sold in closed packing (for example bottles with liquid gas) and in colors used by artists.

We propose to introduce effective measures for monitoring of HCB in chemical preparations listed above and to commit the responsible control bodies to carry out control of their use in Slovakia. Information regarding the use of HCB in chemical preparations will be passed to NFP-POPs.

As the first step, we propose to authorize the responsible control institutions, i.e. Public health Offices (PHO) and Slovak Trade Inspection (STI), which will carry out the control of chemical preparations that should not contain HCB pursuant to the Act No. 163/2001, Coll.

on chemical compounds and preparations. As the second step, these authorized institutions, after they carry out the control, will submit reports on HCB-containing chemical preparations use to NFP-POPs.

	Activity	*Required output/ Indicator of success*	*Time horizon*	*Responsible institution /ministry /body*	*note*
0	*1*	*2*	*3*	*4*	*5*
8.	***To introduce effective measures for controlling the use of chemicals with prohibited HCB content (excluding plant-protecting preparations)***		September 05	ME SR	
8.1	Authorization of PHO and STI to carry out control of the prohibited use of HCB-containing preparations in Slovakia	Authorization and defined time schedule and control procedure	February 05	MH SR MI SR	
8.2	Control results	Evaluation report on the use of HCB-containing preparations in Slovakia.	March 05-September 05	SOI, ÚVZ	
8.3	Definition of format for provision of information on the HCB-containing preparations use. .	Standard format for provision of information on the HCB-containing preparations use to the NFP-POPs.	September 05	SOI, ÚVZ	

3.2.6.3 Time and Financial plan

The same principles were used for estimates of costs of this action plan as in the action plan: Monitoring. Total costs of creating the reporting and information exchange system will be 2,5 mil. Sk. Costs of the office equipment will be 400 000 Sk. Costs of continuous reporting and information exchange are estimated to be 150 000,- Sk yearly, including the maintenance of specialized web page. These costs total to about 790 000,- Sk during the considered period.

Financing of these costs is expected to come from the state budget in each relevant year, from the chapter of the Ministry of Environment SR.

	Measure/Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Contribution of the businesses*	*Note*
1	**Establishment of the National Focal Point for reporting on POPs and authorization of national institutions.**	**519 000**	**317 000**	**145 000**	**150 000**	**156 000**	**167 000**	**172 000**	**1 626 000**	**1 626 000**			
1.1	Talks between the ministries with the purpose of NFP-POPs establishment	45 000							45 000	45 000			
1.2.	Establishment of NFP-POPs and its operation (NFP-POPs equipment 400.000)	474 000	42 000	66 000	68 000	70 000	74 000	76 000	870 000	870 000			
1.3	Establishment and operation of NFP-POPs web page		275 000	79 000	82 000	86 000	93 000	96 000	711 000	711 000			
2	**Development and implementation of an effective system for provision of information by responsible institutions to the National Focal Point**	**0**	**736 000**	**0**	**0**	**0**	**0**	**0**	**736 000**	**736 000**			
2.1	Discussions between ministries		60 000						60 000	60 000			
2.2	**Information campaign for public awareness raising (not calculated, see work wit public)**		636 000						636 000	636 000			
2.3	Meeting of the stakeholder institutions and NFP-POPs with the aim to get familiar with the methodologies		40 000						40 000	40 000			
3	**To Secure effective recording of the POPs compounds imports and exports on institutional level between MI SR and Customs directorate**	**189 000**	**160 000**	**0**	**0**	**0**	**0**	**0**	**349 000**	**349 000**			
3.1	Inter-ministry negotiations with the aim to define appropriate measures for effective registration of the real exported and imported quantities of POPs	189 000							189 000	189 000			
3.2	Modification of existing registration system for facilitating the provision of information on POPs exports and imports.		106 000						106 000	106 000			
3.3	Definition of format for provision of information on actual quantities of imported and exported POPs to the NFP-POPs		27 000						27 000	27 000			
3.4	Definition of format for provision of information on POPs production in Slovak Republic		27 000						27 000	27 000			

