GOVERNMENT OF ROMANIA
MINISTRY OF ENVIRONMENT AND FORESTS

NATIONAL IMPLEMENTATION PLAN OF STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS

2012

CONTENT

The Stockholm Convention on Persistent Organic Pollutants was adopted at a Conference of Plenipotentiaries on 22 May 2001 in Stockholm, Sweden. The Convention entered into force on 17 May 2004, ninety (90) days after submission of the fi ftieth instrument of ratifi cation, acceptance, approval or accession in respect of the Convention.

The objective of the Stockholm Convention is to protect human health and the environment from persistent organic pollutants.

Persistent Organic Pollutants (POPs) are a group of chemicals exhibiting specific hazardous properties: toxicity, resistance to degradation, bioaccumulation and are transported, through air, water and migratory species, across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems.

Romania signed the Convention in 2001 and ratified it in October 2004 (Law No 261/2004).

On the occasion of the 4th and 5th meetings of Conferences of the Parties, respectively, in May 2009 and April 2011, 10 substances were included in the Convention in its Annexes A (Elimination), B (Restriction) and C (POPs from unintentional production) by virtue of Decisions SC-4/10 through SC-4/18 and SC-5/3.

The Convention bans or restricts, pursuant to Article 3, the production, use and trade of/with 22 hazardous chemicals. Similarly to the extent that no general or specific derogations exist, export of waste is prohibited, except for the purpose of environmentally sound disposal.

The first amendment for including the "new" POPs, as they are called, entered into force for Romania pursuant to Article 22 paragraph 3) subparagraph c) on August 26, 2010; pursuant to Article 7 paragraph 1) subparagraph b), the revised National Implementation Plan must be submitted by **August 27, 2012.**

The second amendment will enter into force on October 27, 2012 and should thus be taken into consideration as well.

Romania is also a Party to the UNECE Convention on Long-Range Transboundary Air Pollution (LRTAP) and its POPs Protocol of which has laid down rules for 23 substances since its overall revision in 2009. The Protocol obliges the Parties to the Convention to work out

1. INTRODUCTION

The general objective of the Stockholm Convention is to protect human health and environment against persistent organic pollutants.

Annexes A, B and C include 22 chemical substances identified as POPs and in accordance with this Convention, the Parties shall:

- take measures to reduce or eliminate releases from intentional production and use;
- take measures to reduce or eliminate releases from unintentional production;
- take measures to reduce or eliminate releases from stockpiles and wastes;
- develop plans to implement the requirements deriving from the Convention;
- promote and facilitate actions for public education, awareness and information related to POPs and for developing research activities and monitoring systems.

In July, 2002, the Ministry of Environment and Forests, with financial support from GEF (Global Environment Facility) and technical assistance from the United Nations Industrial Development Organization (UNIDO), through the National Research - Development Institute for Environmental Protection developed the National Implementation Plan (NIP) of Stockholm Convention, which was submitted to the Stockholm Secretariat in April 2006.

Since 2006 the process of implementing the actions and measures provided in NIP has started at the national level in order to fulfill the obligations assumed through the Convention.

In 2008 entered into force the Goverment Decision 1497/2008 for the approval of the National Implementation Plan.

At the 4th meeting of the Conference of the Parties to the Stockholm Convention, held in May, 4-8, 2009, in Geneva, Switzerland, there had been adopted the amendments made to Annexes A, B and C of the Convention. Thus, 9 new POPs substances were introduced in the Annexes A, B and C, respectively:

- Annex A - Elimination, Part I: alpha-hexachlorocyclohexane, beta-hexachlorocyclohexane, chlorodecone, hexa-bromobiphenyl, hexa- and hepta-bromobiphenyl ether, lindane, pentachlorobenzene, tetra- and penta-bromobiphenyl ether;
- Annex A, Part III – Definitions : hexa- and hepta-bromobiphenyl ether, tetra-and penta-bromobiphenyl ether;

- Annex A, Part IV: hexa- and hepta-bromobiphenyl ether;
- Annex A, Part V: tetra- and penta-bromobiphenyl ether;
- Annex B – Restriction, Part I and Part III: perfluorooctanic sulphonic acid, its salts and perfluorooctanic sulphonyl fluoride ;
- Annex C – Unintentional production, Part I – pentachlorobenzene.

In accordance with the provisions of Article 22 in the Convention, the amendments brought to the Convention enter into force a year after the date of communication by the depositary (the Secretary General of the United Nations). The depositary informed the Parties about the adoption of the amendments on the 26th of August 2009, and the amendments entered into force on the 26th of August 2010.

At the 5th meeting of the Conference of the Parties to the Stockholm Convention, held on May, in Geneva, Switzerland, the representatives of the 127 governments agreed upon that endosulfan is introduced on the list of persistent organic pollutants proposed to be eliminated. This substance was introduced in Annex A (Elimination) with certain exceptions. The amendment to Annex A shall enter into force in October 2012. Thus, endosulfan shall be the 22nd persistent organic pollutant on the Stockholm Convention list.

Taking into consideration the new changes made within the Convention Law 227/2010 was promulgated. By this Law the amendments of Stockholm Convention have been ratified.

Decision SC-1/12: the National Implementation Plans of the Conference of the Parties to the *Stockholm* Convention stipulate the fact that, if due to some external factors, such as changes of the obligations derived from the amendments made to the Convention or its annexes, including addition of new substances in Annexes A, B and C, it is necessary to update/revise the National Implementation Plan in two years from the date the amendments enter into force.

2. GENERAL CHARACTERISTICS OF THE COUNTRY

2.1. Country profile

2.1.1. Geography and population

a) Geography

For this section there are no changes to the NIP 2005.

b) Population

The number of inhabitants was 21.8 millions on the 1st of July 2009, out of which 10.65 millions men and 11.15 millions women. The distribution is presented in the following table:

Table 2-1 - Romanian population

Age (years)	TOTAL		URBAN		RURAL	
	Both sexes	Women	Both sexes	Women	Both sexes	Women
0-4	1094213	532170	487110	236674	607103	295496
5-9	1138448	555452	519080	253154	619368	302298
10-14	1546637	757032	820913	403082	725724	353950
15-19	1646667	803016	943191	464631	703476	338385
20-24	1752646	856679	1019609	507988	733037	348691
25-29	1733618	846325	950006	478905	783612	367420
30-34	1953607	964106	1110055	579822	843552	384284
35-39	1219037	604443	723336	385008	495701	219435
40-44	1427621	716071	900782	479306	526839	236765
45-49	1603366	815450	1033035	534722	570331	280728
50-54	1433857	739137	835315	424912	598542	314225
55-59	1061665	558424	530835	276396	530830	282028
60-64	1122390	610803	508819	275275	613571	335528
65-69	1085893	605877	450185	252684	635708	353193
70-74	900956	517380	358978	209327	541978	308053
75-79	630292	380019	241732	149476	388560	230543
80-84	279105	180764	108354	72730	170751	108034
85 and over	164775	109107	67400	45601	97375	63506
Total	**21794793**	**11152255**	**11608735**	**6029693**	**10186058**	**5122562**

Source: *National Institute of Statistics – Romanian Statistical Yearbook, 2010*

2.1.2. Economic profile

Emission sources of POPs are placed in four main economic sectors: energy, industry, agriculture, transport and in "others sources".

Energy

In 2009 the energy resources and final energy consumption decreased comparing with the values of 2008 (-11.3 %, and -10.5 %, respectively).

The decrease of the energy resources was mainly caused by the 31.2% decrease of energy import. The final energetic consumption decreased in industry including constructions by 27.5%, while remaining relatively the same in transport and for population.

In 2009, the available **energy resources** amounted to 43.8 million oil equivalent tons (toe), a decrease of 5591 thousands tons (-11.3%) as compared to the preceding year, which was caused by the 31.2%.reduction of electric power import and energy carriers.

In 2009 the resources of **primary energy** were 42729 thousand oil equivalent tons, a decrease of 5437 thousand oil equivalent tons as compared to the preceding year.

Coal, natural gases and oil resources were reduced mainly because of the import reduction of these energy carriers (i.e. -1390 thousand tons, -1953 thousand tons and -1525 thousand tons). Primary electric energy resources were relatively constant as compared to 2008, the reduction of wind power and hydro electric power by 120 thousand tons being compensated by a 129 thousand tons rise of nuclear- electric power.

Production of primary energy in 2009, 28.0 million tons, a small fall compared to 2008 (-2.6%), increased significantly its share among the total energy resources; it amounted to 64.0%, as compared to the value of the preceding year (58.3%).

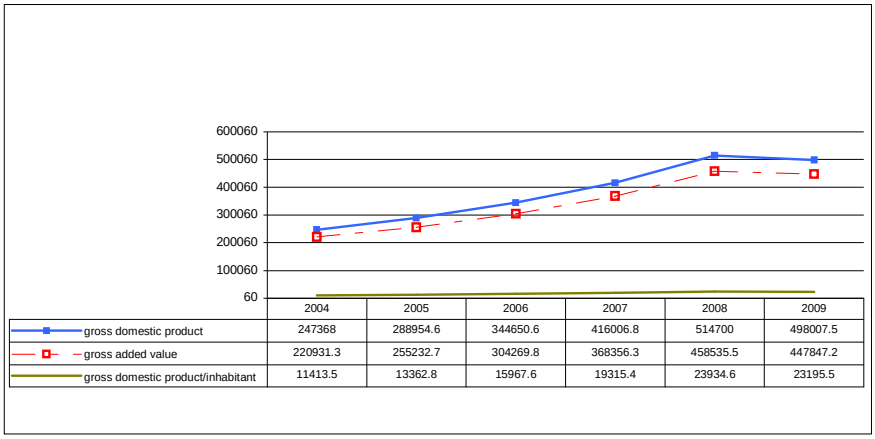
Table 2-2 Production of the main primary energy carriers in 2009, in comparison with 2008

	Year 2009	Year 2008	Rise (+) or fall (-) As compared to	
	Thousand tons	Thousand tons	Thousand tons	
Coal (exclusively coke)	6477	7011	-534	-7,6
• pit coal	751	979	-228	-23,3
• lignite and brown coal	5726	6032	-306	-5,1
Oil	4390	4619	-229	-5,0
Usable natural gases	8964	8982	-18	-0,2
Wind and hydro = electric power	1361	1481	-120	-8,1

Source: *National Institute of Statistics – Energetic Balance, 2009*

Renewable natural resources of Romania are limited although they are varied. The most important ones are water, soil, fauna, and flora and forest resources.

