



## **International POPs Elimination Project**

*Fostering Active and Efficient Civil Society Participation in  
Preparation for Implementation of the Stockholm Convention*

---

# **Country Situation Report on POPs in Romania**

**Environmental Experts Association (EEA)**

**Romania  
March 2006**

## **About the International POPs Elimination Project**

On May 1, 2004, the International POPs Elimination Network (IPEN <http://www.ipen.org>) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;
- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;
- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see <http://www.ipen.org>

IPEN gratefully acknowledges the financial support of the Global Environment Facility, Swiss Agency for Development and Cooperation, Swiss Agency for the Environment Forests and Landscape, the Canada POPs Fund, the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM), Mitchell Kapor Foundation, Sigrid Rausing Trust, New York Community Trust and others.

The views expressed in this report are those of the authors and not necessarily the views of the institutions providing management and/or financial support.

This report is available in the following languages: English

# Romania Country Situation Report on POPs

## What are POPs?

Persistent Organic Pollutants (hereinafter mentioned as POPs) are chemicals that remain intact in the environment for long periods, are toxic for humans and wildlife, are accumulating in the fatty tissues, are volatile, and have a global circulation through the atmosphere and seawater.

The Stockholm Convention on Persistent Organic Pollutants focuses on reducing and, where appropriate, the elimination of 12 POPs of international concern. These POPs include nine pesticides: aldrin, chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, endrin, heptachlor, hexachlorobenzene (also an industrial chemical and unintended by-products), mirex and toxaphene; two industrial chemicals – polychlorinated (PCBs – also unintended by-products) and hexachlorobenzene (HCB); and four by-products – polychlorinated dibenzo-p-dioxins (PCDD) and dibenzo-furans (PCDF) as well as HCB and PCBs.

The above mentioned POPs are the subject of this report.

To fulfill the obligations as a Party to the Stockholm Convention on Persistent Organic Pollutants the National Implementation Plan on POPs together with the other related environmental legislation is one of the most important issues.

Current activities are also some project initiatives from private, research and NGOs sector, identified as priority projects for the implementation of Stockholm Convention:

*1. Soil decontamination and elimination of POPs from city area*

*2. Developing and modernizing a POPs incinerator, located in a city*

The project included in NIP is related to modernization of the existing incinerator by adding some other facilities (e.g. stand by deposits provided with strategy conditions for environment including monitoring facilities, and air and water pollutants elimination by proper available techniques).

*3. Developing an integrated national management system, dedicated to POPs*

*4. Gas separation system - on hospital waste incinerators*

*5. Improving use and trading of pesticides (A better quality of pesticide's trading, and use)*

The persons involved in pesticides trading must be authorized and the application of pesticides should be well coordinated by the right professionals and not by random, by the buyers.

*6. Dioxin emissions reduction - esp. from aluminum and copper smelters*

*7. Human resources development and personnel training, in order to achieve a better management of POPs (Hiring and training adequate personnel)*

The above mentioned projects were supported as a consequence of process of setting up a strategy where the objectives were established and prioritized according to the criteria discussed by the involved persons – legal and natural persons.

The stakeholders identified for POPs management, under the coordination of environmental or other central or local competent authorities, will implement the projects included in NIP.

The use of POPs is not permitted by the existing legislation. The emissions of dioxins into the atmosphere from existing incinerators located near hospitals are a threat to public health because hospitals are placed in densely populated areas.

But according to NIP provisions a part of these installations will be decommissioned and another part will be provided with gas treatment for removing volatile organic compounds (e.g. dioxins).

These 7 project proposals have been country wide within the UNIDO / GEF NIP project implementation and while not covering all the problems, they are a good starting point.

Another Four projects proposed and strongly supported by the National central environment authority (Ministry of Environment and Water Management) are:

- ♦ *National Strategy on POPs: access to information, communications, public awareness and education*
- ♦ *Abatement of unintentional POPs emissions from the energy and transport sectors*
- ♦ *PCB elimination*
- ♦ *Development of a sustainable regional partnerships (Romania, Moldova Republic and Ukraine) for prevention of POPs accidental emissions from trans boundary transports*

## **Sources of POPs**

The POPs emission sources are situated in four main economic sectors: agriculture, industry, transportation and energy, to which could be added other sources that include the human settlements with waste landfills and incineration plants for hospital wastes.

### **Agriculture**

Agriculture is the main economical sector where chlorinated pesticides had been used and the effects of their use are felt today. These effects are not certain because there are no special research studies currently being undertaken to establish the effect of pesticide use in agriculture in the past. The impact of pesticide used in agriculture on water is in the form of diffuse pollution and is actually measured in the underground and surface waters nowadays.

Releases of POPs used in agricultural sector into the atmosphere occur either from stationary sources, like pesticides application on land and heat production, or mobile sources which are mostly related to off road vehicles (tractors and other means).

The following table shows the period of time when the POPs have been applied in Romania

Period of time/ POPs	1975-1980	1981-1985	1986-1990	1991-1995	1995-2000
Aldrin	Applied	Not applied	Not applied	Not applied	Not applied
Dieldrin	Applied	Not applied	Not applied	Not applied	Not applied
Endrin	Applied	Not applied	Not applied	Not applied	Not applied
Chlordane	Applied	Not applied	Not applied	Not applied	Not applied
DDT	Applied	Applied	Not applied	Not applied	Not applied
Heptachlor	Applied	Not applied	Applied	Some products consented	Not applied
Hexachlorobenzene	Applied	Applied	Applied	Some products consented	Not applied
Toxaphene	Applied	Applied	Applied	Some products consented	Not applied
Mirex	Not applied	Not applied	Not applied	Not applied	Not applied

Source of the table: 2002-2004 POPs Inventories

Legend

Applied	Applied
Not applied	Not applied
Some products consented	Some products consented

Chlorinated pesticides were first used in Romania in 1948. The first products were based on DDT but other products based on chlordane, dieldrin, endrin, aldrin, heptachlor and toxaphene have all been used. All of these products were imported, except those based on DDT and heptachlor which were produced locally.

The respective substances were used in the form of powders, granular or liquid forms, on large agricultural areas, on meadows and alpha-alpha cultures. Since 1965 the DDT pesticides have no longer been applied on meadows and alpha-alpha cultures.

The dieldrin based pesticides were used in Romania during 1965-1970, especially for seeds treatment. Beside the persistent chlorinated pesticides, the most extensively used products were those based on DDT and heptachlor. After 1988 these types of products have not been certified by the authorities for use in Romania.

Nowadays the only chlorinated insecticides used in Romania are those based on Lindane used for seeds treatment.

Environmental parameter	Emission sources
Air	The pesticides emitted from the agriculture sector have been decreased according to the production decrement between 1989 and 2001. The emission of Lindane in atmosphere in the mentioned period of time has been decreased by about 91.3 % and pentachlorophenol applied as fungicide and herbicide by 88%.
Water	The annual loads of chlorinated pesticides on tributary areas of the inland rivers in the period 1985 – 2001 are monitored with routine analyses. The concentration values of pesticides have been decreased after the significant peak in the years of the 1990 – 1991 as the influence/effects of the plant protection substances applied in the former time. This interpretation should be carefully considered because the monitoring system is not perfect. The number of samples distributed in time and on the tributary inland river basins needs to be increased in order to improve the certainty degree of the veridical conclusions drawn.

Source of the table figures: Romanian NIP

## **Industry**

The emission sources in the industrial sector are mainly “point sources”. There are also some diffusion sources generated by the deposits of solid and liquid wastes coming from the production of pesticides. PCBs are coming mainly from capacitors, transformers, batteries and other electrical equipments.

The list of equipment currently being used containing PCB must be updated, completed and checked again because some of the data are not clear (e.g. concentration of PCB of the solution in the capacitors under operation in some counties e.g. Arad, Dolj etc).

The existing stocks (including waste) of POPs are related to the quantities of POPs which are not in use anymore and which could possibly be eliminated.

The list of decommissioned equipments containing PCBs is prepared by each title holder who has used PCB-containing equipment in the past. All these lists are centralized at each of the 42 counties and finally at the national level at the central environment authority (Ministry of Environment and Water Management.)

The lists are operated by each title holder and being updated as new equipment containing PCBs is decommissioned (e.g. the main user “Transelectrica” reported 273 transformers in 2000).

At the central level there is a special department of waste, within the Ministry of Environment and Water Management operating the respective list.

All the exhausted / decommissioned equipments are stored at the placement of the former users in order to be destroyed according to the NIP of Stockholm Convention.

Since 1985 all POPs pesticides production has been stopped. Only Lindane (which is not on the Stockholm Convention Lists, for the time being but is a current candidate proposed by the EU) was produced in Romania at Olchim till 1999.

<b>Table 3</b>	
<b>Environmental parameter</b>	<b>Emission sources</b>
Air	<ul style="list-style-type: none"> <li>▪ industrial combustion processes, e.g.: production of energy using fossil fuels, cement and lime kilns firing hazardous waste, fossil fuel – fired utility and industrial boilers, firing installations for wood and other biomass fuels, waste oil refineries.</li> <li>▪ metal processing operations, e.g. sintering, metal smelters, etc.</li> </ul> <p>Releases of POPs into the atmosphere occur either from <i>stationary sources</i>, which are mostly associated with industrial activities such as production and manufacturing, e.g.: pig iron tapping, steel plants, aluminum and other non-ferrous metal production (secondary production), pulp and paper, textile and leather dyeing;</p> <p>or from <i>diffuse or dispersed sources</i>, which are mostly related to the use and application of POP – containing products. POPs emitted from either of these two source categories can undergo long-range transport and thus POPs can be detected in air at locations far from the origin of its release.</p> <p>Due to the decrement of the industrial sector dioxins emission diminished during 1989 – 2001 with a decrease from 1995-2001 of 77%. (The industrial sector dioxins emissions represent 28 – 57 percent of the total dioxins emission). The industrial sector is the main source of emissions of PAHs: (60% – 80% of all emissions). The main PAHs activities in the industry sector are coke production (75%-85% of all emissions); pig iron tapping (20% – 12% of all emissions.) PAHs emission decrease from 1989-2001 was 30 %.</p>
Water	<ul style="list-style-type: none"> <li>▪ wastewater discharge from pulp and paper production using elemental chlorine;</li> <li>▪ chemical production processes;</li> <li>▪ wastewater discharge from the use of contaminated preservatives or dyestuffs for textiles, leather, wood, etc.</li> <li>▪ wastewater discharge from normal household operations (washing machines, dishwashers, etc.)</li> </ul> <p>Release of wastewater in form of leachates into surface waters and/or ground water may be deliberate or unintentional. Leaching occurs when rainwater is allowed to migrate through inadequately stored repositories of POP – containing products, residues and/or wastes</p>
Land	<p>The contaminated land result from applying products containing POPs like storage of expired pesticides, or wastes (e.g. PCB from batteries, a.s.o.).</p> <p>Environmental processes are: evaporation followed by rain, or other conditions causing POPs deposition on soil and transportation to groundwater or surface water resources.</p> <p>In all cases, land serves as a sink for the POPs from which they can be released into the food – chain through uptake by plants and/or animals.</p>

Source of data published in the table: Romanian NIP

## Energy

Romanian power generation and heating includes power station, industrial firing places (furnaces) and installations for providing space heating that are fired with fossil fuels. The main release vectors are air and residue. There is a scarcity of measured data for POPs concentrations in residue (fly ash) and that is why only emissions to air are reported.