	Measure/Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Contribution of the businesses*	*Note*
4	**Securing the flow of information between stakeholder institution and NFP-POPs on gradual elimination of the use of PCB-containing equipments in Slovakia**	**0**	**133 000**	**0**	**0**	**0**	**0**	**0**	**133 000**	**133 000**			
4.1	Modification of the existing mechanism for registration of PCB-contaminated equipments and facilitation of provision of information to the NFP-POPs		106 000						106 000	106 000			
4.2	Definition of format for provision of information on the PCB-contaminated equipments in Slovakia		27 000						27 000	27 000			
5	**Introduction of an effective system for monitoring of handling with POPs-containing plant-protecting preparations after their expiry period.**	**0**	**133 000**	**0**	**0**	**0**	**0**	**0**	**133 000**	**133 000**			
5.1	Modification of the existing mechanism of registration of the stocks of POPs plant-protecting preparations after their expiry period in order to improve provision of information to the NFP-POPs.		106 000						106 000	106 000			
5.2	Definition of format for provision of information on POPs plant-protecting preparations after their expiry period stocks in Slovakia.		27 000						27 000	27 000			
6	**Establishment of an effective system for monitoring of origin and handling of the POPs-containing hazardous wastes as well as their imports and exports.**	**189 000**	**133 000**	**0**	**0**	**0**	**0**	**0**	**322 000**	**322 000**			
6.1	Modification of current legal requirements in order to achieve effective registration of POPs containing waste	189 000							189 000	189 000			
6.2	Modification of the existing system of waste registration in Slovakia, in order to facilitate provision of information on POPs-containing hazardous waste handling, imports and exports to the NFP-POPs		106 000						106 000	106 000			

	Measure/Activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Contribution of the businesses*	*Note*
6.3	Definition of format for provision of information on POPs-containing waste		27 000						27 000	27 000			
	Measures total	**897 000**	**1 612 000**	**145 000**	**150 000**	**156 000**	**167 000**	**172 000**	**3 299 000**	**3 299 000**			
	State budget	897 000	1 612 000	145 000	150 000	156 000	167 000	172 000	3 299 000				
	Regional budgets	0	0	0	0	0	0	0	0				
	Contribution of businesses	0	0	0	0	0	0	0	0				

3.2.7 Action plan: Raising of Public Awareness on POPs

Authors of the chapter: RNDr. Juraj Gavora, Mgr. Katarína Lipovská

3.2.7.1 Priority setting

With regard to the conclusions drawn in the situation analysis of SR (chap. 2.3.7), it is apparent that Slovak public needs to be provided with relevant information on POPs in a systematic manner and with regard to specific target groups. Establishment of information flows for both expert and general public is a requisite for fulfillment of the Stockholm Convention requirements so that the public will not be just a passive observer of the planned measures, but it will also actively require and support these changes – also in case of appearent negative effects in socio-economic area.

Respecting the specific features of the situation in Slovakia, the priorities for public involvement were identified as follows:

3.2.7.2 Proposed measures

3.2.7.2.1 Short-term priorities:

A.1. Target group: In habitants of the contaminated areas – Zemplín:
Goal: Full public awareness about the hazards, so that they can decide on their "behavior pattern" on their own
A.2 Target group: plant-inspectors and Customs administration
Goal: Raising of the awareness among plant-inspectors and Customs administration employees

Measures:

- To identify spatial distribution and size of affected population – on the level of administrative units.
- To prepare a proposal of a leaflet that will be distributed to all households, containing reasonable arguments and stressing the health of future generations.
- To secure printing of the leaflets
- To secure distribution of the information – local governments and local NGOs
- To involve NGOs also into creation of content of the materials (Greenpeace, etc.)
- To use local media for dissemination of the information (press, radio, TV)
- To propose a special training program (specific training packages) for the plant-inspectors and Customs administration employees – their preparation for further fieldwork regarding (illegal) imports of plant protecting preparations – with regard to the expected changes of customs law after Slovak entry to EU and new regime on the borders/ in customs warehouses / transport nodes.

	Activity	*Required output*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1	Population size identification – Michalovce district	Number of households	June 2004	SOSR	
2	Preparation of the information material – design, printing	Information material, printed in sufficient quantity	Sept. 2004	SEA	NGO involvement
3	Distribution	Information material available to the households	Dec. 2004	Local government	NGO involvement
4	Design of the training program for the plant-inspectors	Training program available to the inspectors	Dec. 2004	CAITI	
5	Design of the training program for the Customs Administration employees	Training program available to the Customs Administration	Dec. 2004	Customs Administration	

3.2.7.2.2 Medium-term priorities

B.1. Target group: industrial employees encountering POPs (especially PCB – loading, disposal, transport…)

Goals: - to minimize working exposure hazards

- to increase awareness of the need of disposal compliant to prepared legal regulations

Measures:

- To identify size of the group – National Labor Inspectorate (NLI) + database of equipments, production factories under BAT/BEP
- To prepare information material
- To secure printing
- Distribution
- Training program for the production workers and middle management (decision-making authority for the choice of technology), use of environmental management systems, involvement of interest groups and associations active in the area of safety and health protection in work, etc.