The main economic indicator is the ***Gross National Product (GNP),*** which is the annual value of goods and services derived from production processes of the economy with the purpose to be consumed, invested, stored or exported, whose evolution is presented in *Figure 2-1*, bellow.



	2004	2005	2006	2007	2008	2009
gross domestic product	247368	288954.6	344650.6	416006.8	514700	498007.5
gross added value	220931.3	255232.7	304269.8	368356.3	458535.5	447847.2
gross domestic product/inhabitant	11413.5	13362.8	15967.6	19315.4	23934.6	23195.5

Source: *National Institute of Statistics – Romanian Statistical Year Book, 2010*

Figure 2-1- Gross National Product (2004-2009) (%)

The main indicators of industrial production in the period 2007-2009 are presented in *Table 2-3.*

Table 2-3 - Indicators of industrial production by activities

Economic activity	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Total	**122.7**	**125.1**	**109.3**	**120,6**	**123,8**	**116,9**
Mining and working of mines:	**101.6**	**101.0**	**102.4**	**100.8**	**100.7**	**88,7**
Coal processing and mining	103.7	102.5	112.7	114.3	114.2	98.3
Oil and natural gases extraction	95.3	96.8	95.7	94.6	89.4	84.7
Quarrying and	103.8	80.5	79.9	18,8	4,0	2,8
metal-bearing ore processing	135.9	140.5	129.1	152,6	170,9	109,6
Other extractive activities	128.8	132.1	112.5	126,1	130,1	121,6
Processing	92.3	90.9	92.3	**96,3**	**96,6**	**103,4**
Electric and thermal energy, gases and water :	106.0	114.0	92.3	96,3	**96,6**	**103,4**
- production, transport and distribution of thermal and electric energy, gases and hot water						

Source: *National Institute of Statistics – Romanian Statistical Year Book, 2008*

National Institute of Statistics – Romanian Statistical Year Book, 2010

Table 2-4 presents a general view on the *primary energy consumption* in the period 2007-2009.

Table 4 - Energy consumption

	2004	2005	2006	2007	2008	2009
	Gross domestic energy consumption (*thousand tons of equivalent oil*)					
Total						
Electric energy	1320	1489	1212	1195	1115	1164

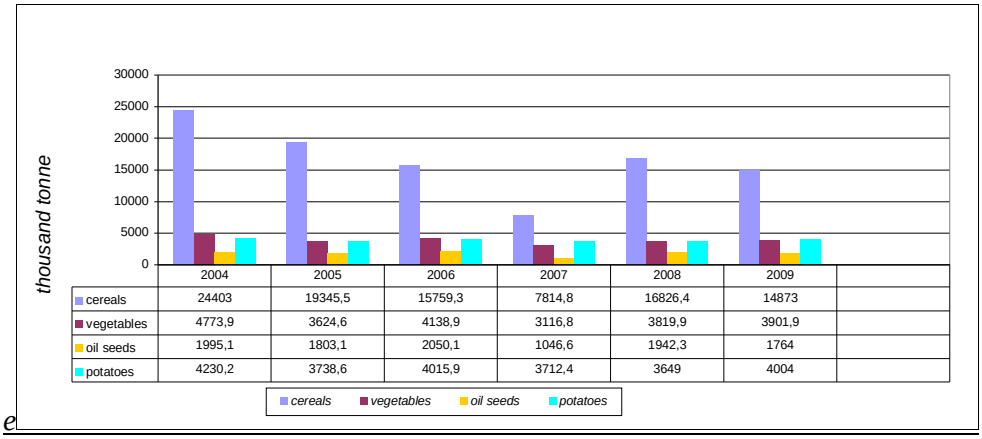
Crude oil	10092	9163	9651	9658	9719	8239
Coal and oil products	9172	8742	9540	10064	9649	7436
Natural gases	13766	13820	14308	12862	12476	10642
Final energy consumption (*thousand tons of equivalent oil*)						
Industry (including constructions)	11285	10505	9998	9630	9115	6612
Agriculture, silviculture, fishing	233	237	262	260	293	385
Transport and communications	4353	4379	4407	4729	5399	5377
Other industrial activities	1936	2030	2757	2481	2106	1976
Population	7908	8055	7889	7559	8089	8037

Source: *National Institute of Statistics –Romanian Statistical Year Book, 2010*

Generally, the evolution of the energetic consumption has had the same trend as the evolution of the national economy, namely industrial activity.

Agriculture, through its specific characteristics (land exploitation, conservation of natural biological processes) is one of the most important economic activities.

Studying the evolution of agricultural land distribution by types of uses between 2007-2009 it can be noticed that the surface of arable lands is almost 61.6% of the total of agricultural lands, whereas the remainder is distributed among pastures (about 14%), grassland (about 6.4%), vineyard (1.0%) and orchards (0.86%). The dynamics of agricultural plant production is presented in F*igure 2-2.*



Source: *National Institute of Statistics – Romanian Statistical Year Book, 2010*

Figure 2-2 - Dynamics of agricultural plant production

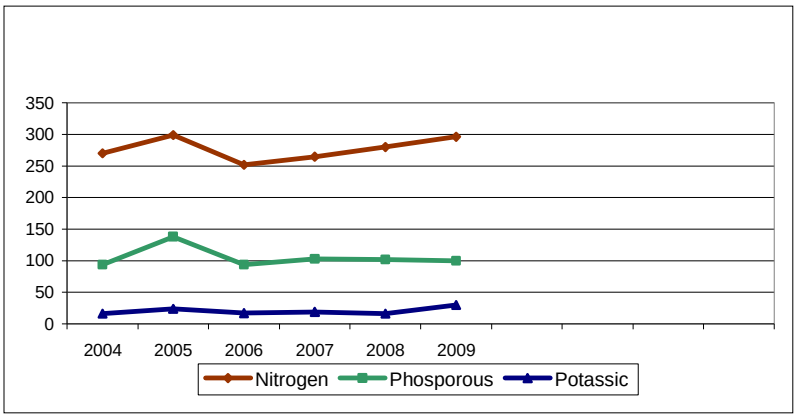
The evolution of the use of chemical fertilizers in Romania is presented in *Table 2-5* and *Figure 2-3.* It can be noticed that in 2005 there was a sudden rise in pesticides consumption as compared to the year 2004, then, in 2006 there was a sudden fall. In the period 2006-2009 it can be noticed a slight rise from one to another.

The quantity of natural fertilizers used in 2008 was 11,748, 14 thousand tons, and in 2009 it was greater, namely 13,748.307 thousand tons. It can be noticed a rise of 85.45% in the use of natural fertilisers in 2009 as compared to 2008.

Table 2-5 - Use of chemical fertilizers in Romanian agriculture

Year	Used chemical fertilisers (thousand tons of active substance)				$N+P_2O_5+K_2O$ (kg/ha)	
	Nitrogen	phosphorous	Potassium	Total	Arable	Agricultural
2004	270	94	16	380	40.3	25.9
2005	299	138	24	461	48.9	31.4
2006	252	94	17	363	38.5	24.7
2007	265	103	19	387	41.1	26.4
2008	280	102	16	398	42.2	27.1
2009	296	100	30	426	45.2	29.0

Source: *National Institute of Statistics –Romanian Statistical Year Book, 2010*



Source: *National Institute of Statistics – Romanian Statistical Year Book, 2010*

Figure 2-3 - Evolution of used chemical fertilizers in Romania (thousand tonne)

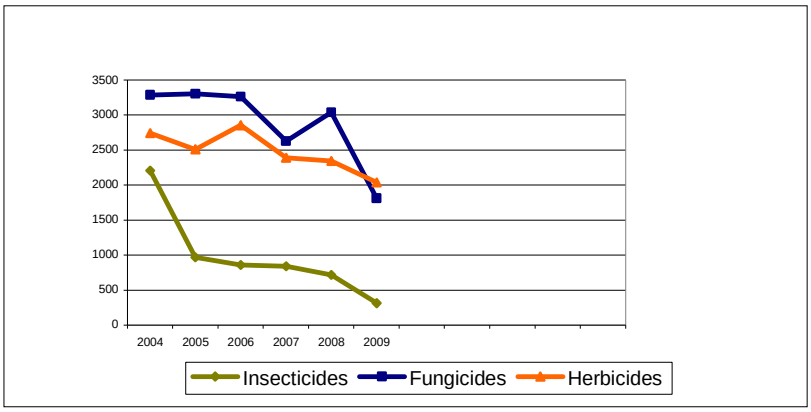
The use of pesticides in agriculture has beside the advantage of increasing the production the disadvantage of causing environment pollution. Soil acts as receiver and collector for pesticides, in places where they degrade.