In the year of 2000 the primary energy resources were in total 40,360,000 tones of oil equivalent\* of which:

- natural gas – 33,9% (6,7% - imported);
- coal + coke – 20,4% (4,7% - imported);
- crude oil – 28,5% (11,8% - imported);
- hydro and nuclear power – 6,5%
- other resources – 10,5% (3,6% - imported);
- imported electrical energy – 0,2%

The source of the data presented above: Romanian Statistical Yearbook

The energy sector is the main source of dioxins emissions: 38.9% (1989) to 61.7 % (2001) Commercial, institutional and residential combustion plants and energy production in the industry has decreased during 1989 – 2001 and dioxin emissions from the power plant and co-generation plants increased by 30.5 % in the same period.

The main PCB emission values are from the energy sector: 50% to 75 % of the whole PCB emissions in the country. From the energy sector, 80% to 95% percent of the whole PCB emitted comes from public power and co-generation plants. Commercial, institutional and residential combustion plants are responsible for 1% to 10% of the whole PCBs emissions.

## **Transport**

Transportation relies heavily on the combustion of gasoline - leaded and unleaded, kerosene, gas oil etc. Higher POPs emissions from leaded gasoline are linked to the presence of halogenated scavengers as additives to the fuel. The POPs emissions are mainly a result of poor maintenance, low fuel quality, and poor combustion efficiency which are likely to result in increased PCDD / PCDF releases.

In most cases emissions from internal combustion engines lead only to releases to air.

After the energy sector, the transport sector is the area making an important emission contribution of PCBs with an increase of about 3 times in 2001, when/if compared with the reference year (1989).

## **Other Sources**

The main sources of POPs in the human settlements are health care/medical wastes incinerators. Although the amount of health care/medical wastes being incinerated has increased slightly, municipal waste incineration is very unpopular.

There were at one time seven incinerator plants operating in Romania, but nowadays there is only one, very old, domestic waste incinerator with a capacity of 5 tonnes per hour in Bucharest.

Also other sources of POPs are representing by the PCBs and other POPs stocks.

Main conclusions are that:

- The stationary emission sources in the human settlement areas are the incinerators handling hospital wastes. These are located in most of the municipal hospitals and are not adequately equipped to eliminate dioxins emissions from the resulting gases;
- Municipal wastes are not incinerated in Romania. Usually these are landfilled.



<b>Table 4</b>	
<b>Sector</b>	<b>Sources</b>
Agriculture	<ul style="list-style-type: none"> <li>▪ pesticides application on land and heat production</li> <li>▪ road vehicles (tractors and other means)</li> </ul>
Industry	<ul style="list-style-type: none"> <li>▪ industrial combustion processes</li> <li>▪ metal processing operations</li> <li>▪ use and application of POPs containing products.</li> <li>▪ deposits of solid and liquid wastes coming from the production of pesticides</li> <li>▪ wastewater discharge from pulp and paper production using elemental chlorine;</li> <li>▪ chemical production processes;</li> <li>▪ wastewater discharge from the use of contaminated preservatives or dyestuffs for textiles, leather, wood, etc.</li> <li>▪ wastewater discharge from normal household operations (washing machines, dishwashers, etc.)</li> <li>▪ applying products containing POPs like storage of expired pesticides, or wastes</li> </ul>
Energy	<ul style="list-style-type: none"> <li>▪ commercial, institutional and residential combustion plants and energy</li> <li>▪ production in the industry</li> </ul>
Transport	<ul style="list-style-type: none"> <li>▪ poor maintenance, low fuel quality, and poor combustion efficiency</li> </ul>
Other sources	<ul style="list-style-type: none"> <li>▪ health care wastes incinerators</li> <li>▪ PCBs and other POPs stocks</li> </ul>

## Levels of POPs

The main levels of POPs are, according to official figures specified in the POPs inventory. And taking into account the reference years (1989, 1995 and 2001) for the main sectors and sources is specified below.

### Agriculture

The POPs releases from agricultural sector are specified in the table 4 and 5

<b>Table 5</b>				
<b>Emission of POPs from Agriculture Sector</b>				
<b>Pollutant</b>	<b>Activity</b>	<b>Year</b>		
		<b>1989</b>	<b>1995</b>	<b>2001</b>
Pentachlorophenol (tonnes/year)	Application as Fungicide and Herbicide	55,663	15,668	6,423
Hexachloro-cyclohexane – HCH – Lindane (tones/year)	Application as Insecticide	6,431	1,810	555
<b>TOTAL PESTICIDES (tones/year)</b>		<b>62,094</b>	<b>17,478</b>	<b>6,978</b>
Dioxins (g I – TEQ/year)	Open Burning of Agricultural Wastes	0.58	0.62	0.64
<b>TOTAL DIOXINS (g I – TEQ /year)</b>		<b>0.58</b>	<b>0.62</b>	<b>0.64</b>
PAHs (kg/year)	Open Burning of Agricultural Wastes	5,897	6,253	6,400
<b>TOTAL PAHs (kg/year)</b>		<b>5,897</b>	<b>6,253</b>	<b>6,400</b>

Source of data: POPs Inventory

## Pesticides application in agriculture

<b>Table 6</b>			
<b>POPs Emissions in Air from Pesticides Applied in Agriculture</b>			
#	Year		
	1989	1995	2001
Tones of Pesticides	71455	20113	7870
PCP (tones/year) (Pentachlorophenol)	55663	15,668	6422.9
HCH (tones/year) (Hexachlorocyclohexane)	6431	1,810	555
<b>TOTAL POPs (tones/year)</b>	<b>62,094</b>	<b>17,478</b>	<b>6978</b>

Source of data: POPs Inventory

## Open Burning of agricultural waste

Open burning of agricultural waste sector has been reported by each county EPI totaling the following surfaces, per year:

- 1989: 41411 ha
- 1990: 200836 ha
- 1991: 200246 ha
- 1995: 259353 ha
- 2000: 233019 ha
- 2001: 196414 ha

Source of data: POPs Inventory

The emission in air from this activity is shown in the following table:

<b>Table 7</b>			
<b>POPs Emissions in Air from Open Burning of Agricultural Wastes</b>			
#	Year		
	1989	1995	2001
<i>Tones of wastes (25 kg/ha)</i>	58975	62335	63965
Dioxins (g/year)	0,58	0,62	0,64
PAH (kg/year)	5897	6253	6400

Source of data: POPs Inventory

## Pesticides Waste Deposits

Pesticide waste deposits have been inventoried in 2002 and 2003 (see table 7 and 8). These are also the main potential point sources of pesticide emissions in the agricultural sector. The pesticides stored in the deposits inventoried are in the solid and liquid forms and a part of them are substances that are not identified. These deposits are potential sources for accidental pollution, especially those deposits which are not in a safe condition.

<b>Table 8</b>					
<b>Existing Waste Deposits Containing Pesticides at the End of 2002</b>					
#	Number of Deposits	Total Waste Quantity			
		Substances Identified		Substances <i>not</i> Identified	
		Solid (kg)	Liquid (dm <sup>3</sup> )	Solid (kg)	Liquid (dm <sup>3</sup> )
<b>TOTAL</b>	709	882700	425943	464400	166282

Source of data: POPs Inventory

<b>Table 9</b>						
<b>Pesticide Waste Deposits in Romania Reported in 2003</b>						
#	Total Waste Quantity		Unidentified		Identified	
	Solid (kg)	Liquid (l)	Solid (kg)	Liquid (l)	Solid (kg)	Liquid (l)
<b>TOTAL</b>	744946	514644	291008	262543	453937	252101

Source of data: POPs Inventory

The total number of the existing deposits in Romania is 709, of which 237 are not secured (e.g. no proper conditions for storage, not monitored etc.) as such they might rightly be considered 'uncontrolled.' Moreover, out of 1350 tones of deposited substances containing pesticides – about 34 percent are not identified (that is, about 464 tones).

The deposited substances containing pesticides in liquid phase totals a volume of about 600 m<sup>3</sup>, of which 166 m<sup>3</sup> are unidentified substances.

## Industry

The emission sources in the industrial sector are mainly “Point Sources”. There are also some diffuse sources generated by the deposits of solid and liquid wastes coming from the production of pesticides. PCBs are coming mainly from capacitors, transformers, batteries and other electrical equipments.