	Activity	*Required output*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1	Identification of the target group size	Amount of spoken to	Dec. 2004	NLI *	
2	Preparation of the information material – design, printing	Information material printed in sufficient quantity	June 2005	NLI *	
3	Design of the training program for the industrial employees	Prepared training program	Dec. 2005	NLI *	

* - National Labor Inspectorate

3.2.7.2.3 Long-term priorities

C.1. Target group: public (countryside population, but also city agglomerations – local gardens and cottages)
Goal: To minimize home burning as a POPs source

Measures:

- Media campaigns - press, state TV, radio broadcasting, local media
- Use of local governments and NGOs

	Activity	*Required output*	*Time horizon*	*Responsible institution /ministry/ body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1	Preparation of background information for media campaigns	Background information available to the media	Dec. 2005	SEA	
2	Involvement of the local governments and NGOs to distribution	Background information available to local governments and NGOs	continuous	Local governments	

Note: It is necessary to consider the possibility of raising funds from alternative sources, e.g. grant schemes and foreign donors that might be used also for the NGOs.

C.2. Target group: Schools
Goal: To continuously supplement the subject matter taught to pupils of primary and secondary schools, as well as to students of teaching universities who will afterwards enter into the teaching and education process.

Measures:

- Formal teaching and education process – transformation of content, cooperation between ministries (i.e. M. of Education SR, ME SR, MA SR, NGOs)
- Supplementation of study programs on pedagogical, medical and veterinary schools

	Activity	*Required output*	*time horizon*	*Responsible institution /Ministry/ Body*	*Note*
0	*1*	*2*	*3*	*4*	*5*
1	Supplementation of basic curricula	Expert (contentwise and methodically) materials for supplementation of curricula	Dec. 2005	MEdu. SR	
2	Preparation of supplements to individual university study programs	Materials for study programs	Dec. 2005	MEdu. SR	

C.3. Preparation of information strategy on POPs

Goal: implementation of information about POPs into existing information systems; in case of t heir insufficient functionality, proposal of an independent system for hazardous chemicals

Prerequisites:

- Coordination between ministries and sectors
- POPs coordination body as optimal solution for relationships between ministries in the area of hazardous chemicals and other contingencies

3.2.7.2.4 Institutional and methodical support for the implementation of proposed priorities in the area of public involvement

Coordination of activities focused on implementation of Stockholm Convention in the area of public involvement presents an independent set of problems and challenges Because of their specific characteristics and general applicability, these problems were not addressed among the other groups of priorities. The urgency of addressing the coordination tasks also follows from the other action plans.

Coordination of the above listed activities can be addressed in two ways:

1. Under coordination of ME SR (Public relations department, in cooperation with SEA) and in cooperation with other affected ministries and institutions,

2. By entrusting it to an independent coordination body, which would have competencies also in other areas, i.e. prepared National POPs Office.

It is also possible to combine these alternatives. A combination appears to be an optimal solution, with regard to already existing competences of the ministry and its institutions and expected competences of the coordination body on POPs, other hazardous chemicals and their

groups, and alternatively also further relevant conventions and Slovak international commitments.

Implementation of the measures will require use of various methodical approaches applied to time horizons dependent on practical solutions to the priorities of the other action plans. Apart for regular informing, also explanation campaigns will be important, for example in relation to implementation of new legislation (or amendment of existing legislation), monitoring of health status of the human population, etc.

3.2.7.3 Time and financial plan

Action plan: Public awareness raising assumes total cost of 46,646 mil. Sk, largest cost items being media campaigns with the aim to increase public awareness. This item amounts to 31,390 mil. Sk and should be in budget chapter of the Ministry of Environment SR.

Another cost item that is substantial is the cost of supplementing of the curricula for primary and secondary schools, in the amount of 5,765 mil Sk. It will be mainly proportional costs of re-written text books. All of these costs should be covered from the state budget chapter of ME SR in relevant years.

Businesses will contribute mainly by covering the cost of training of their employees from different management levels. The cost of training during the considered period will be 7,38 mil. Sk.

	Measure/activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*Total*	*State budget*	*Regional budgets*	*Contribution of the businesses*
1	**Informing the general and expert public in the short-term horizon**	**1 416 000**	**0**	**40 000**	**0**	**40 000**	**0**	**40 000**	**1 536 000**	**1 536 000**		
1.1	Identification of the affected population – Michalovce district	36 000							36 000	36 000		
1.2.	Preparation of the information material including printing	1 000 000							1 000 000	1 000 000		
1.3	Distribution of information materials	20 000							20 000	20 000		
1.4	Training program for plant inspectors	180 000	0	20 000	0	20 000	0	20 000	240 000	240 000		
1.5	Training program for Customs Administration employees	180 000	0	20 000	0	20 000	0	20 000	240 000	240 000		
2	**Information public awareness raising campaign**	**2 156 000**	**0**	**1 840 000**	**0**	**2 120 000**	**0**	**1 840 000**	**7 956 000**	**576 000**	**0**	**7 380 000**
2.1	Target group identification	36 000	0						36 000	36 000		
2.2	Target group training program *	2 120 000	0	1 840 000		2 120 000		1 840 000	7 920 000	540 000		7 380 000
3	**Informing the general and expert public in the long-term horizon**	**2 930 000**	**10 926 000**	**5 860 000**	**5 860 000**	**3 860 000**	**3 860 000**	**3 860 000**	**37 156 000**	**37 156 000**		
3.1	Mass-media campaigns – STV, radio broadcasting, NGOs, local governments, press	2 230 000	5 860 000	5 860 000	5 860 000	3 860 000	3 860 000	3 860 000	31 390 000	31 390 000		
3.2	Preparation of supplements to study programs for primary and secondary schools, including re-written text-books	700 000	5 066 000						5 766 000	5 766 000		
3.3	Preparation of supplements to individual university study programs *								0			
	Measures Total	**6 502 000**	**10 926 000**	**7 740 000**	**5 860 000**	**6 020 000**	**3 860 000**	**5 740 000**	**46 648 000**	**39 268 000**	**0**	**7 380 000**
	State budget	4 382 000	10 926 000	6 080 000	5 860 000	4 080 000	3 860 000	4 080 000	39 268 000			
	Regional budgets	0	0	0	0	0	0	0	0			
	Contribution of the businesses	2 120 000	0	1 660 000	0	1 940 000	0	1 660 000	7 380 000			