In comparison with other member states of the European Union, Romania is not under the conditions of being "saturated" with products used for plant protection. In the last 6 years, in our country, the consumption per ha of arable land areas, vineyard and orchards, is between 0.88 and 0.44 kg/ha, as the data shown in *Table 2-6* and *Figure 2-4.*

Table 2-6 - Quantity of pesticides approved to be placed on the market, used in the period 2004 – 2009

Year	Total consumption of pesticides (*tons of active substance*) out of which	Insecticides (tons)	Fungicides (tons)	Herbicides (tone)	kg/ha (ha of arable land /*kg of active substance)* out of which*:*	Insecticides	Fungicides	Herbicides
2004	8240.568	2206.302	3288.961	2744.5437	0.88	0.24	0.35	0.29
2005	6790.443	968.9147	3304.7896	2513.254	0.72	0.10	0.35	0.27
2006	6994.347	858.8815	3263.1490	2857.754	0.74	0.09	0.35	0.30
2007	5883.579	841.4090	2626.998	2394.142	0.62	0.09	0.28	0.25
2008	6120.020	718.0175	3041.0103	2344.524	0.65	0.08	0.32	0.25
2009	4167.611	313.5112	1811.8567	2041.1925	0.44	0.03	0.19	0.22

Source: *NEPA - State of Environment Report, 2009*



Source: *National Institute of Statistics –Romanian Statistical Year Book, 2010*

Figure 2-4 - Evolution of quantities of pesticides used

Transport sector has been and still is by far an important consumer of energy (hydrocarbons and electric energy).

Great efforts are being made to build new highways and to equip urban transport with new vehicles. Under these circumstances, emissions of pollutants into the air will increase. We are far from having an ecological transport.

Transport of goods (independent of the transport means) registered a significant reduction in the period 2007-2009, see *Table 2-7.*

Table 2-7 - Distance covered by goods

	2004	2005	2006	2007	2008	2009
	(million tons - km)					
Railway transport	72,738	69,175	68,313	68,772	66,711	50,596
Road/Land transport	294,221	306,994	335,327	356,669	56,377	34,265
Inland waterway transport	31,211	33,648	29,304	29,425	30,295	24,743
Maritime transport	40,531	47,694	46,709	48,928	50,458	36,021
Airborne transport	0,020	0.020	0.023	0.022	0.027	0.024
Transport on the route of oil pipelines	12,804	13,378	12,702	12,310	12,390	8,520

Source: *National Institute of Statistics –Romanian Statistical Year Book, 2010*

There is a fifth sector "Others sources", which included "residential areas" with deposits / dumps of waste, incineration plants for hospitals waste, a.s.o.

2.1.3. Environmental situation in Romania

Environmental quality is a concept that includes many aspects of human-nature relationship. Quality and environmental protection problem entered into topical when people became aware of the need to conserve and make best use of the productive potential of the environment.

Achieving environmental quality monitoring is carried within the framework established by the transposition and implementation of EU directives requirements at national and local levels.

Monitoring actions are based on the improvement of living at all levels and ensuring sustainable development in terms of compatibility of data exchange.

Report on state of environment in Romania is a summary of the results of the monitoring and control of state environmental elements (air, water, soil, waste, biodiversity and protected areas, urban, environmental radioactivity), activities carried out by EPAs or by other institutions and local governments that manage various environmental issues in the country, being made monthly, quarterly and annually. The raport is intended to inform the public authorities, decision makers at local and national levels and public informing in accordance with legal provisions on public access to environmental information.

2.1.4. The role and responsibilities of ministries, agencies and other institutions involved in POPs life cycle

From an institutional perspective, the environmental effect is the Government Decision no. 544/2012 on organization and functioning of the Ministry of Environment and Forests. The Ministry of Environment and Forests is the specialized institution of central public administration, subordinated to the Government, which operates in the areas of strategic planning, sustainable development, environmental infrastructure and water management, meteorology, hydrology,

hydrogeology, climate change, protected areas, waste management, management of dangerous substances and preparations, biodiversity, biosafety and environmental noise, air quality management, forest management administration.

The Ministry of Environment and Forests (MEF) develops at the national level, the policy of environment and water management domain, elaborates the strategy and specific regulations of development and harmonization of these activities within the framework of the Government general policy, coordinates the implementation of Government strategy in its domain of competency, fulfilling the role of State Authority for synthesis, coordination, inspection and control in this domains.

As the role and responsibilities of ministries, agencies and other government agencies involved in the management of POPs substances, there are no changes to the NIP2005.

2.1.5. Relevant international commitments and obligations

Since the first NIP was developed, at the national level were promoted laws which contributed to the elimination or reduction of the negative effects of persistent organic pollutants, namelly:

- ✓ Law no. 261/2004 on the ratification of Convention on persistent organic pollutants, adopted at Stockholm on 22 May 2001;
- ✓ Law no. 112/2009 on the ratification of Protocol regarding the Register of Pollutants Emitted and Transferred, adopted la Kiev on 21-23 May 2003;
- ✓ Law no. 349/2009 on the ratification of the Convention on Environmental Impact Assessment in a Transboundary Context Protocol on Strategic Environmental Assessment (SEA), adopted at Kiev on 21-23 May 2003;
- ✓ Law no. 227/2010 on the ratification of the amendments to the Annexes A, B and C of the Convention on persistent organic pollutants, adopted at Stockholm on 22 mai 2001, adopted by Decisions SC-4/10, SC-4/11, SC-4/12, SC-4/13, SC-4/14, SC-4/15, SC-4/16, SC-4/17 and SC-4/18 at the 4th meeting of the Conference of Parties, which took place at Geneva, on 4 to 8 May 2009;

2.1.6. Existing legislation and regulations at EU level on POPs

The main national legislative acts and European Union regulations in force on POPs issues are:

- ✓ Government Decision (GD) no. 561/2008 regarding establishment of some measures in order to implement the Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC;

- ✓ Government Decision (GD) no. 1497/2008 on the approval of the National Implementation Plan of the Convention on Persistent Organic Pollutants, adopted at Stockholm on May 22, 2001, for the period 2008-2029;
- ✓ MEF Order no. 1179/2010 for the approval of the Guidelines on environment sound management of PCBs;
- ✓ Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC;
- ✓ Council Regulation (EC) No 1195/2006 of 18 July 2006 amending Annex IV to Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants;
- ✓ Council Regulation (EC) No 172/2007 of 16 February 2007 amending Annex V to Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants;
- ✓ Commission Regulation (EC) No 323/2007 of 26 March 2007 amending Annex V to Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants and amending Directive 79/117/EEC;
- ✓ Commission Regulation (EC) No 304/2009 of 14 April 2009 amending Annexes IV and V to Regulation (EC) No 850/2004 of the European Parliament and of the Council as regards the treatment of waste containing persistent organic pollutants in thermal and metallurgical production processes;
- ✓ Commission Regulation (EU) No 756/2010 of 24 August 2010 amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annexes IV and V;
- ✓ Commission Regulation (EU) No 757/2010 of 24 August 2010 amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annexes I and III;
- ✓ Commission Regulation (EU) No 519/2012 of 19 June 2012 amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annex I.

3. Current national situation concerning POPs

3.1. POPs listed in the Annexes "A", "B" and "C" of Stockholm Convention

POPs are organic substances which have toxic characteristics, are resistant to degradation and bioacumulative. They are transported through air, water and migration species over international boundaries and deposited at long distances from the emission sources where they are accumulated in the terrestrial and aquatic ecosystems.

Stockholm Convention has three Annexes comprising the lists of substances:

ANNEX "A" contains a list of substances that must be prohibited for production and use. These substances are:

Aldrin, Endrin, Mirex, Chlordan, Heptachlor, Toxaphen, Dieldrin, Hexachlorobenzene, PCB.

After the fourth meeting of Conference of Parties (COP 4), the following new substances have been introduced in ANNEX "A":

Alpha hexachlorocyclohexane (Alpha HCH), Beta hexachlorocyclohexane (Beta HCH), Chlordecone, Hexabromobiphenyl, Hexabromobiphenyl ether and Heptabromodiphenyl ether (commercial octabromobiphenyl ether), Lindane (Gamma HCH), Pentachlorobenzene– PeCB (which is also included in ANNEX "C"), Tetrabromobiphenyl ether and Pentabromobiphenyl ether (commercial pentabromobiphenyl ether).

After the fifth meeting of Conference of Parties (COP5) has been also introduced Endosulfan.

ANNEX "B" contains a list of substances which must be restricted. The use of the substances mentioned in this ANNEX is accepted according to the prevision from Part III of ANNEX "B". Initially only DDT was included in this category. After the fourth meeting of the Conference of Parties (COP4) in ANNEX"B" the following substances have been introduced: Perfluotooctane sulfonic acid (PFOS) and its salts and Perfluorooctane sulfonyl fluoride (PFOS-F).

ANNEX "C" is related to the unintentional production of POPs. The following substances are included in this ANNEX: Polychlorinated para-dibenzodioxine (PCDD) and Polychlorinated dibenzo furans (PCDF), Hexachlorobenzene (HCB) and Polychlorinated Biphenyls (PCB). After the forth meeting of the Conference of Parties (COP4) has been also introduced Pentachlorobenzene (PeCB).

3.2. Persistent organic pollutants listed in the annexes of the Stockholm Convention before 2009 (aldrin, dieldrin, endrin, chlordane, heptachlorine, toxaphene, mirex, HCB, DDT, PCB, PCDD/PCDF)

To achieving the key-objective no.1 "Disposal of pesticides wastes and stocks" foreseen by the first NIP, in the period 2004-2006 the Ministry of Agriculture and Rural Development has developed and implemented the PHARE project "Elimination of pesticides (repackaging, collection and disposal the pesticide residues) from Romania". Following this project were collected, repackaged, transported and disposed of, in Germany, about 2516 tons of waste pesticides from 218 locations on the Romanian territory.