Taking into account the main activities generating POPs the level of emissions is specified in the following tables:

<b>Table 10</b>				
<b>Emission of POPs from Industry Sector</b>				
Pollutant	Activity	Year		
		1989	1995	2001
Dioxins (gI-TEQ/year)	Electric Furnace Steel Plants	16.20	6.60	3.45
	Sintering Annex Plants	54.65	32.36	25.20
	Primary Production of Cooper	0.53	0.24	0.07
	Secondary Lead Production	0.24	0.10	0.12
	Secondary Zinc Production	0.01	0.01	0.01
	Secondary Aluminum Production	1.480	0.630	0.0887
	Cement Factories	2.52	0.007	1.162
	<b>TOTAL DIOXINS (g I - TEQ/year)</b>		<b>75.63</b>	<b>39.947</b>
HCB (g/year)	Secondary Aluminum Production	56,830	24,380	3,420
	<b>TOTAL HCB (g/year)</b>	<b>56,830</b>	<b>24,380</b>	<b>3,420</b>
PAHs (kg/year)	Pig Iron Tapping	25,530	10,750	8,230
	Electric Furnace Steel Plants	41.05*	15.6*	2.43*
	Aluminum Production	1,230	653	834
	Wood Preservation	1	6	10
	Coke Production	100,330	84,560	55,000
	<b>TOTAL PAHs (kg/year)</b>	<b>127,132</b>	<b>95,984</b>	<b>64,076</b>

\*Notice: Emission Factor for steel plants are related to Benzo(a)pyrene

Source of data: POPs Inventory

<b>Table 11</b>			
<b>POPs Emissions in Air from Pig Iron Tapping</b>			
#	Year		
	1989	1995	2001
<i>With filters for dust removal</i>	8757904	4244582	3253202
PAHs (tonnes/year)	21.9	10.6	3.09
<i>Without filters</i>	473233	45047	29762
PAHs (tonnes/year)	1.63	0.155	0.102
<b>TOTAL PAH (tonnes/year)</b>	<b>23.53</b>	<b>10.75</b>	<b>8.23</b>

Source of data: POPs Inventory

<b>Table 12</b>			
<b>POPs Emissions in Air from Electric Furnace Steel Plants</b>			
#	Year		
	1989	1995	2001
<i>With filters for dust removal</i>	952981	539196	1059961
Dioxins and furans	2.38	1.35	2.65
<i>Without filters for dust removal</i>	2414528	918238	142932
Dioxins and furans	13.3	5.05	0.8
<i>With electrostatic precipitation</i>	2702442	810107	
Dioxins and furans	0.486	0.146	
<b>TOTAL: Dioxins g I – TEQ/year</b>	<b>16.2</b>	<b>6.6</b>	<b>3.45</b>
PAH (kg/year)	41.05*	15.6*	2.43*

Range: 0.068-6µg 1-TEQ/tonne (Dioxins)

Value applied: 1= 2µg 1-TEQ/tonne; 2=5.5µg 1-TEQ/tonne; 3=0.18µg 1-TEQ/tonne; PAH 17mg/tonne

\*Notice: Emission Factor for PAH is related to Benzo(a)pyrene

Source of data: POPs Inventory

<b>Table 13</b>			
<b>POPs Emissions in Air from Wood Preservation</b>			
#	Year		
	1989	1995	2001
<i>Creozot kg/year</i>	6520	61900	98762
Benzo(a)pyrene	3.26	30.95	49.38
Benzo(ghi)perylene	1.63	15.5	24.69
Benzo(k) fluoranthene	1.63	15.5	24.69
Fluoranthene	632.44	6004.3	9579.9
Indenof(1.2.3-cd)pyrene	1.63	15.5	24.69
Benzo (b)fluoranthene	1.63	15.5	24.69
<b>Total PAH (g/year)</b>	<b>642.22</b>	<b>6097.15</b>	<b>9728</b>

EF: 0.5; 0.25;0.25;97;0.25;0.25 mg/kg

Source of data: POPs Inventory

<b>Table 14</b>			
<b>POPs Emissions in Air from Primary Production of Copper</b>			
#	Year		
	1989	1995	2001
<i>Tonnes of copper/year</i>	53553	24498	6987
Dioxins and furans (g I – TEQ/year)	0.53	0.24	0.07

SNAP CODE: 030306; 040300

Primary Copper Production; Process in Non-ferrous Metal Industries

Range: 0.25-22µg 1-TEQ/tonne; Value applied: 10µg 1-TEQ/tonne

Source of data: POPs Inventory

<b>Table 15</b>			
<b>POPs Emissions from Secondary Lead Production</b>			
#	Year		
	1989	1995	2001
Tonnes of secondary lead/year	12291	4889	6207
Para dibenzo-dioxins (g I – TEQ/year)	0.24	0.1	0.12

SNAP CODE: 030307; 040300  
 Secondary Lead Production; Process in Non-ferrous Metal Industries  
 Range: 5-35µg 1-TEQ/tonne; Value applied: 20µg 1-TEQ/tonne  
 Source of data: POPs Inventory

<b>Table 16</b>			
<b>POPs Emissions in Air from Secondary Zinc Production</b>			
#	Year		
	1989	1995	2001
Tonnes of secondary zinc/year	35	24	30
Polychlorinated dioxins and furans g I – TEQ/year	0.0077	0.0053	0.0066

SNAP CODE: 030308; 040300  
 Secondary Zinc Production; Process in Non-ferrous Metal Industries  
 Range: 63.1-379µg 1-TEQ/tonne; Value applied: 220µg 1-TEQ/tonne  
 Source of data: POPs Inventory

<b>Table 17</b>			
<b>POPs Emissions in Air from Secondary Aluminum Production</b>			
#	Year		
	1989	1995	2001
Tones of secondary aluminum/year	11,366	4,876	683
Hexachlorobenzene (HCB) g/year	56,830	24,380	3420
Dioxins (g I – TEQ/year)	1.48	0.63	0.00887

SNAP CODE: 030310; 040300  
 Secondary Aluminum Production; Process in Non-ferrous Metal Industries  
 Range: - ; Value applied: HCB: 5g /tonne (PARCOM, 1992); Dioxane: 0,13 g/tonne  
 Source of data: POPs Inventory

<b>Table 18</b>			
<b>POPs Emissions in Air from Cement Factories</b>			
#	Year		
	1989	1995	2001
Tonnes of cement/year	12586047	7072212	5808783
Dioxin (g/year)	2.52	0.007	1.162

SNAP CODE: 030311  
 Cement; Range: Value applied: 200 ng /tone  
 Source of data: POPs Inventory

## Transport

Transportation relies heavily on the combustion of gasoline (leaded and unleaded), kerosene, 2 –stroke mix (typically a 1:25 – 1:50 mixture of motor oil and gasoline), Diesel fuel (also known as light fuel oil), and heavy oil. Higher emissions from leaded gasoline are linked to the presence of halogenated scavengers as additives to the fuel. Poor maintenance, low fuel

quality, and poor combustion efficiency are likely to result in increased PCDD / PCDF releases.

In most cases emissions from internal combustion engines lead only to releases to air.

The levels of POPs related to transport sector and the types of activities are specified in the following tables:

<b>Table 19</b>				
<b>Emission of POPs from Transport Sector</b>				
<b>Pollutant</b>	<b>Activity</b>	<b>Year</b>		
		<b>1989</b>	<b>1995</b>	<b>2001</b>
PAHs (kg/year)	Road Transport	4,473	20,540	25,630
	Off Road Transport	1,703	1,371	1,364
	Other Mobile Sources	2,880	2,210	2,069
	Water Transport	1,178	834	705
<b>TOTAL PAHs (kg/year)</b>		<b>10,234</b>	<b>24,955</b>	<b>29,768</b>
Dioxins (gI-TEQ/year)	Road Transport	3.9	19.4	23.7
	Off Road Transport	NA	NA	NA
	Other Mobile Sources	NA	NA	NA
	Water Transport	2.0	1.4	1.3
<b>TOTAL DIOXINS (g I - TEQ/year)</b>		<b>5.9</b>	<b>20.8</b>	<b>25.0</b>
PCB (g/year)	Road Transport	29,643	71,689	104,730
	<b>TOTAL PCB (g/year)</b>		<b>29,643</b>	<b>71,689</b>
HCB (g/year)	Water Transport	120	70	65
	<b>TOTAL HCB (g/year)</b>		<b>120</b>	<b>70</b>

Source of data: POPs Inventory

<b>Table 20</b>			
<b>POPs Emissions in Air from Off Road Transport</b>			
#	<b>Year</b>		
	<b>1989</b>	<b>1995</b>	<b>2001</b>
Benz(a)anthracene	2.95	4.13	6.09
Benzo(h)fluoranthene	1.84	2.58	3.8
Dibenzo(a,h)anthracene	0.37	0.52	0.76
Benzo(a)pyrene	1.11	1.56	2.28
Chrysene	7.36	10.32	15.2
Fluoranthene	16.65	23.4	34.2
Phenanthrene	92.5	130	190
Total-1 POP (kg/year)	<b>122.8</b>	<b>172.5</b>	<b>252.3</b>
Benz(a)anthracene	60.32	45.75	42.47
Benzo(h)fluoranthene	32.17	24.4	22.65
Dibenzo(a,h)anthracene	8.04	6.1	5.66
Benzo(a)pyrene	32.17	24.4	22.65
Chrysene	120.6	91.5	84.9
Fluoranthene	361.8	274.5	254.7
Phenanthrene	964.8	732	679.2
Total-2 POP (kg/year)	1580	1198.6	1112.2
<b>TOTAL POP (kg/year)</b>	<b>1702.8</b>	<b>1371.1</b>	<b>1364.5</b>

Source of data: POPs Inventory

<b>Table 21</b>			
<b>POPs Emissions in Air from Water Transport</b>			
#	Year		
	1989	1995	2001
Fuel Consumption (tones/year)	588797	416980	352578
HCB (kg/year)	0.12	0.07	0.065
Dioxins kg I – TEQ/year	0.002	0.0014	0.0013
<b>Total PAH (kg/year)</b>	<b>1177.6</b>	<b>834</b>	<b>705</b>

Source of data: POPs Inventory

## Energy

The category of power generation and heating includes power station, industrial firing places (furnaces) and installations providing space heating and fired with fossil fuels.

The mean release vectors are air and residue. There is a scarcity of measured data for POPs concentration in residue (fly ash) and that is why only emissions to air are reported.

Thermoelectric energy is about 70% of the total electric energy produced and hydro electrical energy about 30%.

Fossil fuel fired power plants generate the majority of the electricity consumed in Romania today. Out of the total thermoelectric energy produced, 50.9% are generated by coal (mostly lignite), 24.2% natural gas and 8.9% liquid petroleum products. Releases of POPs to matter, land and product are normally negligible. Thus, the only important release routes are air and residue, especially fly ash.