3.2.8 Action plan: Institutional and Legal Measures

Author of the chapter: MUDr. Jindra Holíková

3.2.8.1 Proposals for amendment of legal documents

In order to secure fulfillment of the Convention in terms of the EP&C Regulation, it will be necessary to amend existing legal measures so that they will secure full implementation of the individual articles of the referenced documents. The impact of individual articles of the convention is generally as follows:

Pesticide regulations

- Amendment of implementing regulation to the Act No. 285/1995 Coll. on plant-medical care – Decree MA SR No. 3322/3/2001-100 – list of preparations with prohibited use and import must be complemented pursuant to Annex I. It is also necessary to address the issue of old reserves.

PCBs regulations

- The Convention requirements will be satisfied when the amendment of the Act No. 223/2001 Coll. on waste will enter to force.

DDT regulations

- This compound has not been used in Slovakia over a long period of time, regulation is not necessary. If it is found in waste, its handling will be subject to hazardous wastes legislation.

Assessment of the new pesticides and chemicals

- Amendment of implementing regulation to the Act No. 163/2001 Coll. on chemical compounds and preparations – Decree MI SR No. 7/2001, which lists chemical compounds and preparations for the purposes of imports and exports regulation. All chemicals from Annexes I and II must be added.

- Amendment of the Decree MI SR No. 2/2002 in the part which addresses testing methods for detection of persistent properties of chemicals.

Reduction and elimination of unintentional production

- Amendment of implementing regulation to the Act No. 478/2002 Coll. on Air - Decree ME SR No. 706/2002 within the conditions for pollution source operation and in Annex No. 1 – supplement list of pollutants according to Annex III.

- Amendment of the Act No. 245/2003 Coll. on integrated prevention and control of environment pollution – in Annex No. 2 to supplement list of pollutants, and if appropriate, in Annex No. 3 supplement perspectives for determination of best available techniques.

Regulation of hazardous waste handling from the perspective of POPs

- To supplement the Act No. 223/2001 Coll. on wastes – to expand the validity of PCB amendment by remaining POPs and to define "environmentally acceptable manner of disposal".

Further necessary amendments to the legal regulations that will become apparent from the partial action plans and strategies will be implemented later.

3.2.8.2 Proposed institutional framework

At the moment, there are several institutions in Slovakia that partially deal with POPs issues, based on legal appointments. In relation to implementation of the Convention, it will be necessary to:

- Legally expand scope of activity of the individual institutions pursuant to the needs of the Convention. This will probably concern *Center for chemical compounds and appliances, Central Control and Testing Agricultural Institute, Slovak Hydro-meteorological Institute, Slovak Environmental Agency and Slovak Environmental Inspection.*
- Appoint by law one institution as responsible for POPs (National Focal Point (NFP-POPs)), which will also have the duty to collect partial information from the individual institutions, their summarization, and reporting and information sharing on national and international level. Among its other duties will be also implementation of an appraisal system and preparation and implementation of repressive measures (fines).

An alternative solution may be establishment of a new organizational unit (probably on the basis of one of the existing organizations), as a competent institution, which would cover all responsibilities following from the Convention and EP&C Regulation, including registration, monitoring, control, reporting, informing and penalization.

As POPs issues are covered by several legal regulations concerning activities of several ministries, an alternative solution is possible – to create a separate POPs Act (similarly as the Act No. 76/1998 Coll. on protection of Earth ozone layer), which would address all the responsibilities given by the Convention, while partial solutions in the individual legal regulations would be cancelled by this act. This act could at the same time address the institutional framework by establishing of a new organization or appointing of an existing organization (better). We consider this alternative to be simpler, but less real.

It must be also noted that all EP&C Regulations will after May 1, 2004 (entry of Slovakia to EU) become part of our legal system and will change our national legislation by a standard procedure. This will be true also for the Regulation on POPs.