3.2.1. Chlordane, Dieldrin, Endrin, Aldrin, Heptachlor and Toxaphene

In Romania, chlorinated pesticides had been used since 1948, and they are products based on chlordane, dieldrin, endrin, aldrin, heptachlor and toxafen.

All these products were imported excepting those based on DDT and heptachlor which were produced in a petrochemical installation in Borzeşti.

The respective substances were used under the form of powders, granular or liquid form on large agricultural land areas, on meadows and alpha-alpha cultures.

Dieldrin-based pesticides were used in Romania in the period 1965-1970, especially for seeds treatment. In addition to persistent chlorinated pesticides, some of the most used products were those based on heptachlor.

Preliminary inventory showed that at national level, at the end of 2011, there is no information regarding the existence of waste stockpiles containg of or contaminated with such substances.

3.2.2. DDT

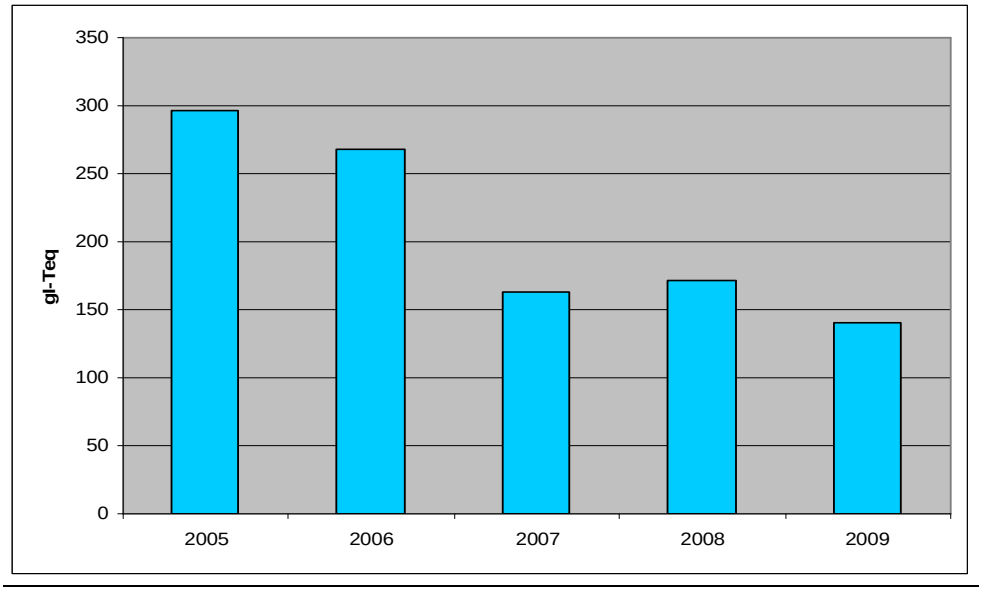
DDT –based products were used on large agricultural land areas for the purpose of protecting plants (potato beetles) and of killing destructive/troublesome insects (bugs, flies, etc.).

Preliminary inventory showed that at national level, at the end of 2011, there is no information regarding the existence of waste stockpiles containg of or contaminated with such substance.

3.2.3. Dioxines and furans

From 2005 to 2009 the emissions of persistent organic pollutants generally registered a decreasing evolution from 296,8 g I-Teq to 140,33 g I-Teq. In 2009, the total dioxine emissions slightly

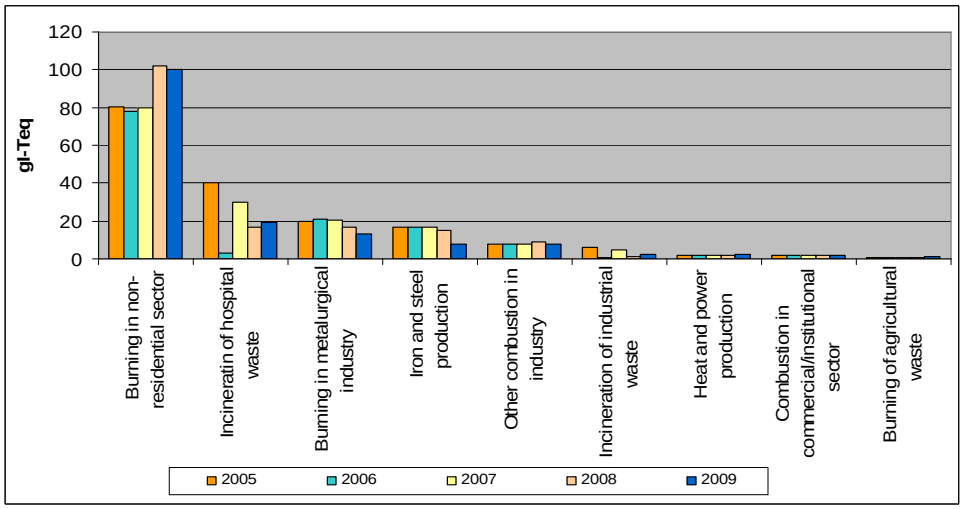
increased, reaching to 140,33 g I-Teq. This rise was caused by the use of wood and wood wastes for burning in the residential sector *(Figure 3-1).*



Source: *NEPA – State of Environment Report, 2010*

Figure 3-1 - Evolution of the total dioxine emissions

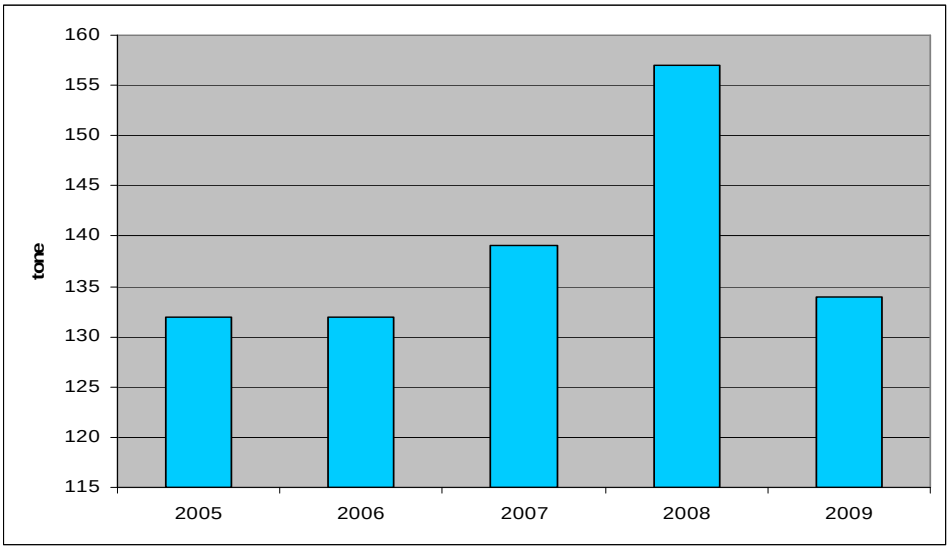
The main sources of dioxine emissions are represented by the following sectors: "Burning in residential sector", "Incineration of hospital wastes", "Burning in metallurgical industry" and "Production of cast iron and steel" *(Figure 3-2).*



Source: *NEPA – State of Environment Report - 2010*

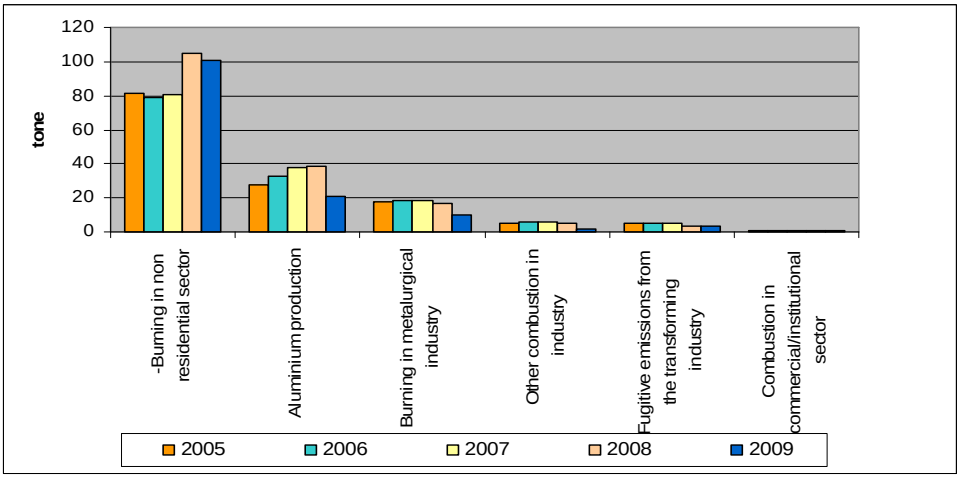
Figure 3-2 - Evolution of dioxine emissions coming from industrial sources, wastes treatment and burning processes

The yearly national emissions of policyclic aromatic hydrocarbons (PAH) had an ascending trend in the period 2005 - 2009, from 131,73 t to133,54 t (*Figure 3-3).* The greatest rises had been registered in sectors "Burning in residential sector", the cause being like in the case of dioxine emissions the use of wood and wood wastes for this type of burnings and "Production of aluminium" (*Figure 3-4*).