<b>Table 22</b>				
<b>POPs releases from Energy Sector</b>				
Pollutant	Activity	Year		
		1989	1995	2001
Dioxins (g/year)	Public Power and Cogeneration Plants (PPC)	198.0	338.0	258.5
	Commercial, Institutional and Residential Combustion Plants (CIRC)	30.0	2.4	4.7
	Combustion in Boilers in Industry (CBI)	15.1	9.3	9.5
	<b>TOTAL DIOXINS (g/year)</b>	<b>243.1</b>	<b>349.7</b>	<b>252.7</b>
PCB (g/year)	PPC	80,037	137,047	104,722
	CIRC	11,155	661	1,346
	CBI	5,235	1,777	2,968
	<b>TOTAL PCB (g/year)</b>	<b>96,427</b>	<b>139,485</b>	<b>109,036</b>
PAHs (kg/year)	PPC	4,456	5,025	3,500
	CIRC	1,403	21	40
	CBI	316	798	440
	<b>TOTAL PAHs (kg/year)</b>	<b>6,175</b>	<b>5,844</b>	<b>3,980</b>

Source of data: POPs Inventory

## Other sources

### Waste Incineration

The most important sources of POPs resulting from incineration are the hospital waste incineration and municipal waste incineration.

Both level of releases are specified in the tables 22, 23 and 24

<b>Table 23</b>				
<b>Emission of POPs from Other Sources</b>				
<b>Pollutant</b>	<b>Activity</b>	<b>Year</b>		
		<b>1989</b>	<b>1995</b>	<b>2001</b>
Dioxins (g I-TEQ/year)	Hospital Waste Incineration	11.71	16.8	22.7
	Municipal Waste Incineration Plants	2.19	2.19	2.19
<b>TOTAL DIOXINS (g I - TEQ/year)</b>		<b>13.9</b>	<b>18.99</b>	<b>24.89</b>
PCB (g/year)	Hospital Waste Incineration	66.76	127.08	159.6
	Municipal Waste Incineration Plants	232.14	232.14	232.14
<b>TOTAL PCB (g/year)</b>		<b>299</b>	<b>359.2</b>	<b>391.7</b>
PAHs (g/year)	Hospital Waste Incineration	<b>0.042</b>	<b>0.04</b>	<b>4.14</b>
	Municipal Waste Incineration Plants	6,351	6,351	6,351
<b>TOTAL PAHs (g/year)</b>		<b>6351.04</b>	<b>6351.04</b>	<b>6,535.14</b>

Source of data: POPs Inventory

<b>Table 24</b>			
<b>POPs Emissions in Air from Hospital Waste Incineration</b>			
#	<b>Year</b>		
	<b>1989</b>	<b>1995</b>	<b>2001</b>
<i>Anatomic Waste (tonnes/year)</i>			
<i>With special abatement measures (particle abatement)</i>	2.102	2.02	207
Dioxin g I – TEQ/year	0.0003	0.0003	0.034
PAH(g/year)	0.042	0.04	4.14
<i>With no special abatement measures</i>	4062	4405	6385
Dioxin g I – TEQ/year	6.7	7.27	10.53
<i>Without Anatomic Waste (tonnes/year)</i>	3341	6358	9127
<i>With special abatement measures (particle abatement)</i>	3.2	3.6	1147
Dioxin g I – TEQ/year	0.00048	0.00054	0.172
<i>With no special abatement measures</i>	3338	6354	7980
Dioxin g I – TEQ/year	5.01	9.53	11.97
PCB (g/year)	66.76	127.08	159.6
<b>TOTAL: Dioxin g I – TEQ/year</b>	<b>11.71</b>	<b>16.8</b>	<b>22.7</b>
<b>PCB (g/year)</b>	<b>66.76</b>	<b>127.08</b>	<b>159.6</b>
<b>PAH (g/year)</b>	<b>0.042</b>	<b>0.04</b>	<b>4.14</b>

EF PAH: 0.02mg /tonne (for clinical waste)

Source of data: POPs Inventory



<b>Table 25</b>			
<b>POPs Emissions in Air from Incineration of Municipal Waste</b>			
#	Year		
	1989	1995	2001
<i>Tonnes of municipal waste/year</i>	43800	43800	43800
PCB g/year	232.14	232.14	232.14
PAH g/year	6351	6351	6351
Dioxins g/year	2.19	2.19	2.19

SNAP CODE:

Value applied: PCB – 5.3mg /tonne; PAH - 145 mg /tonne (Fluoranthene); Dioxin - 50µg I- TEQ/tonne

Source of data: POPs Inventory

### PCBs and Other POPs Stocks

EPIs reported the POP Stocks at the end of 2001 (DDT, Heptachlor, Toxaphene and PCB).

Total existing POPs in Romania at the end of 2001 are:

- Toxaphene: 2942 Kg
- Heptachlor: 3544 kg
- DDT: 6621 kg
- PCB (in use and waste): 749 m<sup>3</sup>

Integrating all the above information the POPs releases in air by economic sector are specified in the following table:

<b>Table 26</b>				
<b>POPs Emissions in Air by Economic Sectors in the Period 1989 – 2001</b>				
Pollutant	Economic Sector	Year		
		1989	1995	2001
Dioxins (gI-TEQ/year)	Agriculture	0.58	0.62	0.64
	Industry	75.63	39.947	30.101
	Transport	5.9	20.8	25.0
	Energy	243.1	349.7	252.7
	Other Sources	13.9	18.99	24.89
	<b>TOTAL DIOXINS (g/year)</b>		<b>339.11</b>	<b>430.05</b>
PCBs (g/year)	Agriculture	0	0	0
	Industry	0	0	0
	Transport	29,643	71,689	104,730
	Energy	96,427	139,485	109,036
	Other Sources	299	359.2	391.7
	<b>TOTAL PCBs (g/year)</b>		<b>126,369</b>	<b>211,533</b>
Pesticides (tones/year)	Agriculture	<b>62,094</b>	<b>17,478</b>	<b>6978</b>
	<b>TOTAL PESTICIDES (tones/year)</b>		<b>17,478</b>	<b>6,978</b>
HCB (g/year)	Agriculture	0	0	0
	Industry	56,830	24,380	3,420
	Transport	120	70	65
	Energy	0	0	0
	Other Sources	0	0	0
	<b>TOTAL HCB (g/year)</b>		<b>56,950</b>	<b>24,450</b>
PAHs (kg/year)	Agriculture	5,897	6,253	6,400
	Industry	127,132	95,984	64,076
	Transport	10,234	24,955	29,768
	Energy	6,175	5,844	3,980
	Other Sources	6,351	6,351	6,535
	<b>TOTAL PAHs (kg/year)</b>		<b>149,442</b>	<b>133,042</b>

Source of data: POPs Inventory

## **POPs levels measures in the environment**

According to our investigations there are no data available on POPs levels measurement in the environment (food, animal bodies etc.) or an assessment of their impact on health. This is probably due to no analyses being carried out (to our knowledge) and consequently no report ever being published. Thus, the only one information source on POPs releases and their levels in the environment could be the POPs Inventory and/or National Implementation Plan.

In addition to these documents, it should be mentioned that the Audit Reports and EIA Reports for different activities could likely be a source of information on POPs like PCBs and HCB in relation with environmental parameters (water, air etc). Also, from our research we can underline the fact that POPs like dioxins are not measured due to the lack of the necessary equipment.

## **Laboratories**

In accordance with the inventory of laboratories dealing with POPs, 11 such facilities were identified in 2003 as being capable of handling organochlorine and organophosphorous pesticides, PCBs, volatile compounds, DDT, pyrethroids, ureic pesticides, herbicides, fungicides, PAH, THM, and “drines”.

No laboratories have been identified in Romania as being capable of handling dioxins.

## **Damage caused by POPs**

At present, a limited number of studies have been performed that identify exposed populations and assessing human exposure. These were focusing on drinking water and food exposure to POPs. Water quality conditions in Romania have deteriorated rapidly over the past few decades and are considered to pose a severe threat to both environment and human health.

Nowadays, there are actions directed to classify and to elaborate so-called “Directory Schemes” (defined by the new Law 310/2004 which modifies the former Law of Waters – 107/1996) in order to comply with the Water Framework Directive along with the additional related Directives (e.g. PHARE Project – Europe Aid / 114912 / D / SV / RO).

According to previous studies “Higher levels than those levels standardized / defined as objectives in the European Directives, namely ammonia, nitrates heavy metals, pesticides are the main cause for qualifying some river water courses as deteriorated (“Environment and Health Overview” – 1991 – ICIM and others). The most severe pollution problems are in the Ialomița, Olt and Siret river basin districts, (Ministry of Environment 1991).

From 1985 to 1989 it has been noted that concentrations of ammonia, nitrates and organic substances in groundwater had been increased due to diffuse impurity to widespread contamination (Ministry of Environment, 1991).

A significant portion of the soil in Romania has been seriously degraded through heavy use of chemical fertilizers and pesticides, large discharges and emissions from chemical and metal processing plants, etc. DDT residues in the soil were reported high in 1991, exceeding the maximum allowable level (> 0.10 ppm). The highest levels of DDT have been observed in Bacău and Constanța where levels often reached 0.6 ppm (Ministry of Environment, 1991). This substance was banned in Romania in 1985 and levels in soil are beginning to decrease in

most areas. However, a substitute chemical, Lindane, is being used and it appears to be found in food (“Environment and Health Overview in Romania”, 1991).

Romania is a country characterized by low life expectancy and high infant and maternal mortality rates.

Some studies concluded that environmental related disease showed considerable variability across regions, with extremely high rates noted in highly industrialized and environmentally polluted areas such as Arad, Buzău, Teleorman and Bihor. Stomach cancer and chronic heart disease mortality rates are among the highest in the world. The life expectancy at birth for a male Romanian in 1989 was 66.5; the life expectancy for female was 72.4. While comparable to those of surrounding countries, these figures are approximately seven years lower than those noted in developed countries. More studies are planned to find out the correlation between POPs emissions and mortality / morbidity throughout the country.

## **Laws currently regulating POPs**

Romania is a country in transition to the market economy, a candidate country to the European Union, and currently in the process of legislative approximation of the *acquis communautaire*. Taking into account the complex approach of the POPs sector this chapter is focused on the actual legislative status at the level of European Union as well as the international legislation concerning POPs.