3.2.9 Strategy: Research and Development

Authors of the chapter: Mgr. Katarína Lipovská, RNDr. Juraj Gavora

3.2.9.1 Introduction

The Stockholm Convention defines for its parties responsibilities in the area of research and development, binding them to the following:

The parties shall, within their capabilities, at the national and international levels, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants and, where relevant, to their alternatives and to candidate persistent organic pollutants, including on their:

(a) Sources and releases to the environment;

(b) Presence, levels and trends in humans and the environment;

(c) Environmental transport, fate and transformation;

(d) Effects on human health and the environment;

(e) Socio-economic and cultural impacts;

(f) Release reduction and/or elimination; and

(g) Harmonized methodologies for making inventories of generating sources and analytical techniques for the measurement of releases.

In undertaking these activities, the Parties shall, within their capabilities:

(a) support and further develop, as appropriate, international programs, networks and organizations aimed at defining, conducting, assessing and financing research, data collection and monitoring, taking into account the need to minimize duplication of effort;

(b) support national and international efforts to strengthen national scientific and technical research, capabilities, particularly in developing countries and countries with economies in transition, and to promote access to, and the exchange of, data and analyses;

(c) take into account the concerns and needs, particularly in the field of financial and technical resources, of developing countries and countries with economies in transition and cooperate in improving their capability to participate in the efforts referred to in subparagraphs (a) and (b);

(d) undertake research work geared towards alleviating the effects of persistent organic pollutants on reproductive health

(e) make results of their research and development and monitoring activities referred to in this paragraph accessible to the public on a timely and regular basis;

(f) encourage and/or undertake cooperation with regard to storage and maintenance of information generated from research, development and monitoring.

3.2.9.2 Overview of essential documents and decisive organizations that create institutional framework for support of research and development activities in SR

Documents

Central document for research and development in Slovakia is the Act No.. 132 Coll. from February 19, 2002, on science and technology.

Other essential documents are:

Strategic areas for development of science, technology and research in SR are defined by Conception of State Scientific and Technical Politics until 2005 (adopted by government decree No. 724/2000 and Parliament decree No. 1228/2000).

Most important institutions sharing specific competences in the area of systematic, institutionally-informational support of research and development in Slovakia:

A decree of MEdu SR established an Information system of research and scientific potential of Slovakia (ISRSP SR). This information system acquires, collects and provides information on actual research and development projects undertaken in Slovakia, on excellent experts, on equipment of the research and development by technology (R&D infrastructure) and on R&D projects undertaken in international scientific cooperation.

Important institutions operating under ISRSP SR are:

Slovak Information and Consulting Academic Network (SICAN) (http://www.sikas.sk/)
Established with the support of MEdu SR on Slovak universities. It currently has 18 active stations with a consultant appointed by the rector. Since 1.11. 2002, it has been enlarged by a system of coordinators of the 6. Framework Program for science and technology. SICAN is coordinated by CDST.

Center for Development, Science and Technology (CDST) (www.sarc.sk)
It was established by the Ministry of Education in 1992, in order to support participation of Slovak subjects in European scientific and R&D projects and to support transfer of technologies in Slovakia. It serves as a contact consultancy and advisory platform for European framework programs for scientific and technologic development COST and EUREKA, that are part of the 6. Framework Program of European cooperation.

Government Commission for Science and Technology
It is an advisory body to the Slovak government, for preparation and implementation of state scientific and technical policy, based upon economic, social and cultural development of

Slovak Republic. It originated by restructuring of the former government commission for science and new technologies.

Agency for Support of Science and Technology (APVT)
This agency was established by the Act No. 203/2001 Coll. and grants support to research and development projects by providing funds for financing of selected projects. This agency is a new element in the system of R&D financing and supports projects by a bottom-up system. (from the research and development laboratories to agency as a source of funding). The agency issues calls for projects and the laboratories react by submitting project proposals to the agency.

Slovak Academy of Sciences (SAS)(www.sav.sk)
Slovak Academy of Sciences (SAS) is a legal person established by the Act No. 133/2002 on the Slovak Academy of Sciences. SAS is a major Slovak scientific institution that contributes to development of science, education and general development of the society. The activities of the academy are mainly basic research in selected areas of natural, technical and social sciences, compliant to the state scientific and technical policy. The academy applies new scientific findings in applied research and economic and social practice, as well as in expert, advisory, scientifically-educational and culturally-educational activities.