Source: *NEPA – State of Environment Report, 2010*

Figure 3-3 - Evolution of total PAH emissions

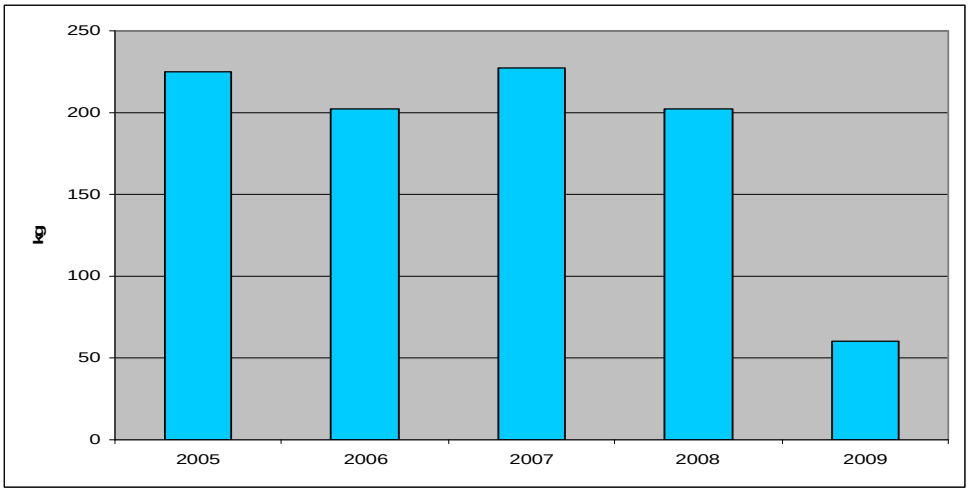


Source: *NEPA – State of Environment Report, 2010*

Figure 3-4 - Evolution PAH emissions from the main industrial sources and burning processes

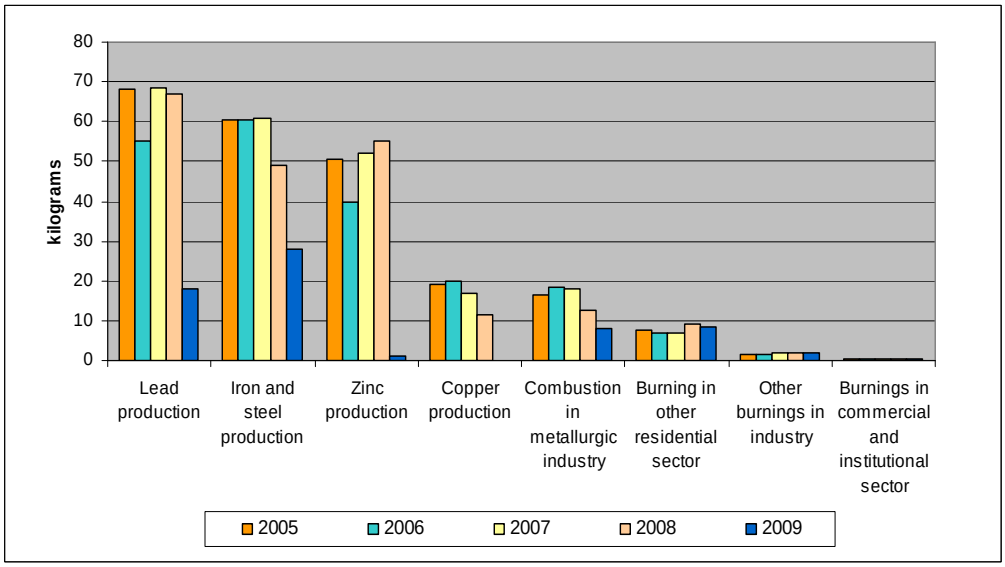
3.2.4. Polichlorinated Biphenyls (PCBs)

The emissions of polichlorinated biphenyls (PCBs) registered a decrease from 223,6 kg in 2005 to 62,855 kg in 2009. (*Figure 3-5*). The most important decreases were registered in the sectors of "Copper production", "Production of cast iron and steel" and "Burnings in metallurgical industry". The shares of the main sources of polichlorinated biphenyls emissions are: "Production of lead", "Production of cast iron and steel" and "Production of zinc", *(Figure 3-6).*



Source: *NEPA – State of Environment Report, 2010*

Figure 3-5 - Evolution of the total PCBs emissions



Source: *NEPA – State of Environment Report, 2010*

Figure 3-6 - Evolution of PCBs emissions from industrial sources and burning processes

In according with Directive 96/59/EC, transposed into national legislation by Government Decision no. 173/2000 for the special provisiosn of the management and control of PCBs and other similar compounds, as amended (GD 291/2005, GD 975/2007), Romania was required to eliminate the equipments out from operation containing PCBs until 31.12.2010.

In this sense, in the period 2007-2010 was developed and implemented by the Ministry of Environment and Forests, through the National Research - Development Institute for Environmental Protection, the GEF/UNIDO project "Disposal of PCBs waste in Romania"

In this project were screened over 7000 samples of transformer oil and were removed about 1200 tonnes of equipments with PCBs content..

According to the information provided by NEPA, at the level of 2010, there were out of use PCBs containing equipment stockpiles still not eliminated, most of them coming from companies with uncertain legal situation (insolvency, bankruptcy, litigation, etc..), and to some operators who had no financial funds necessary to ensure their elimination.

At the level of 2011, the situation concerning the equipments with PCBs content is presented in *Table 3-1*, bellow.

Table 3-1 - Situation of PCBs containing equipments at the level of 2011

Nr crt.	Tip of equipment	Equipment inventory (pieces)			Oil volume (liters)	Removed in 2011 (pieces)			Oil volume removed	Decontaminated in 2011		Stock at 31.12.2011		
		Total	In use	Out of use		Total	In use	Out of use		Total equip. (pieces)	Total oil (liters)	Total	In use	Out of use
1.	Capacitors	67939	50558	17381	529.976,64	6550	2142	4408	36.547,60	0	0	**61389**	**48416**	**12973**
2.	Transformers	649	605	44	505.611,00	47	36	11	27.476,20	1	3.720	**601**	**568**	**33**
Total		**68588**	**51163**	**17425**	**1.035.587,64**	**6597**	**2178**	**4419**	**64.023,80**	**1**	**3.720**	**61990**	**48984**	**13006**

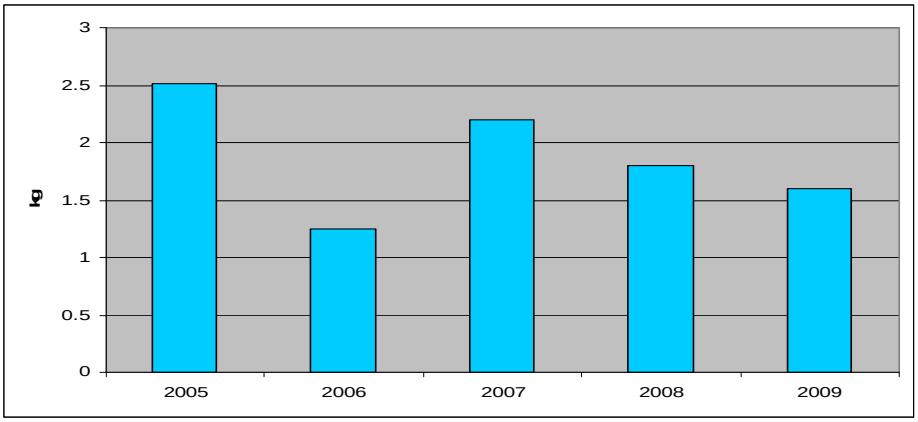
Source: *NEPA*

At the end of 2009, in Romania there were only three installations authorized for elimination of equipments containing PCBs/PCTs: PRO AIR CLEAN Timişoara - incineration, IF TEHNOLOGII Cluj – incineration and SETCAR Brăila – physico - chemical and biological treatment.

Taking into consideration the existing treatment capacities in Romania a great part of equipments containing PCBs/PCTs is transported to be eliminated in authorized installations from other member states, their transfer being done in accordance with the provisions of the *Regulation (CE) no. 1013/2006 of the European Parliament and the Council regarding wastes transfer.*

3.2.5. Hexachlorbenzen (HCB)

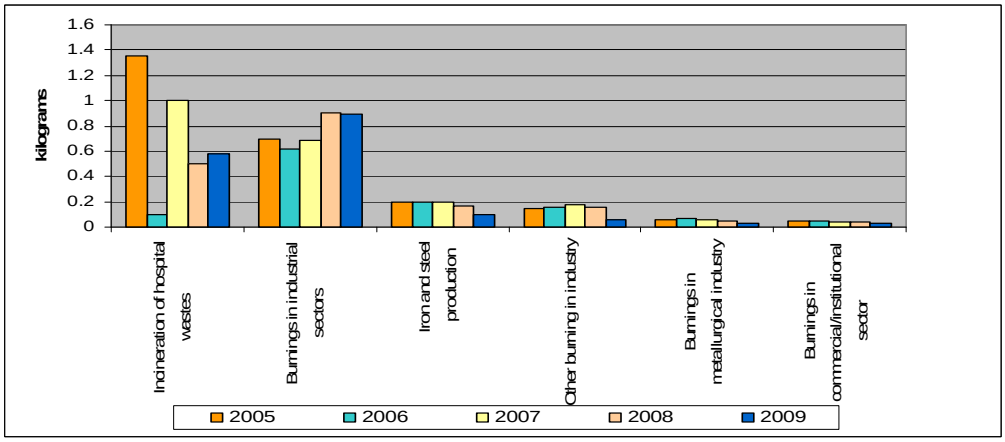
Emissions of hexachlorbenzen (HCB) showed a decreasing trend from 2,51 kg in 2005 to 1,63 kg in 2009, *(Figure 3-7).*



Source: NEPA – State of Environment Report, 2010

Figure 3-75 - Evolution of the annual HCB emissions

The most important decrease came from the sector of "Incineration of hospital wastes", where the wastes quantity was reduced by half. Significant reductions were in other sectors as well: "Burnings in commercial/institutional sector", "Burnings in metallurgical industry" and "Production of cast iron and steel". The sources with the highest shares in the total HCB emissions are "Incineration of hospital wastes" and "Burnings in residential sector", *(Figure 3-8).*



Source: *NEPA – State of Environment Report, 2010*

Figure 3-8 - Evolution of HCB emissions coming from industrial sources, wastes treatment and burning processes

3.3. Characterization of the new POPs substances introduced in the Annexes of Stockholm Convention

3.3.1. Inventory of new POPs substances

In order to update the National Implementation Plan of the Stockholm Convention regarding the new POPs substances were drafted a set of guidelines prepared by United Nations Institute for Training and Research (UNITAR), United Nation Industrial Development Organization (UNIDO) in collaboration with Secretariat of the Stockholm Convention (SSC). The guidelines and refered to the inventories of new POPs, monitoring the presence of products containing new POPs substances and selection of technologies and practices recommended for situations in which production, use and recycling of industrial persistent organic pollutants that are currently permitted by the Convention. Even though were at the "draft stage", the guidelines were of very much help in designing and conducting a preliminary inventory at the national level.