### Romanian National legislation – transposition of EU *acquis communautaire*

- Environmental Protection Law no. 137/1995 republished (Of. J. No. 70/2000)
- Government Ordinance no. 91/2002 for amending Environmental Protection Law no. 137/1995 republished (Of. J. no. 465/ 2002)

#### **Waste sector**

---

*Council Directive 75/442/EEC of 15 July 1975 on waste amended by the Council Directive 91/689/EEC on hazardous waste*

- Law no. 426/2001 for approval of Government Ordinance no. 78/2000 on wastes (Of. J. no. 411/ 2001)

---

*Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste*

- Governmental Decision no. 162/2002 on the landfill of waste (Of. J. no. 164/ 2002)
- MWEP Order no. 1 147/2002 on the approval of Technical Norms concerning the landfill of waste – building, exploitation, monitoring and closing of the waste landfills (Of. J. no. 150/ 2003)
- Governmental Decision no. 123/2003 for the approval of National Plan by Management of Waste Phase (Of. J. no. 113/2003)
- MWEP Order no. 867/2002 concerning criteria that must be fulfilled by the waste to be on the landfill specific list and on the national list of the waste accepted by each category of landfills (Of. J. no. 848/2002)

---

*Directive 2000/76/EC of the European Parliament and of the Council of on the incineration of waste*

- Governmental Decision no. 128/2002 on the incineration of waste (Of. J. no. 160/2002)
  - MWEP no. 1215/2002 for the approval of the Technical Norms concerning the incineration of waste (Of. J. no 150/ 2003)
-

*Commission Decision no. 2000/532/EC, amended by the Commission Decision no 2001/119/EC concerning the waste list, replacing the Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (notified under document number C(2000) 1147)*

▪ Governmental Decision no. 856/2002 concerning the management of waste and for the approval of the waste list, including hazardous waste (Of. J. no. 659/ 2002)

---

*Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT)*

▪ Governmental Decision no. 173/2000 regulating the special regime concerning the management of polychlorinated biphenyls and other similar compounds (Of. J. no. 131/2000)

▪ MWEP Order no. 279/2002 on the establishment of the Technical Secretariat concerning the management and control of the specific compounds, within the Management of Waste and Hazardous Chemical Substances Directorate (Of. J. no. 459/2002)

---

### **Chemical Substances sector**

---

*Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances*

*Council Directive 88/379/EEC of 7 June 1988 on the approximation of the laws, Regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations*

▪ Law no. 451/2001 for the approval of the Governmental Ordinance no. 200/2000 on classification, packaging and labeling of dangerous substances (Of. J. no. 416/ 2001)

▪ Governmental Decision no. 490/2002 for the approval of the methodological norms for the enforcement of the Governmental Ordinance no. 200/2000 on classification, packaging and labeling of dangerous substances (Of. J. no. 356/2002)

---

### **Waters sector**

---

Water Law no. 107/1996 (Of. J. no. 244/1996) modified and completed by Law 310/2004

---

*Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (and the 7 “daughters” Directives) from which are mentioned:*

*Council Directive 86/280/EEC of 12 June 1986 on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC: pentachlorophenol, DDT*

*Council Directive 88/347/EEC of 16 June 1988 amending Annex II to Directive 86/280/EEC on limit values and quality objectives for discharges of certain dangerous*

---

*substances included in List I of the Annex to Directive 76/464/EEC: aldrin, dieldrin, endrin, isodrin hexachlorobenzene, hexachlorobutadiene , chloroform*

▪ Governmental Decision no. 118/2002 on the approval of the action Program on the pollution abatement on the aquatic environment and groundwater, caused by certain dangerous substances discharge (Of. J. no. 132/2002)

---

*Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment*

▪ Governmental Decision no. 188/2002 for the approval of certain norms concerning the discharge conditions of the waste-water into the aquatic environment (Of. J. no. 187/2002)

---

*Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances*

- MWEP Order no. 1049 / 2002 for the approval of the plan of measures for pollution risk reduction or elimination of groundwater
  - MWEP Order no. 44/2004 for approval of Regulation concerning the water quality monitoring for priority/hazardous substances (Of. J. no 154 / 2004)
- 

#### **Air sector**

*Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management*

- Law no. 655/2001 for the approval of the Governmental Ordinance no. 243/2000 on atmosphere protection (Of. J. no. 773/2001)
- 

#### **Industrial pollution sector**

*Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control (IPPC)*

- Governmental Ordinance no. 34/2002 concerning integrated pollution prevention and control (Of. J. no. 223/2002)
  - Law no. 645/2002 (Of. J. 901/2002) for the approval of Governmental Ordinance no. 34/2002 concerning integrated pollution prevention and control (Of. J. no. 223/2002)
  - MWEP Order no. 1.144/2002 concerning the Pollutants Releases Register by the activities under art. 3 align. (1) g) and h) from the Governmental Ordinance no. 34/2002 concerning integrated pollution prevention and control and the reports (Of. J. no. 35 / 2003)
  - MWEP Order no. 1.440/2002 for the approval of the national implementation guide of the pollutants releases register under the Governmental Ordinance no. 34/2002 concerning integrated pollution prevention and control approved by Law no 645/2002 and the reports (Of. J. no. 177 / 2003)
  - MWEP Order no. 1144/2003 (Of. J. no.35 / 2003) concerning the Register for pollutants emission in environment by the activities under the Governmental Ordinance no. 34/2002, approved by the Law no.645/2002
  - MWEP Order no.1440/2003 (Of. J. no.177/2003 for the approval of the National Guidelines for the achievement Register concerning the emitted pollutants
- 

*Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances (SEVESO)*

- Governmental Decision no. 95/2003 concerning the control of the major-accident hazards involving dangerous substances (Of. J. no. 120/2003)
  - MWEP Order no. 1.084/2003 concerning the approval of the notification procedures of the activities that could product major accidents involving hazardous substances and of the produced major accidents (Of. J. no. 118/ 2004)
- 

#### **Romanian legislation ratification of the International Conventions and Protocols**

*Stockholm Convention on persistent organic pollutants*

- Law for the ratification of Stockholm Convention on Persistent Organic Pollutants no. 261/2004 (Of. Journal no. 638 from July 15, 2004)
-

---

*Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal*

- Law no. 6/1991 for the adhesion of Romania at the Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal (Of. J. no. 18/1991)
- Law no. 265/2002 for the acceptance of the amendments to the Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal (Of. J. no. 352/ 2002)

---

*Convention on Long-Range Transboundary Air Pollution*

- Law no. 8/1991 for the adherence of Romania to the Convention on Long-Range Transboundary Air Pollution (Of. J. no. 18/1991)

*Aarhus Protocol on Persistent Organic Pollutants*

- Law no. 271/2003 for the ratification of Convention on Long-range Transboundary Air Pollution protocols, concluded at Geneva in 1979, Aarhus in 1998, and Gothenburg 1999 (Of. J. no.470/ 2003)

*Geneva Protocol on Long-term Financing of the Cooperative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP)*

- Law no. 652/2002 for the adhesion of Romania to the Protocol on Long-term Financing of the Cooperative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), adopted at Geneva in September 28, 1984 (Of. J. no. 911/2002)

---

*Convention on Black Sea protection against pollution*

- Law no. 98/1992 for the ratification of the Convention on Black Sea protection against pollution (Of. J. no. 242/1992)

---

*Convention on the cooperation for protection and sustainable use of the Danube River*

- Law no. 14/1995 for the ratification of the Convention on the cooperation for protection and sustainable use of the Danube River

---

*Convention on the Protection and Use of Transboundary Watercourses and International Lakes*

- Law no. 30/1995 for the ratification of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Of. J. no. 81/1995)

---

*Convention on the Transboundary Effects of Industrial Accidents*

- Law no. 92/2003 for the adhesion of Romania to the Convention on the Transboundary Effects of Industrial Accidents, adopted at Helsinki in March 17,1992 (Of. J. no. 220 /2003)
- 

Other legislation

The existing Romanian legislation covers most of the issues provided by EU legislation regarding POPs control.

The main regulations in this respect are itemized below:

- Law no. 5/1982 is related to plant protection and forests. In Chapter 5 the pesticide regime is stated.
- Law no. 85/1995 approves the Government Ordinance nr. 4/1995 regarding manufacturing, marketing and use of plant protection products against diseases, pests and weeds control in agriculture and silviculture.
- MHF Order no. 536/1997 for approval of Norms on hygiene and recommendations regarding life environment. Chapter IX is related to the pesticides used for human prophylaxis.
- MWEP Order no. 396/2002, MHF Order no. 707/2002, MAAF Order no. 1994/2002, regarding the interdiction of the use of pesticides containing some active substances.

- MAFF Order no. 356/2001, regarding maximum levels of residual pesticides and other contaminants in products of animal origin.
- MAFF Order no. 95/ 2001 and MHF Order no. 224/2001 regarding the maximum levels residual pesticides in plants and plant products.
- Governmental Decision no. 490/2002 approves the methodological norms for classification, labeling and packing of hazardous substances (MO 356/2002).
- MWEP Order no. 1144/2002 establishes the emission thresholds of POPs in air and water.

## **NGOs and POPs**

Compared to other environmental issues being more promoted, the environmental problems related to POPs are almost unknown among Romanian NGOs and even among authorities till 2002 when two POPs related projects were implemented, one at the governmental level and the other at the NGO level.

The current NGO network on POPs information was created in 2003 within a Phare Access Project, having as beneficiary the Environmental Experts Association (EEA). The network consists of seven NGO's whose aim it is to promote and raise awareness on POPs issues. The network is being developed at national level with at least one representative from each Romanian region. Although being coordinated nationally, the communication level and information exchanges among the network are regional and international through a number of mailing lists.

In 2002-2003 due to Phare Access micro grant project awarded to EEA, the network was able to publish and distribute two brochures:

*“Persistent Organic Pollutants in the environment”*

*“Persistent Organic Pollutants inventory procedures”*

Other information on POPs has been distributed through the EEA information bulletin “Partener”.

An information brochure on NIP has also been published and distributed as part of a project financed by UNIDO/GEF.:

*“Stockholm Convention – Key Objectives, Measures, Instruments and Actions National Implementation Plan”*

There is also the website of the Environmental Experts Association at <http://chim.ngo.ro>.

Before IPEP started, the Environmental Experts Association (EEA) the POPs NGO network were the only NGOs dealing with POPs. The network was a result of a national seminar and workshop organized by EEA in 2003.

EEA, National Woman's Organisation, and the National Association of Environment Professionals are the NGO's involved in the NIP elaboration process and information dissemination. Some of the NGOs are located in Bucharest but their activities are regional and national.

In Romania there are around 1.500 NGOs registered as having the aim of certain activities in the field of environment. From the total amount of environmental NGOs approximately 300 are active.

As already mentioned the information network of NGOs dealing with POPs issues has seven NGO members with each of them representing a Romanian region. The network is coordinated by Environmental Experts Association (EEA).