Research projects on POPs – undergoing and completed

There is one project addressing the POPs issues in the MEdu database of projects containing R&D projects in Slovakia financed or co-financed from the state budget since 1996. This project was assigned to SAS and carried out by the Institute of Endocrine Ecology, which is a Center of Excellence. This project was scheduled for the period 2001 – 2004 under the name: *„Evaluation of health hazard during long-term exposure to low PCB levels”.*
POPs issues are also addressed in further international projects carried out with support of the MEdu SR (DG-ENV project “Dioxin emissions in Candidate Countries“, UNIDO/UNDP project *”Global Program to Demonstrate the Viability and Removal of Barriers that Impede Adoption and Successful Implementation of Available, Non-Combustion Technologies for Destroying Persistent Organic Pollutants (POPs), The Slovak Republic, First Phase”).* However, these projects may not be interpreted as basic research projects. Their findings may be useful in formulation of objectives of new research projects in the future.

Requirements for factual focus of POPs related research projects and analysis of capacities of the R&D environment in SR

Taking into account requirements of individual action plans, R&D projects should focus on following POPs issues:
- environmentally appropriate manner of PCB disposal
- use of non-incinerating technologies for final POPs disposal
- methods for detecting the PCB presence
- procedures for decontamination of polluted areas
- alternative ways of production of different chemicals, which are currently produced from compounds and radicals containing chlorine and other halogens
- replacement of problematic chemicals by safe replacements
- determination and definition of BAT parameters and technologies in individual sectors and for individual productions, especially from the perspective of POPs production

Projects which might be solved on state R&D orders will be relevant for following research and development areas:
- natural sciences
- technical sciences
- medical and pharmaceutical sciences
- agricultural sciences

3.2.9.3 Conclusion

State programs and state R&D orders are the largest POPs R&D stimulator (projects following from individual action plans of NIP POPs). State programs are development programs that should contribute to economic and social development of Slovakia. They should become the most preferred form of R&D funding in the future, where also most of funds should be concentrated.

General structural problems caused by long-term lack of R&D funding from state and private sources (which should be 1/3 to 2/3 according to EU proposal) pose risk also to realization of specific POPs project tasks. In addition to financial under dimensioning, the risk is further increased because of lasting problems with actual legislation in SR, which is not sufficiently complementary to methodology of program financing by application of the Act on science and technology and the Act on Agency for support of science and technology.

Tools for POPs projects implementation are:
- use of existing system in Slovakia, through ASST (including of POPs among priorities of state R&D program)
- participation of SR in the 6. Framework Program for Science and Technology EU and other forms of international cooperation

3.3 Time and financial framework of the National Implementation Plan

Author of the chapter: Ing. Janka Kleinertová

Principles of time and financial plan development

In order for the time and financial plan for the implementation of Stockholm Convention in terms of EP&C Regulation to be developed, it is necessary to evaluate impact its implementation into legal system will have on State budget, businesses and socio-economic area, especially impact on employment.

In order to evaluate socio-economic impacts of the Convention, it is necessary to identify costs and benefits of the proposed measures that are new or different from costs and benefits following from the existing laws. It is paramount to distinguish between the costs of achieving state required by current law (if there is a discrepancy between "law" and "reality"), and costs originating because of the new legal regulations. Inconsistency between existing laws and their real implementation occurs quite often. It is therefore very important to bear in mind time and factual aspects when assessing the costs and benefits of a proposed law.

Costs and benefits of the Convention were evaluated with the use of BET method (Business Effect Test).

In order to harmonize implementation of the Convention with EU Regulations, year 2010 was chosen as a time horizon for implementation of the Convention.

Financial plans for individual action plans, including their descriptions and table appendices are viewed by respective action plans.

Time and financial plan scenarios

Financial plan for the NIP was prepared in two scenarios. The need for two scenarios in this case follows from the necessity to develop alternative solutions within the action plan Polluted areas and releases from warehouse deposits and waste dumps. Stockholm Convention does not require decontamination of the polluted areas until specific date. On the other hand, spreading of contamination must be prevented and environmental barriers hindering the socio-economic development of the area must be removed. Decontamination of an area is an expensive process and requires longer time period.

Therefore, two financial plan scenarios were developed.

Scenario 1

First financial plan scenario includes also decontamination of the polluted areas, but time horizon for tackling this issue is until the year 2016, not 2010, as the rest of the NIP. Therefore scenario 1 contains only proportion of costs for decontamination of polluted areas.

Total costs of this scenario are 1.184 billion Sk. Costs of decontamination represent 50.9% of these total costs. However, it should be noted that full implementation of this action plan will in the long run create socio-economic benefits, especially in the Zemplín area. Employment in the region will increase during the decontamination period. Decontamination will also remove environmental barriers and create possibilities for renewal of tourism and related services. Economic benefits are substantial in this case. Also benefits to the health of people in the region can be expected.

Another substantial cost element is constituted by the action plan PCB-containing equipments – 23.3% of total costs. Third largest cost relates to the action plan Unintentional POPs production – 12,9% of total costs.

Source of state budget financing for Scenario 1 are mainly chapters of ME SR, MI SR, MA SR and MEdu SR. State budget will contribute 271,9 mil. Sk during the considered time horizon, what is 23% of the total costs.