For the evaluation of the national situation concerning POPs, first was developed a strategy on how to approach the POPs inventories. This strategy consists in completion of the following steps:

Step 1: Planning of the inventory which included: a) Establishment of the work team; b) Definition of the inventory objectives and scope; c) Formulation of the work plan;

Step 2: Identify POPs sources;

Step 3: Data collection methodology;

Step 4: Data collection;

Step 5: Data processing and report on inventory.

Figure 3-9 describes the flow of PFOS and PBDE and the diagrams of *Figures 3-10, 3-11* and *3-12* are presented the flows of POPs pesticides, PCBs and unintentionally released POPs (dioxins, furans, PCBs, PeCB and HCB).

Description of these data streams served to identify the source categories defined in the Convention.

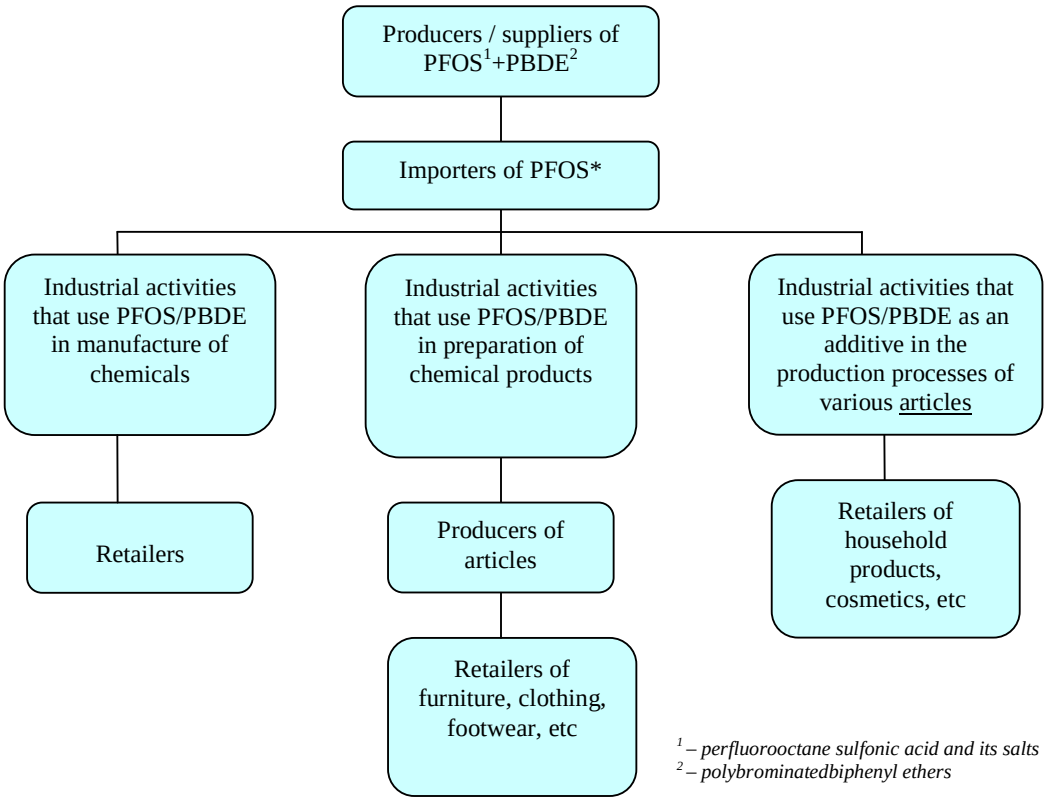


Figure 3-9 - PFOS and PBDE flow where fall the sources which inventoried

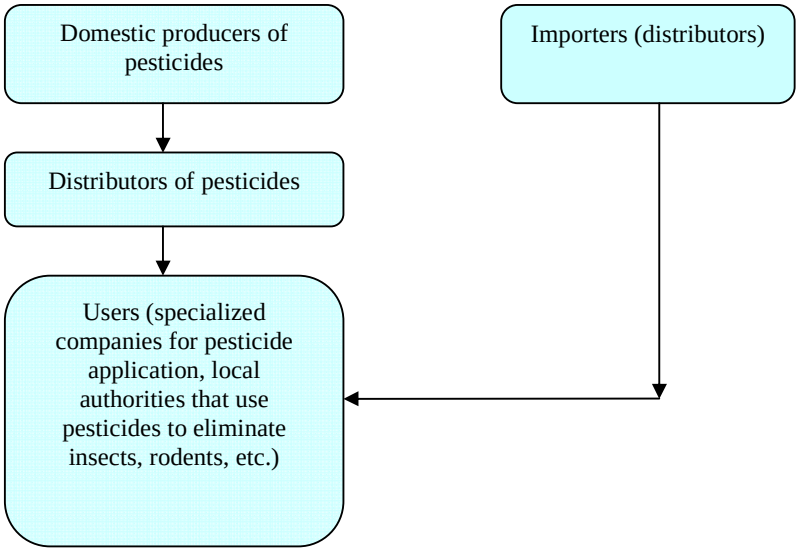


Figure 3-10 - Pesticides – POPs flow where fall the sources which inventoried

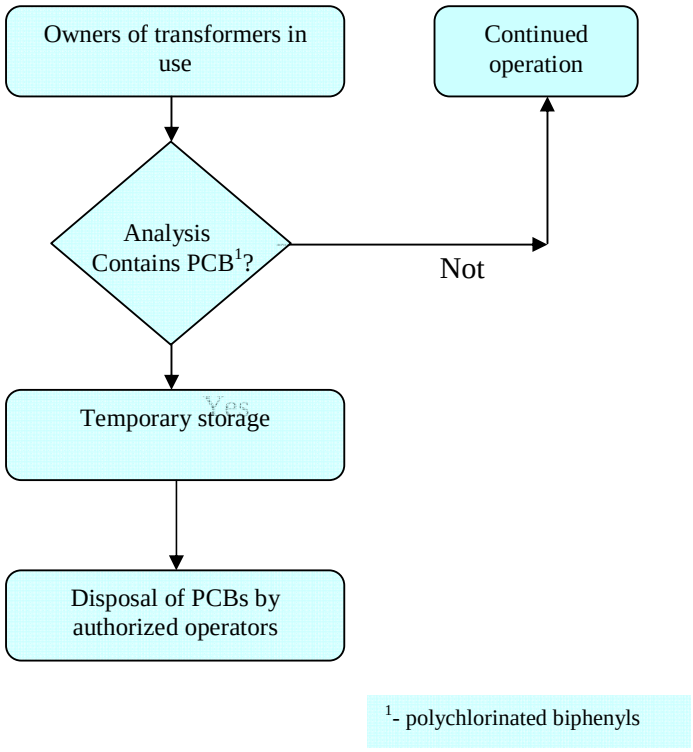


Figure 3-11 - PCB flow where fall the sources which inventoried

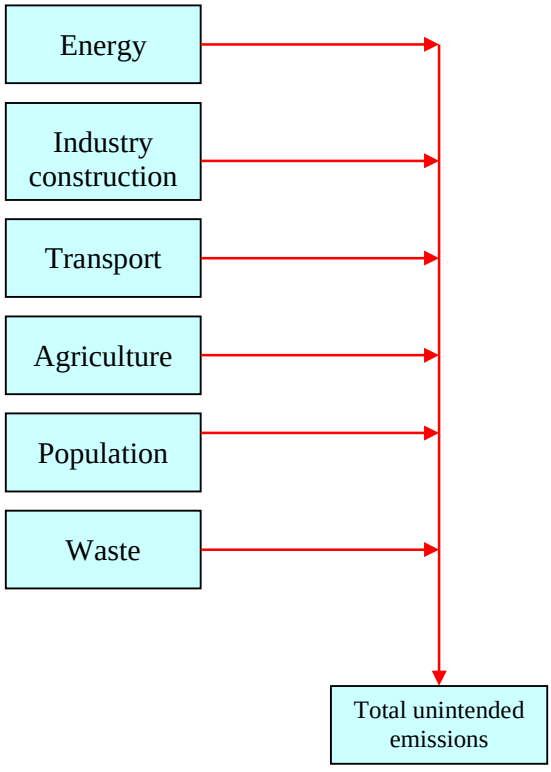


Figure 3-12 - Emission sources of POPs (dioxins, furans, PCBs, PeCB, HCB)

Data collection method

For updating the national inventory of POPs were practically involved all the local and central authorities, research institutes, universities, NGOs and economic operators.

In this sense, was developed an interactive website page on which were uploaded questionnaires for POPs data collection, as well as for public awareness on issues related to POPs.

Figure 3-13 presents a schematic diagrama of the data collection approach to develop the national inventory of POPs.