Due to the characteristics of POPs this is a priority issues and the media covers this issue from time to time, for example; whenever an event is taking place related to POPs. All the mentioned projects implemented in Romania have already been given some degree of media coverage (newspapers, radio)

## **Efforts to deal with POPs**

### Organizational and legislative framework

The Governmental Decision no. 408/ 2004 concerning the organization and functioning of the Ministry of Environment and Waters Management, stipulates it the central authority responsible for the elaboration and enforcement of environmental legislation, including also aspects related to POPs. Its activity is supported by:

- Environmental Protection National Agency;
- 8 Environmental Protection Regional Agencies (EPRAs)
- 34 Local Environmental Protection Agencies (LEPAs)

The Environmental Department has the General Directorate for Environmental Protection, Waste management and Hazardous Chemicals coordinating the following directorates:

- Directorate for Waste Management and Hazardous Chemicals
- Directorate for Impact Assessment, Pollution Control and Risk Management

The Directorate for Impact Assessment, Pollution Control and Risk Management is also responsible with environmental monitoring; one of the representatives from this directorate is also the Focal Point for the Stockholm Convention.

The EPRAs and LEPAs are similar organization as the central authority but are acting at regional or local level.

The Waters Management Department has the Directorate for Coordination, Regulation, Management, Ecological Protection of Waters and International Districts

The control of the environmental protection legislation implementation and related activities is the responsibility of the Environmental Guard with his central and local representatives.

Other ministries which are also involved in POPs related aspects are: Ministry of Health and Family, Ministry of Industry and Resources, Ministry of Agriculture, Food and Forest, Ministry of Public Works Transport and Housing.

In Romania today any new chemicals intended to be used in the Agricultural sector – as phytosanitary chemicals – are registered according to the provisions of Law 5 / 1982 regarding use of pesticides and according to the Government Ordinance 4 / 1995 – included in Law 85 / 1995, regarding production, trading and use of phytosanitary products.

A new law regarding the procedure of approval of the products to be used for plant protection in compliance with the EEC 91 / 414 is to be considered.

The chemicals used in the agricultural sector are permitted on the base of a Certificate signed by the Interministerial Commission for Certification of Phytosanitary Products. A new CODEX – a list of certified phytosanitary products classified in four toxicity groups – according to the legal provision has been published on the 5<sup>th</sup> of June 2004.



The other POPs, namely unintentionally emitted POPs (dioxins, PCB) are inventoried annually and reported in the National Report on the State of Environment and the international organizations (EEA, secretariats of Stockholm Convention, etc.).

The Waste List, including hazardous waste is approved by the Governmental Decision no. 856/2002.

The regulation stipulates that the companies have to declare the types and quantities of wastes.

The new CODEX (this one is similar with a register) of phytosanitary products that are to be used in Romania has been published by MAFF. This catalog is updated each 2 – 3 years.

The mechanism of corporate-government actions is in accordance with the legislation and with the existing issues related to POPs in Romania - dioxins and PCBs - such as:

- Governmental authorities, including environmental representatives – to monitor the activities
- Environmental Guard to control and fulfill the environmental obligations
- Producers / Users - To take adequate measures in compliance with the regulations

## **State of Stockholm Convention Ratification and the National Implementation Plan**

The Stockholm Convention on Persistent Organic Pollutants was ratified by the Law no. 261/2004 published in the Official Journal no. 638 from July 15, 2004.

As it is now the convention requires the development of a National Implementation Plan (NIP) in order to provide a framework for a country to develop and implement, in a systematic and participatory way, priority policy and regulatory reform, capacity building, and investment programs.

The Romanian National Implementation Plan has been elaborated within the UNIDO/GEF financed and implemented project “Enabling Activities to Facilitate Early Action in the Implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs) in Romania”, being endorsed by the Governmental Authorities.

NIP endorsement workshop was held in Mahmudia in July 2004. The draft of NIP had been sent to the Ministers before, and their endorsement had been obtained. The letter asking the Ministers to endorse NIP of Stockholm Convention had been signed by:

Mrs. Speranța Ianculescu – Minister of the Ministry of Environment and Water Management.  
Mr. Miron Mitrea – Minister of Transport Construction and Tourism  
Mr. Dan Ioan Popescu – Minister of Economy and Commerce (former Ministry of Industry and resources)  
Mr. Petre Daea – Minister of Agriculture, Forest and Rural Development  
Mr. Marian Săniuță – Minister of Administration and Interior  
Mr. Ovidiu Brânzan – Minister of Health

One of the NIP development phases is priority setting of key objectives and measures as well as instruments and defining actions. The results have been eleven key objectives. The key objectives are focused on a common approach to solving the key problems related to human

health and environment protection - problems caused by POPs production and use. All these objectives and associated measures are mentioned in the following table.

<b>Table 26</b>	
<b>NIP - Objectives and Measures</b>	
<b>Key Objectives</b>	<b>Measures</b>
1. To prohibit production of POPs and other substances that might be included in POPs list in the future	1.1. Complete phase-out of POPs intentionally produced and used 1.2. Promote the use of "cleaner" and alternative substances
2. To eliminate the existing stocks of PCBs	2.1. Destroying PCBs wastes 2.2. Manage stockpiles, as appropriate, in a safe, efficient, and environmentally sound manner 2.3. Identifying and inventory of PCBs
3. To eliminate the pesticides stockpiles and wastes	3.1. POPs wastes (except PCBs), including products and articles upon becoming wastes shall be reduced and finally eliminated by appropriate actions 3.2. Manage stockpiles (except PCBs), as appropriate in a safe efficient and environmentally sound manner 3.3. Identifying and inventory POPs or other materials containing POPs (except PCBs)
4. To eliminate not identified POPs (presumed to be POPs)	4.1. Elimination, or final disposal of POPs 4.2. Managing stockpiles of presumable POPs, as appropriate, in a safe, efficient and environmentally sound manner 4.3. Identifying new substances presumed to be POPs
5. To reduce POPs emission nuisance from waste incinerators	5.1. To reduce emissions nuisance of dioxins, HCB and PCBs from hospital waste incinerators, municipal, sanitary-veterinary incinerators and crematory 5.2. Reducing emissions from cement kilns burning hazardous waste
6. To improve the environmental performance in the industry sector	6.1. Enhancing the safety of the industrial processes with potential accidents where POPs might be emitted 6.2. Strengthening environmental policy with the industrial sector 6.3. Application of Environmental Impact Assessment (EIA)/ Strategic Environmental Assessment (SEA) principles to all levels of decision-making with respect to the industrial sector 6.4. Promoting the technologies for air pollution control and means in the non-ferrous industry, especially in the secondary aluminum and copper production (for dioxins, Polycyclic Aromatic Hydrocarbons - PAHs and HCB) and with coke production and pig iron tapping (for PAHs)
7. To improve transport management in the urban sector	7.1. Discouraging traffic in densely populated areas 7.2. Stimulation the efficient / quality of urban public transport 7.3. Strengthening transport - environmental policy 7.4. Improving the preconditions for walking and cycling 7.5. Favoring short distances / public transport in urban structures
8. To improve the environmental performance in the transport sector	8.1. Applying EIA / SEA principles to all levels of decision - making with respect to the transport system 8.2. Promote cleaner/ more economical vehicle 8.3. Improving the efficient use of infrastructure (road transport) 8.4. Promote the use of cleaner fuels 8.5. Promoting inter-urban public transport

9. To improve the environmental performance in the energy sector	<p>9.1. Applying the EIA / SEA principles to all levels of decision-making with respect to the energy production, transport and use</p> <p>9.2. Providing environmental targets for the energy sector</p> <p>9.3. Promote the use of cleaner and alternative fuels, especially in Power Plant and Cogeneration (PPC)</p> <p>9.4. Strengthening energy - environmental policy</p> <p>9.5. Improving the hydro or other non-conventional energy production</p> <p>9.6. Improving the energetically efficiency of PPC</p>
10. To strive for sustainable development of ecological agriculture	10.1. Implementation of fair and agricultural products pricing; promoting the use of environmental-friendly products
11. To enhance the production and use of "cleaner" and more economical substances to be used for fighting against disease vectors and/or arthropods	<p>11.1. Complete phase-out of DDT - base products</p> <p>11.2. Promoting the use of substances - other than in the Annex B of Stockholm Convention - for fighting against disease vector and/or arthropods</p>

The mentioned key objectives are the result of the project Working Group that includes representatives of ministries, research institutes and NGOs. The existing draft was commented and final version elaborated through a national seminar where all the stakeholders participated.

NIP comprises a practical part, namely a list of projects. Each of these projects has a file where the main characteristics are mentioned. All these projects have been proposed by the local competent authorities (environmental agencies, mayoralities, health directorates), agreed by the central competent authorities. Stakeholders, NGOs throughout the country have also contributed in the project proposals.

All projects proposed have been distributed on measures and actions identified and prioritized by all participants mentioned above (authorities, stakeholders, NGOs, working group a.s.o.). The measures and actions were correlated with 11 objectives identified in the first stage of NIP elaboration. All the objectives have been prioritized after discussions in a series of seminars organized by the coordinator of this activity, namely the environmental central authority.

The NIP is to be implemented under the coordination of central environmental competent authority, and local environmental authorities, by the stakeholders / owners which are obliged to comply with NIP.

Public implication could have several forms among are mentioned: information, consultation, participation, negotiation.

Relating to public participation this ones are specified by the following legal framework:

- Environmental Protection Law no. 137/1995 republished (Of. J. no. 70/2000)
- Government Ordinance no. 91/2002 for amending Environmental Protection Law no. 137/1995 republished (Of. J. no. 465/ 2002)
- Law no. 86/2000 for the ratification of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, signed at Aarhus in June 25, 1998 (Of. J. no. 224/2000)
- Governmental Decision no. 1115 / 2002 concerning the free access to the environmental information (Of. J. no. 781/2002)
- MWEP Order no. 1182/2002 for the approval of the methodology concerning environmental information management and flow being in detained by the environmental protection authorities

(Of. J. no. 331/ 2003)

Public participation methods are of two categories: legal methods and non-formal methods, both presented in following table.