Further funding will have to be provided by the businesses. These should contribute as much as 67,5% of necessary funding. Taking into account need for relatively high investments into new technologies in the metal-recycling industries, it will be necessary to choose a longer transition period in order to reduce the financial impact.

Longer time period will be necessary also for carrying out the decontamination itself. Decontamination of polluted areas under asphalt mixing plants will have to be funded by companies currently doing business in these areas. This problem will have to be addressed by development of a national model for their involvement.

Regional budgets should contribute 9,5% of the total costs. It will be mainly from the Košice region budget for decontamination of the Zemplínska Šírava.

Scenario 2

This scenario of the financial plan assumes total costs of 581,3 mil Sk. The largest cost item is for the action plan PCB-containing equipments, amounting to 276,3 mil. Sk, which is 46,8% of the total costs. Further action plans with substantial costs are Unintentional POPs production and Polluted areas and releases from warehouse deposits and waste dumps.

This time and financial plan scenario assumes state budget contribution of 271,947 mil. Sk, which is 46,8 % of the total costs. Businesses will contribute 303,013 mil. Sk, i.e. 52,1% of the total costs. Regional budgets will contribute 6,343 mil. Sk to this scenario, i.e. 1,1% of the total costs. Also this financial plan scenario assumes longer transition period for metals recycling businesses in order to reduce financial impact of the Stockholm Convention-related legal changes.

This scenario has smaller socio-economic benefits than Scenario 1.

Financial costs of Scenarios 1 and 2 for the state budget are almost identical.

Time and financial plan – Scenario 1										
	Action plan	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***Total***	**%**
1	Pesticides	36 000	587 000	0	1 890 000	0	0	0	2 513 000	0,2
2.	PCB-containing equipments	1 770 000	3 215 000	54 899 000	53 374 000	54 406 000	54 186 000	54 406 000	276 256 000	23,3
3.	Unintentional POPs production	1 456 000	1 152 000	50 987 000	40 987 000	40 987 000	15 987 000	987 000	152 543 000	12,9
4.	Polluted areas and releases from warehouse deposits and waste dumps	556 000	26 347 000	26 190 000	170 219 000	162 108 000	154 635 000	154 663 000	694 718 000	58,7
5.	Monitoring	56 000	838 000	2 742 000	1 000 000	1 000 000	1 000 000	1 000 000	7 636 000	0,6
6.	Reporting and information exchange	897 000	1 612 000	145 000	150 000	156 000	167 000	172 000	3 299 000	0,3
7.	Public awareness raising	6 502 000	10 926 000	7 740 000	5 860 000	6 020 000	3 860 000	5 740 000	46 648 000	3,9
8.	Institutional and legal measures*									
	Measures total	**11 273 000**	**44 677 000**	**142 703 000**	**273 480 000**	**264 677 000**	**229 835 000**	**216 968 000**	**1 183 613 000**	
	State budget	7 697 000	43 264 600	59 539 600	53 795 300	40 995 600	33 093 600	33 566 600	271 952 300	23,0
	Regional budgets	0	0	0	32 047 000	26 867 000	26 867 000	26 867 000	112 648 000	9,5
	Contribution of the businesses	3 576 000	1 412 400	83 163 400	187 637 700	196 814 400	169 874 400	156 534 400	799 012 700	67,5

* is not calculated – does not assumed increased costs in the legislation process

Time and financial plan – Scenario 2										
	Action plan	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***Total***	***%***
1	Pesticides	36 000	587 000	0	1 890 000	0	0	0	2 513 000	0,4
2.	PCB-containing equipments	1 770 000	3 215 000	54 899 000	53 374 000	54 406 000	54 186 000	54 406 000	276 256 000	47,5
3.	Unintentional POPs production	1 456 000	1 152 000	50 987 000	40 987 000	40 987 000	15 987 000	987 000	152 543 000	26,2
4.	Polluted areas and releases from warehouse deposits and waste dumps	555 000	26 347 000	26 189 000	20 514 000	11 240 000	3 767 000	3 796 000	92 408 000	15,9
5.	Monitoring	56 000	838 000	2 742 000	1 000 000	1 000 000	1 000 000	1 000 000	7 636 000	1,3
6.	Reporting and information exchange	897 000	1 612 000	145 000	150 000	156 000	167 000	172 000	3 299 000	0,6
7.	Public awareness raising	6 502 000	10 926 000	7 740 000	5 860 000	6 020 000	3 860 000	5 740 000	46 648 000	8,0
8.	Institutional and legal measures*									
	Measures total	**11 272 000**	**44 677 000**	**142 702 000**	**123 775 000**	**113 809 000**	**78 967 000**	**66 101 000**	**581 303 000**	
	State budget	7 696 000	43 264 600	59 538 600	53 794 300	40 994 600	33 092 600	33 566 600	271 947 300	46,8
	Regional budgets	0	0	0	6 343 000	0	0	0	6 343 000	1,1
	Contribution of the businesses	3 576 000	1 412 400	83 163 400	63 637 700	72 814 400	45 874 400	32 534 400	303 012 700	52,1