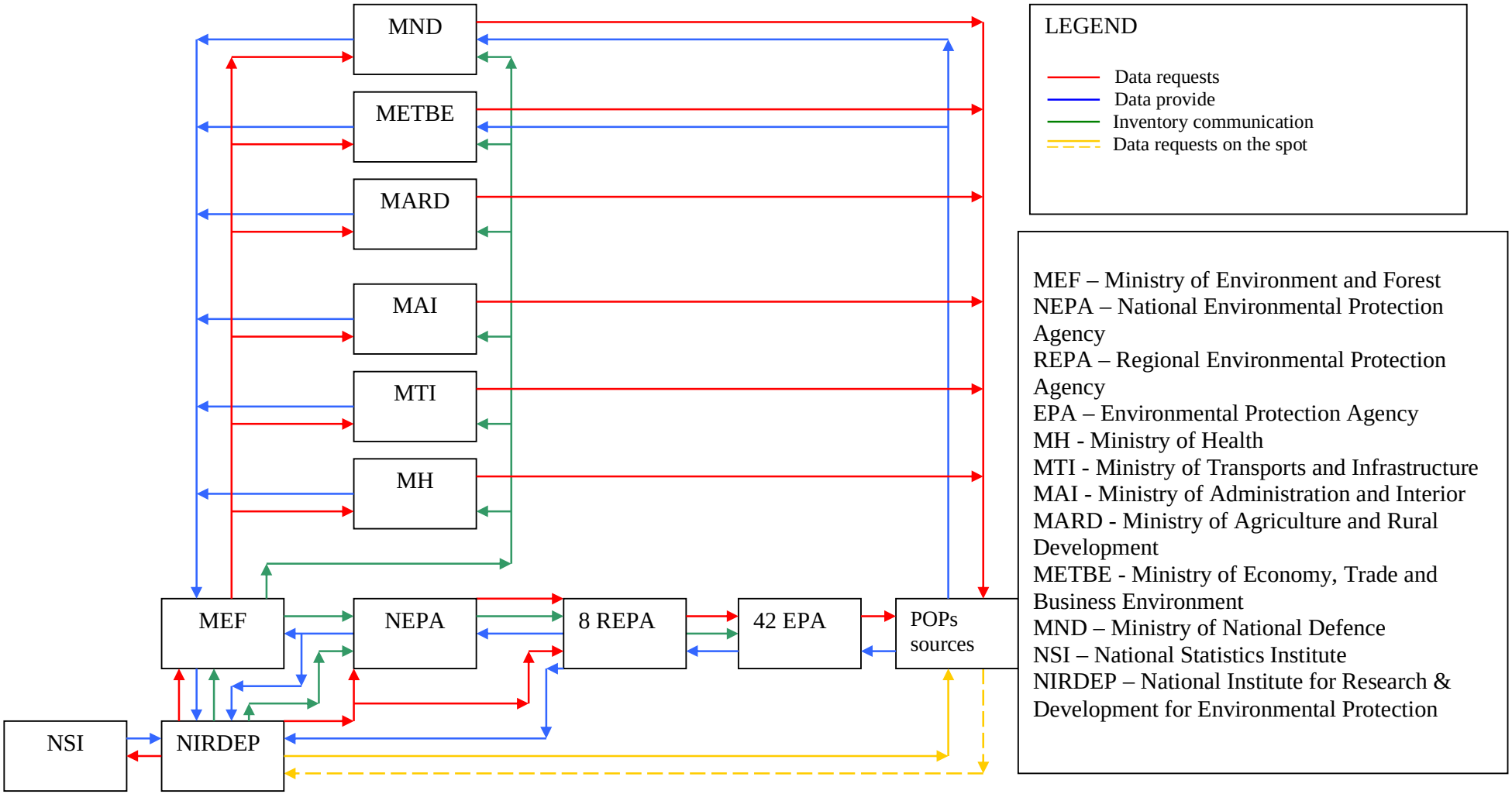


Figure 3-13 - Approach to data collection scheme to develop the national inventory of POPs

For the collection of necessary data were followed three levels of approach:

- Level 1 – the poorest in the data – desk studies analysis;
- Level 2 – corresponds to data collection by the scheme presented in *Figure 3-13*;
- Level 3 – corresponds to the checking and validation of data collected from level 2.

These checks are done through direct interviews with the main sources of POPs substances.

The data collection approach scheme for inventory of POPs substances is shown in *Figure 3-14*.

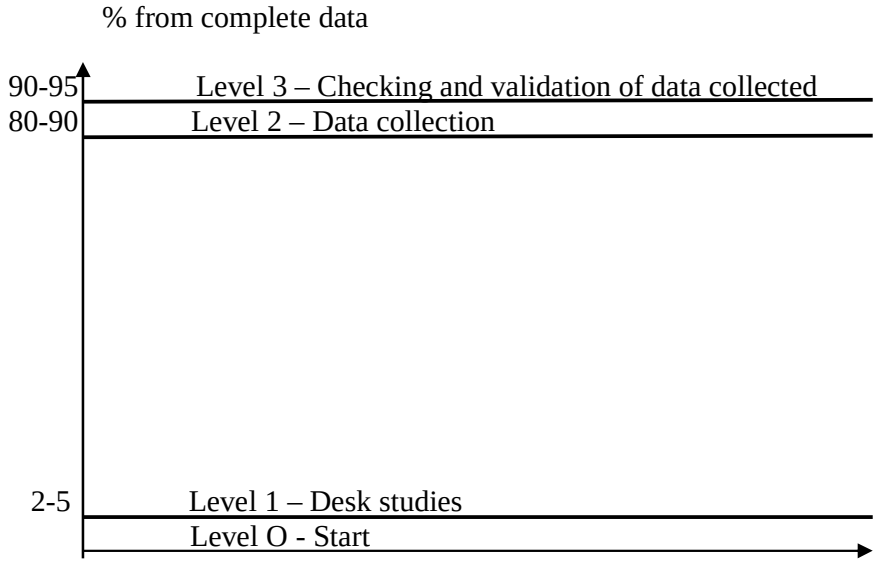


Figure 3-14 - Levels of data collection approach for developing the national inventory of POPs

Description of the database

The logical structure of the questionnaire was translated into an online platform, platform served by open source solution "Limesurvey". Among the facilities offered by the sofware are listed:

- unlimited number of questionnaires available simultaneously on the same platform;
- unlimited number of questions in the questionnaire (only limitation is the database);
- unlimited number of participants in each questionnaire;
- possibility to manage the users and the access type;
- integration of images and movies in the questionnaires;
- possibility to publish multilingual questionnaires;
- possibility to create hard-copy of the questionnaires;
- possibility to declare valid questionnaires for a period of time, such access is controlled

automatically;

- possibility to import and / or export from and to text files, CSV, PDF, SPSS, R, queXML, Microsoft Word and Microsoft Excel;
- automatically possibility to import the questionnaires on paper.

The platform runs on an external server connected to the internet with its own domain and a public IP address. Services running on this server are:

- services http served by an Apache platform;
- a MySQL database types (can be PostgreSQL);
- PHP modules for displaying Web pages and operations of read / write MyQSL database (or PostgreSQL);

3.3.2. Alpha – Hexachlorociclohexan and Beta – Hexachlorociclohexan (Annex A)

Generically, hexachlorocyclohexan (HCH) primarily contains 5 forms of isomers: alpha, beta, gamma, delta and epsilon – HCH. Lindane is the name given to the gamma isomer of HCH.

Alpha and beta – HCH are very persistent in cold zones and they can bio-accumulate in biota as well. These substances are transported on long distances being classified as potentially carcinogenic substances for humans, affecting their life and that of the wild animals in contaminated.

In Romania Alpha and Beta – HCH is likely to be found in the lindane contaminated sites on the and arround the former chemical platforms that produced Lindane in the past.

3.3.3. Chlorodecone

Chlorodecone is an organo-chlorinated pesticide that is related to Mirex – a pesticide included in Annex A of the Convention. It is considered a persistent organic pollutant as it bioaccumulates and it is transported on long distance. This substance is supposed to be carcinogenic and very toxic for the aquatic organisms.

Clordecone was produced in 1951 and put on the market in 1958, and according to the preliminary inventory has not been reported any waste stockpiles contaminated with or containing this substance.

3.3.4. Hexabromobiphenyl

Hexabromobiphenyl belongs to the group of polibromized biphenyls and is classified as potentially carcinogenic for humans, having other toxic effects as well.

Although in the 70s this substance was used as a flame retarder currently the preliminary inventory have not found information on the production and use of hexabromobiphenyl, as well as on the existence of waste stockpiles contaminated with or containing this substance.

Internationally, studies have shown that hexabromobiphenyl can be replaced by other chemical agents that have similar characteristics for flame retardation.

3.3.5. Hexabromodiphenyl ether (hexa-BDE), Heptabromodiphenyl ether (hepta-BDE), Tetrabromodiphenyl ether (tetra BDE) and Pentabromodiphenyl ether (penta BDE)

All these substances were listed in Annex A with specific exemptions in case of recyclable articlescontaining these chemicals in conformity with the provisions of Annex A – Parts IV and V.

Both substances – Hexabromobiphenyl ether (hexa-BDE) and Heptabromobiphenyl ether (hepta-BDE) are the main components of the substance that is marketed under the name of 'Octabromobiphenylether'. The commercial mixture is extremely persistent, it has a high potential of bioaccumulation and it can be transported on long distance. Hexa and Hepta-BDE can be debromized by replacing bromine with hydrogen, thus becoming precursors of penta-BDE which are much more toxic. These substances have been used as additional fireproof material in plastics industry, for inner spaces of the electronic equipments.

The preliminary inventory shown that in Romania, at the end of 2011, there is no information regarding the production of these chemical substances but there are in use several articles containing it.