<b>Table 27</b>	
<b>Methods of Public Participation</b>	
<b>Method type</b>	<b>Example</b>
Legal methods	<ul style="list-style-type: none"><li>▪ right to knowledge (accession to information)</li><li>▪ right to word freedom</li><li>▪ right to speaking</li><li>▪ right to association</li><li>▪ right to a clean environment</li></ul>
Non-formal methods	<ul style="list-style-type: none"><li>▪ educational (i.e. publication of informative bulletin, workshops organization, competitions, camps, exhibitions, school activities, seminars, campaigns etc.);</li><li>▪ direct pressures (i.e.: petitions sending, complaints, signature collection, demonstrations, mass-media using);</li><li>▪ lobby (organization of public auditions, consultations, workshops, elaboration of alternative politics, influence of decision factors)</li><li>▪ services (i.e. promotion of participation public or actions of other organizations, training, green call phones, information centers, coalitions etc.)</li><li>▪ complementary methods / semi-legal (i.e. development of alternative proceedings as: voluntary pickets, examinations, etc.)</li></ul>

Public participation in matters related to the Stockholm Convention is pursuing the same path as in any other regulations implementation cases.

Environmental Experts Association (EEA) National Woman's Organisation, and the National Association of Environment Professionals are the NGO's involved in the NIP elaboration process and information dissemination. The input and comments of the NGOs were taken into consideration into the NIP drafting. Then NGOs activities are continuing through information dissemination.

### **Public awareness activities**

The Stockholm Convention Romanian National Implementation Plan include also a National Strategy on POPs: Access to Information, Communication, Public Awareness and Education

The NIP strategic objectives related to public awareness have been discussed with NGOs (e.g. National Women's Association, Environmental Experts Associations, etc.). So, it can be considered that those two objectives in POPs strategy are of NGOs, as well.

Two of the strategic objectives are dealing with public awareness aspects:

Objective I: Providing all available information and facilitating awareness among policy and decision makers, NGOs and public, with regard to Persistent Organic Pollutants and their alternatives;

Objective II: Designing, developing and implementing educational and public awareness programs on Persistent Organic Pollutants, including environmental effects and relationship with health issues, and especially dedicated to women, children and least educated.

The strategy time span is until 2025.

The target groups to which the strategy is addressing are: Romanian Parliament, central and local authorities involved in the management of POPs, public institutions and research institutions, schools and universities, trade chambers, sectoral professional associations (producers, distributors, consumers) employers, NGOs and the public.

The main types of activities envisaged by NIP and the Communication and Information Strategy to be undertaken to public awareness activities are related:

- environmental and administrative regulations, as well as fiscal regulations - in order to enforce the legislation;
- increase access to environmental information
- elaboration of guidelines on handling, collection, transportation and storage, and final disposal, destruction or irreversible transformation, taking into account national and international rules and norms;
- training activities
- elaboration of guidelines, including methodologies and hands-on manuals;

The current activities are directly related with the projects implemented in Romania on POPs subject.

In 2002-2003 the Environmental Experts Association has implemented a Phare Access Project, funded by the European Union called "*Persistent Organic Pollutants in the environment – characterization, identification, information and public awareness*". One of the main project objectives was to establish a non-governmental network having a main role in the dissemination of information and increasing public awareness. The network was developed at national level having one NGO from every major region of Romania. The network is actually functioning through the voluntary approach of the NGOs representatives being involved in POPs information dissemination.

Another important element concerning the public awareness activities was the implementation of the project funded by UNIDO/GEF "Enabling Activities to Facilitate Early Action in the Implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs) in Romania". The objective of the project is to assist Romanian decision makers and public authorities in undertaking all their tasks and obligations derived from the Stockholm Convention. This includes designing and implementing the National Implementation Plan on POPs and taking a number of immediate actions to address the issue. The project includes a public awareness component implemented by the organization of specific meetings and information dissemination using printed and electronic means.

On the level of public awareness, the projects supported by Phare and UNIDO / GEF regarding the implementation of Stockholm Convention have had a positive effects, but the process must be continuing. Issues related to chlorinated pesticides, dioxins, furans or PCB are difficult to understand for lay people and even by some people in the higher educated sections. More attention should be paid to the relation between POPs and their effects on human health which are not very well demonstrated by exemplification / case studies in Romania. In consequence, in spite of the fact that the attitude of public and authorities is positive, more actions are needed – and more continuous activities – to keep this problem of POPs alive.

## **Recommendations on eliminating POPs**

Former analysis elaborated and resulted gaps from Romanian NIP during project implementation on POPs elimination are directly related to the identified actions, including communication strategy objectives:

- raised awareness concerning POPs such as: definitions, characteristics, impact on environment and health, collection, management and safety measures;

- information promotion regarding the legislation on elimination alternatives and applied methods for identification;
- identification of the most used elimination methods such as: landfill, incineration etc.
- information on alternative methods to diminish the level of existing POPs and other substances that could present similar characteristics (e.g. pesticides)

The Ministry of Agriculture, Forests and Rural Development is involved – as beneficiary – of an on-going PHARE Project related to the elimination of the existing stocks of exhausted pesticides throughout the country. According to the information obtained from this Ministry, the idea of the exportation of the exhausted pesticides to the other countries is considered as a solution for the elimination of the exhausted pesticides, including POPs.

The NIP of Stockholm Convention *does not consider the exportation of the existing POP wastes as a solution of elimination*. But, a common approach of the transboundary issues related to POP emission is necessary.

A special category of recommendations are related to the reduction of POP emissions, especially POPs that are unintentionally emitted. The main recommendations of the Romanian NIP for POP reduction are:

- complete phase-out of lead from petrol;
- elaboration of traffic plans; encouraging non-polluting mode of transport, improving quality of services;
- building means for POP emission control from hospital (medical) waste oil refineries or other waste incinerators (by adsorption on activated carbon, etc.). Non combustion technology is recommended in the NIP by implementing some new technologies like that provided by the project related to PCB removal biologically located in the town of Brăila.

This project is now in the final stage of implementation.

## **Recommendations on inventories**

Former analysis on public interest and the NGOs perspective the recommendations on POPs inventories are directly related to the identified NIP actions, including communication strategy objectives:

- raised awareness concerning POPs such as: definitions, characteristics, impact on environment and health, collection, management and safety measures;
- information promotion regarding the inventory legislation and applied methods for identification and procedures as well as institutions and documentations;
- identification of the most used inventory types such as: emissions inventory, PCBs equipments inventory, potential sources of dioxins and furans, pesticides deposits etc.
- increased access facilitation to information materials on POPs that could be included in an inventory such as: production, import/export, utilization, stocks, disposals

The gaps resulting from the Romania POPs Inventory are:

- a) There are uncertainties related to POPs emission inventories due to the lack of research on specific national Emission Factors to estimate the emissions in the atmosphere. The EFs range is quite large and that is why the average value chosen is thought to have a high range of uncertainties.
- b) The lack of equipment in the laboratories in Romania is the most important impediment of measuring POPs in water soil, air, plants, etc. (e.g., only one laboratory over the whole country is able to measure dioxins).
- c) The available information is not always easy to obtain and sometimes impossible to find.

The issue of the impact on the environment / human health of pesticide use is quite new, and the responsible authorities and institutions have only recently become acquainted with it.

- d) The import / export data are not always available, especially data from a former era.
- e) There are not many specialized experts on POPs matters, and the decision makers have difficulties in finding information about these issues.
- f) There is a serious lack of information regarding the quality of some POPs stored at random in different sites. This has made the inventory activities more difficult to implement or develop.
- g) the lack of historical POPs storage, especially while speaking about Persistent Organic Pollutants, is also another gap to be taken into consideration.  
There are no data on quantities or effects of the POPs applied on agricultural land or when storage ceased. This leaves a serious gap in estimating the impact of POPs applied a few decades ago on health and environment.
- h) The balance of POPs emitted to groundwater and surface water via soil by diffusion or via atmosphere presents gaps in knowledge, although some models of diffusion are applied for approximation of the effects of these phenomena.
- i) The gap in knowledge of the people working on the environmental monitoring of POPs is a serious problem to be taken into consideration for any action plan.
- j) There are confused, uncertain, or missing data in the existing data base of MWEF. For instance, the PCB concentrations of 900000 or 1000000 ppm are not explained or PCB stocks in Zarnesti (Brasov County) have not been reported, but have been identified by the working group with the opportunity of conducting this study. The data regarding waste deposits have to be confirmed and evaluated: for instance, the data conveyed by MWEF regarding POPs waste deposits are different from the data obtained during the course of this study.
- k) There is a paucity of toxicological data to prove the effects of POPs on human health and environment in Romania.

## Alternatives to POPs

There are no alternatives to POPs in Romania for the time being, but it is envisaged [eventually] that imported products accepted in EU area, or accepted by international organizations related to POPs will be used in compliance with Stockholm Convention provisions.

### Example of choosing alternatives:

UNEP data base on choosing alternatives for the Stockholm convention on POPs is taken into account specific criteria for each of these substances:

<b>Table 28</b>	
<b>POP</b>	<b>Criteria and categories for alternatives</b>
Aldrin/ Dieldrin	Sector and uses Biological control Integrated Pest Management Chemical Substitute Physical Barrier
Chlordane / Heptachlor / Mirex	Sector and uses Biological control Integrated Pest Management Chemical Substitute Physical Barrier Environmental Management

DDT	Sector and uses Biological control Chemical substitute Integrated Pest Management Physical Barrier Environmental Management Integrated Vector Management Technological Alternatives Waste management Water management
Endrin	Sector and uses Biological control Integrated Pest Management Chemical Substitute
Hexachlorobenzene (HCB)	Sector and uses Biological control Chemical Substitute
PCBs	Sector and uses Chemical substitute Technological alternatives
PCDDs / PCDFs	Sector Chemical substitute Technological alternatives Waste management Environmental management
Toxaphene	Sector and uses Biological control Chemical Substitute Environmental Management Technological Alternatives Integrated Pest Management

### **Examples of alternative options:**

#### Example 1

The alternative non-combustion technologies not only prevent the formation and - unintentional releases of POPs, but the capital cost and operating costs are also considered to be far less compared to incinerators having state of the art pollution control devices and monitoring.

Four such commercialized non-combustion technologies with operating plants licensed to destroy high strength POPs stockpiles are Gas Phase Chemical Reduction (GPCR), Base Catalyzed Decomposition (BCD), Sodium Reduction (SR) and Super-Critical Water Oxidation Reduction (SCWO).