* is not calculated – does not assumed increased costs in the legislation process

Abbreviations and explanations:

AC SR	-Accreditation Commission SR
ASST	- Agency for Support of Science and Technology
AEO SR	-Association of Employers' Organizations SR
BAT	-Best Available Technology
BEP	-Best Environmental Practice
BREF	-BAT Reference Documents
WSHP	-Work Safety and Health Protection
CLRTAP	-Convention on Long-Range Transboundary Air Pollution
CChCP	-Center for Chemical Compounds and Preparations
DDT	-1,1,1,-trichloro -2,2, - bis (4-chlorfenyl) etane
PCDD	-Polychlorinated dibenzo-p-dioxins
PCDF	-Polychlorinated dibenzofurans-
EEA	-European Environmental Agency
EIA	-Environmental Impact Assessment
EEC	-European Economic Commission
EC	-European Commission
EMAS	-Environmental Management Systems
EPER	-European Polluting Emissions Registry
E-PRTR	-European Pollutant Release and Transfer Registry
EU	-European Union
GIS	-Geographic Information System
HCB	-Hexachlorobenzene
IPCP	-Integrated Prevention and Control of Pollution
IR	-Integrated Information Registry
ISSRP SR	-Information system for scientific and research potential in SR
CEE SR	-Conception of Environmental Education in SR
CIMSE	-Complex Information and Monitoring System for the Environment
MTPT SR	-Ministry of Transport, Post and Telecommunications SR
MI SR	-Ministry of Industry SR
MA SR	-Ministry of Agriculture SR
MLSSF SR	-Ministry of Labor, Social Security and Family SR
MEdu SR	-Ministry of Education SR
MH SR	-Ministry of Healthcare SR
ME SR	-Ministry of Environment SR
NGO	-Non-government Organization
NPHE	-National Program for Health and the Environment
NEIS	-National Emission Inventory System
NFR	-New Format for Reporting
NLI	-National Labor Inspectorate
NFP-POPs	-National focal point for POPs for implementation of Stockholm Convention requirements
NRL	-National Reference Laboratory
UNO	-United Nations Organization
OEEZ	-Waste from Electric and Electronic Equipment

PAH	-Polycyclic Aromatic Hydrocarbons
PCBs	-polychlorinated biphenyls
WMP	-Waste Management Programs
POPs	-Persistent Organic Pollutants
PS	-Businesses
M-WG	-Monitoring Working Group
PVC	-Polyvinyl chloride
RAPS	-Registry of Air Pollution Sources
RF	-Recycling Fund
RWIS	-Regional Waste Information System
SAS	-Slovak Academy of Sciences
CDST	-Center for Development, Science and Technology
SEA	-Slovak Environmental Agency
SEA-CEWM	- Slovak Environmental Agency, Center of Environmental and Waste Management
SCCP	-Slovak Center for Cleaner Production
SEI	-Slovak Energetic Inspection
SHMI	-Slovak Hydrometeorological Institute
SICAN	-Slovak Information and Consulting Academic Network
SEI	-Slovak Environmental Inspection
APSN	-Air Pollution Sources Nomenclature
SNAS	-Slovak National Accreditation Service
CO	-Consumer Organizations
STI	-Slovak Trade Inspection
SISE	-State Institute for Specialist Education
SIS	-State Information System
SPI SR	-State Pedagogic Institute SR
SOSR	-Statistical Office SR
SVGA SR	-State Veterinary and Foodstuff Administration SR
TIC	-Toxicological Information Center
TEQ	-Toxic Equivalent
DCP MI SR	-Department of civil protection of the Ministry of Interior SR
CAITI	- Central Agricultural Inspecting and Testing Institute
UNEP	-United Nations Environmental Program
UNDP	-United Nations Development Program
UNIDO	-United Nations Industrial Development Organization
IPCM	-Institute of preventive and clinical medicine (since 1.1.2004 Public Health Institute)
PHI	- Public Health Institute
AERI	-Agricultural Economics Research Institute;
VUP	-Foodstuff Research Institute
WMRI	-Water Management Research Institute
ACPI	-Association of Chemical and Pharmaceutical Industry
APCI	-Association of Paper and Cellulose Industry

PIC procedure	Procedure of giving consent after prior notification – this is the activity of public bodies controlling imports to and exports from the country, which they carry out during the assessment of possibility to import/export and introduce to the market selected hazardous chemicals or chemical preparations *(Prior Informed Consent)*
Plant-protecting preparations after their expiry period	This term covers all preparations for protection of plants that are already past their date of use, whether they are dangerous or not. According to the Act on wastes, such preparations are classified as waste.