#### Example 2

In case of an Australian case study the availability of alternative termite management strategies to POPs for subterranean, arboreal and dry wood termites should be taken into account the following elements:



Management Strategy	Termite Type by Nesting			Time of Application of Management Strategy	
	Subterranean	Arboreal Nesters and Subterranean Aerial	Dry wood	Pre-/During Construction	Post-Construction
Building Design & Site Preparation	Yes	Yes	Yes	Yes (best)	Yes (repairs)
Termite Resistant Construction and use of Preservative-treated Timber Products	Yes	Yes	Yes	Yes (best)	Yes (repairs)
Physical Barriers	Yes	Yes, but limited	Yes	Yes (best)	Yes (repairs)
Termiticides to soil and topical and subsurface applications to wood.	Yes	Yes, but limited	Yes	Yes (best)	Yes
Baiting Systems	Yes	(insufficient data available for arboreal nesters)	No	No	Yes
<b>Space Fumigation</b>	No	Yes	Yes	No	Yes
Thermal Control	No	Yes	Yes	No	Yes
Biological Control	Experimental	Experimental	No	No	Yes

## New POPs

Following the official figures of the POPs inventory, the new POPs identified substances that might be of interest at the Romanian national level and not included in the Stockholm Convention are: Polycyclic Aromatic Hydrocarbons (PAHs, including creosote), Pentachlorophenol (PCP), hexachlorocyclohexane (HCH, including Lindane).

In 2005, five candidate substances were nominated for inclusion in the Stockholm Convention; Lindane (Mexico); chlordecone (EU); hexabromobiphenyl (EU); perfluorooctansulfonate (Sweden); and pentabromodiphenyl ether (Norway). The POPs Review Committee of the Convention has already declared all five as having the characteristics of POPs. At this writing, the Committee is assembling risk profiles for further consideration.

Research related to POPs and their impact on health are initiated or being conducted in Romania. Lindane is one of the possible POP candidates and some restrictions have been suggested by the central environmental authority.

In Tables 5 to 26 the evolution of emissions of POPs substances are presented. Besides, their sources by sectors are mentioned.

Finally it must be stressed that POPs production and use are not allowed by Law in Romania.

The discussions are related to the existing wastes and unintentionally emitted POPs.

## Resources on POPs

### List of Stakeholders Committee involved in the elaboration of Romanian NIP

Name / Position	Organization/ Address	Phone (mobile phone) / Fax / email / Web site
Albu Anca , Chief Inspector	EPI Arges Egalitatii 50A, 0300, Pitesti, Arges	248 213099 / 248 213099 / ampipit@easynet.ro
Bacila Vasile, Director	MAFF General Directorate for Implementation-Enforcement and Management of Biotechnological Resources Bd.Carol I 24, sector 3, Bucharest	3159985 / 3132187 /cereale@ma.ro
Dinu Mihail Gheorghe, General Director	MPF General Directorate of Customs Matei Milo 13	3138251 / 3138251 / N.A.
Giurcaneanu Titus, General Director	MPWTH Bd.Dinicu Golescu	2223618 / 2223618 / news05@mt.ro
Hancu Simion, Prof.PhD., Professor	University of Agriculture and Veterinary Medicine Bucharest	2242576/329 / N.A
Ion Cristiana, Director	MIR Calea Victoriei 152, sector 1, 70034, Bucharest	2125036 / 2125036 / icristiana@minind.ro
Negut Victoria, Director	OLTCHIM Str.Uzinei 1, 1000 Rm.Valcea, Valcea	0250 733379/ 736101 / 736102 / 0250 733379 negut@oltchim.ro / oltchim@oltchim.ro
Parnuta Gheorghe PhD., Scientific Secretary	FRMI Sos.Stefanesti 128/2 Bucharest	2406096 / 2406845 / gbarnuta@com.pcnet.ro
Popescu Horia, Chief Inspector	EPI Rm.Valcea Remus Bellu 6, 1000 Rm.Valcea, Valcea	0250 584054 / 0744 472957 / 0250 739753 apmvl@unet.ro
Popescu Razvan, Technical Director	Research and Production Institute for Pomology Maracineni Pitesti, 0300, Arges	0248 278830 / 278066 / 278399/ 0248 278292 N.A.
Popovici Elena , Counselor, Focal Point	MWEP Bd. Liberatii 12, sector 5, 70005, Bucharest	4100421 / 0745988947/ 4102067 popovic@mappm.ro
Vasilescu Mihaela, PhD Head of Water Laboratory	MPH - IPH Dr.Leonte 1-3, sector 5, 76256 Bucharest	2249226 / 2249226 / vasilescu@xnet.ro
Velea Sanda, PhD, Scientific Director	ICECHIM Spl.Independentei 202, 77208, sector 6, Bucharest	2248817 / 2248817 / icpesticide@pcnet.ro

N.A. = Not Applicable

Web sites:

<b>Institution / Organization</b>	<b>Web site</b>
Romanian Government	<a href="http://www.gov.ro">http://www.gov.ro</a>
Ministry Of Environment and Waters Management	<a href="http://www.mappm.ro">http://www.mappm.ro</a>
Ministry of Health	<a href="http://www.ms.ro">http://www.ms.ro</a>
Ministry of Administration and Interior	<a href="http://www.mai.gov.ro">http://www.mai.gov.ro</a>
Ministry of Agriculture, Forests and Rural Development	<a href="http://mapam.ro">http://mapam.ro</a>
Ministry of Transport Construction and Tourism	<a href="http://www.mt.ro">http://www.mt.ro</a>
Ministry of Economy and Commerce	<a href="http://www.minind.ro">http://www.minind.ro</a>
UNDP Romania	<a href="http://www.undp.ro">http://www.undp.ro</a>
EU Delegation in Romania	<a href="http://www.infoeuropa.ro">http://www.infoeuropa.ro</a>
Environmental NGOs	<a href="http://www.ngo.ro">http://www.ngo.ro</a>
Environmental Experts Association	<a href="http://eea.ngo.ro">http://eea.ngo.ro</a> and <a href="http://chim.ngo.ro">http://chim.ngo.ro</a>

POPs issues are to be subject of the UNDP Grants Program Especially reduction of unintentional POP emission is to be focused on.

## Abbreviations

POPs	Persistent Organic Pollutants
DDT	Benzene, 1, 1' – (2, 2, 2, - Trichloroethylidene) bis (4 – chloro)
HCB	Hexachlorobenzene
PCDD	Poly Chlorinated Dibenzo – p – Dioxins
PCDF	Poly Chlorinated Dibenzo Furans
PCBs	Poly Chlorinated Biphenyls
PAHs	Poly Aromatic Hydrocarbons
NIP	National Implementation Plan
ICIM	National Institute of Research – Development for Environmental Protection
BAT	Best Available Technique
MEWM	Ministry of Environment and Water Management
MAFWE	Ministry of Agriculture, Forests, Waters and Environment
MAFRD	Ministry of Agriculture, Forest and Rural Development
MH	Ministry of Health (former MHF – Ministry of Health and Family)
MEC	Ministry of Economy and Commerce (former MIR – Ministry of Industry and Resources)
MTCT	Ministry of Transports, Constructions and Tourism
MAI-CPC	Ministry of Administration and Interior / Civil Protection Commandment
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
UNEP	United Nations Environmental Program
GEF	General Environmental Facilities
NGO	Non Governmental Organizations
PPC	Public Power and Cogeneration
DEHP	Di-2ethylhexyl phthalate or Bi (2-ethylhexyl)

## References

National Research and Development Institute for Environment Protection - ICIM and Polytechnic University of Bucharest – Faculty of Energetic Research Center for Energy and Environmental Protection , *2002-2004 POPs Inventory, National Implementation Plan, National Strategy on Information, Education , Communication and Awareness in the field of POPs*

Environmental Experts Association, *2003 POPs and the Environment*

REC, *2002 Networks at work*

IPEN Facts Sheet, Arnika Association 2004 *Alternatives for POPs disposal*

Agricultural & Veterinary Chemicals Policy Section / Department of Primary Industries & Energy, *Australian Case Study, Elimination of Organochlorine Termiticides: Alternative Strategies for Controlling Termites in Australia*

UNEP Chemicals' web pages: <http://www.chem.unep.ch/pops/>

UNEP *Ridding the world of POPs: A Guide to the Stockholm Convention on Persistent Organic Pollutants*, 2002

Photos – ICIM and EEA data base.

## Contents

	page
What are POPs?	1
Sources of POPs	1
Levels of POPs	5
Damage caused by POPs	13
Laws currently regulating POPS	14
NGOs and POPs	18

Efforts to deal with POPs	20
State of Stockholm Convention Ratification and the National Implementation Plan	22
Public awareness activities	24
Recommendations on eliminating POPs	26
Recommendations on inventories	26
Alternatives to POPs	27
Resources on POPs	28
Abbreviations	30

## References

## Annex

### Photos

#### Photo description

4865\_002\_P\_013.jpg - please remove this photo because, there is no description

4865\_002\_P\_015.jpg – containers with hazardous wastes deposited temporary for incineration at Pro Clean Air Plant Timisoara, Timis County

4865\_002\_P\_017.jpg – Deposits of exhausted pesticides at Caracal

4865\_002\_P\_024.jpg – Modernized deposit of pesticides and other substances for flora protection

4865\_002\_P\_034.jpg – Compressed packages after extraction of hazardous wastes incinerated at Pro Air Clean Timisoara, Timis County

4865\_002\_P\_038.jpg, 4865\_002\_P\_040.jpg, 4865\_002\_P\_041.jpg - Capacitors and transformers at a pulp and paper plant at Dorbeta Turnu Severin, Mehedinti County


4865\_002\_P\_048.jpg – Exhausted pesticides collected and stored temporary in Oradea, Bihor County

#### Events Photos description


2.jpg , 4.jpg - Workshop "Persistent Organic Pollutants in the environment " organized by Environmental Experts Association in Bucharest February 11, 2003

seminar1.jpg , seminar3.jpg – Seminar „Persistent Organic Pollutants – inventory procedures” organized by Environmental Experts Association in Bucharest May 5, 2003






### Legend

-  Information request from the public and other target groups

---

-  Information flow inside the ministry system and the public and other target groups (demands and answers)

---

-  Information exchange inside the ministry
-  Minimum flow of information requested by Local and regional EPAs, Research Institutes and National Administrations, Environmental Protection National Agency
-  Answers to the requested information from the Local and regional EPAs, Research Institutes and National Administrations, Environmental Protection National Agency
-  Institutes and National Administrations, Environmental Protection National Agency to the ministry, other institutions part of the ministry system and to the public and other target groups
-  Demands of information to the other institution part of the ministry system

Public Environmental Information Flow at the National Level