Tetrabromobiphenyl ether (tetra BDE) and Pentabromobiphenyl ether (penta BDE) are the main components of the the substance that is marketed under the name of 'Pentabromobiphenyl ether' – which belong to the group of chemical substances known under the name of "Polybromobiphenyl ethers (PBDE)". Penta BDE (commercial name) is a bioaccumulative substance that is persistent in environment and can be transported on long distances. It was detected in humans in all zones and has evident toxic effects on wild organisms, including mammals.

This substance was mainly used for the production of flexible polyurethane foam (PUR) utilized for packaging of furniture and tapestry for dwellings and vehicles.

According to the preliminary inventory, in Romania there is no production of these chemical substances but there are in use several articles containing it.

Table 3-2 presents the situation of quantities of Pentabromobiphenyl ether (BDE-99) containing waste existent in Romania at the level of 2009.

Table 3-2 - Quantities of Pentabromobiphenyl ether containing waste at the level of 2009

No.	County	Name of the waste	Generated quantity of waste(kg)	Eliminated quantity (kg)	Stock (kg) (01.01.2010)
1.	Iaşi	Plastic materials for electronic equipments	1 100		1 100
		Textile materials	300	300	0
		Protective clothing	1 300	650	650
		Curtains, lavettes	300	300	0
TOTAL			**3 000**	**1 250**	**1 750**

***Source**: NEPA*

Achieving the objective of eliminating the brominated diphenyl ethers from the recycling streams as soon as possible represents still a challenge and to to meet this objective it is necessary to develop methods for separation of articles containing brominated diphenyl ethers before recycling.

3.3.6. Gamma hexachlorociclohexan – Lindane, with special derogation

Gama hexaclorciclohexanul – Lindane is a persistent substance that bio - accumulates easily in the trophic chain and concentrates rapidly. Lindane, that is transported on long distances, has toxic effects found in animals (lab demonstrations) and aquatic organisms.

In Romania significant quantities of lindane were produced and used as insecticide on a large series of plants for plants and soil treatment, for foliage treatment, trees and wood treatment and against ectoparasites in human and veterinary treatment.

Regarding the existence of stocks of waste containing lindane, in Teleorman County, in the year 2009 there was identified a stock of 563 kg Lindatox, from former agricultural cooperative. According to the data from Teleorman EPA, the total amount was eliminated in 2010.

3.3.7. Pentachlorobenzen – PeCB

Pentachlorobenzene belongs to the group of chlorobenzens, which is characterized by a benzene ring in which hydrogen atoms are substituted by one or more chlorine atoms. PeCB is very toxic for aquatic organisms and moderately toxic for humans.

In the past, PeCB was used for the production of PCB in paint industry as fungicide and flame retarder. It can also be used as intermediary chemical product (for exemple: in the production of quintozene). The most relevant sources of PeCB are unintentional formation in thermal processes similar to those generating PCDD/PCDF, PCB, HCB, namely metallurgical industry, power production, thermal waste treatment and domestic incineration, but it can be found under the form of impurities in some products such as solvents or pesticides.

At the national level it is likely that PeCB emissions from many primary sources have also been reduced in recent decades, due to the closing down of most of this industry sectors, but there are still uncertainties concerning the total quantities released.

3.3.8. Endosulfan

Endosulfan is an insecticide and an organo-chlorinated acaricide whose production and use are already banned in the EU. Endosulfan was worldwide used in agriculture for fighting against aphides and other insects belonging to hemipters, Colorado beetles and cabbage worms.

In 2009, the Persistent Organic Pollutants Review Committee of the Stockholm Convention (POPRC) concluded that Endosulfan is a POPs substance and proposed it for inclusion in the Annez A of the Convention. At the fifth meeting of the Conference of the Parties (COP 5), held in Geneva, in April 2011, it was decide to list Endosulfan in Annex A with certain exemptions.

According to the preliminary inventory, in Romania there was no production of endosulfan, but following the request and notification to the Commission by Ministry of Agriculture and Rural Developmnt, in accordance with the porvisions of art. 8 of Directive 91/414/EEC, this product has been imported and is used as raticides.

Table 3-3 presents the situation on the quantities of pesticides containing endosulfan used in Romania at the level of 2011.

Table 3-3 - Quantities of pesticides containing endosulfan at the level of 2011

No of counties	No of economic operators	Amount of used substance (THIONEX 35 EC) (liters)	Stock at 01.01.2012
9	**22**	**41750**	**0**

***Source**: NEPA*

3.3.9. Perfluorooctanic sulfonic acid (PFOS) with its salts and Perfluorooctanic sulphonyl fluoride (PFOS-F) – listed in Annex B with certain restrictions

Generally, PFOS is used as salt or it is incorporated in more complex polimers. PFOS was firstly produced in 1949 and in 1999 – EPA-USA started to investigate perfluorized compounds in the database on PFOS toxicity. In 2000, the first and greatest producer of PFOS – 3 M in the USA shut down its production. At present, PFOS and other products related to this substance are produced in China. PFOS synthesis involves the use of PFOS-F as raw material. The latest achievements in the field of analitical chemistry enabled the determination of low PFOS concentrations (levels under ppb) in food, wild organisms and humans.

The main uses of PFOS are metallic coatings and foamings in fire extinguishing operations. Other uses of PFOS are as follows : for cloth protection, for substances used for removal of stains and paints, in fire extinguishing foams, in the structure of impregnating agents for textiles, paper and leather, in wax, cleaning materials for metals and carpets, in semicoductors industry or in photolithographic chemicals, including photo acid generators foto-acide and anti reflecting coatings. The use of PFOS in the industry of semiconductors has been eliminated in the EU. PFOS is still used in Skydrol, a hydraulic fluid applied in civil aviation.

Preliminary inventory shown that currently there is small scale usage of substances containing PFOS, PFOS salts or precursors of PFOS in metal coating processes.

Concerning the textile materials, the preliminary inventory shown that there is no use of chemicals containing PFOS, PFOS salts or PFOS precursors in the production process, as well as there is no production and use of products manufactured by recycling textiles produced before 2003* (*the year of 2003 has been recognized as the threshold year when use of PFOS has been discontinued in commercial repellent chemicals).

In the field of production/import of synthetic carpets, the preliminary inventory shown that there are no such chemical substances used for the treatment of carpet surfaces, and there is no use of products made of by recycling synthetic carpets, produced before 2003, having PFOS content, as well as no production or placing on the market of synthetic carpets with PFOS, PFOS salts or PFOS precursors content.

Neither for the pulp and paper sector, had the preliminary inventory showed no use of chemicals containing PFOS, PFOS salts or PFOS precursors.

In case of waste treatment, production of semiconductor, electronic and photographic sector there is no information on the use of chemicals containing PFOS, PFOS salts or PFOS precursors, or on the existence of stocks of waste containing these substances.

Regarding the use of PFOS in fire fighting foams, this was allowed until 27 June 2011 according to the EU legislation. The preliminary inventory shown that, at the level of Inspectorates for Emergency Situations foams containing PFOS, PFOS salts or PFOS precursors are not used. Concerning the types of foams existent in stocks there is no information available.

The *Table 3-4* presents the situations of quantities of PFOS containing waste in Romania at the level of 2009.

Table 3-4 - Quantities of PFOS containing waste in Romania at the level of 2009.

Running No.	County	Name of the item waste	Generated waste quantity (kg)	Stockpile (01.01.2010)
1.	Iaşi	Elastic materials (rubber)	500	500

		Carpets, moquetes, rubber and plastics	500	500
TOTAL			**1 000**	**1 000**

Source: *NEPA*

3.4. POPs contaminated/potentially contaminated soils

Within the project "*Capacity Building on Obsolete and POPs Pesticides in Eastern European, Caucasus and Central Asian Countries", financed by Global Environment Facility (GEF) and implemented by Food and Agriculture Organization (FAO),* to which Romania is part of, the Pollution Control and Impact Assessment Directorate together with the project team had organized on 10th of December 2010 at Bucharest the *"Workshop on awareness-raising at the decision-making level regarding contaminated sites with POPs, including HCH"*.

The event was financed from the above mentioned project budget and was addressed to the Romanian authorities for environment protection at national, regional and local level, as well as other authorities involved in the POPs contaminated sites issues in Romania. At the workshop participated representatives of National Environment Protection Agency, Local Environment Protection Agency (LEPA) Harghita, LEPA Vâlcea, LEPA Covasna, LEPA Ilfov, LEPA Prahova, Regional Environment Protection Agency Bucureşti, as well as representatives of research institutes ISPE and ICPA.

According to the provisions of Article 6(1) e) the Parties to the Stockholm Convention should develop appropriate strategies for identification of sites contaminated by chemicals listed in Annex A, B and C and to remediate these sites in an environmentally sound manner.

The first step undertaken by Romania in this sense was the development of National Implementation Plan (NIP) for Stockholm Convention which included measures for dealing with sites contaminated. The NIP was adopted by the Minister in April 2006.

The recent studies and reports have shown that **the sites contaminated with POPs (including HCH) became one of the global key-issues**. This issue needs to be considered as soon as possible and requires financial support from financial mechanism of the Convention (GEF) as well as from other sources (national budgets, bilateral donors etc).

The workshop represented an excellent opportunity for Romanian authorities to start the process of the NIP updating with reference to the sites contaminated with POPs.

Within the first session of the workshop was revealed the current situation in Romania regarding the POPs contaminated sites, including HCH, based on a set of presentations introduced by the representatives of Ministry of Environment and Forests, National Environment Protection Agency, ICPA and ISPE.

The first session ended with the first conclusions presented by Ms. Mihaela Ciobanu as following:

- ✓ Updating of the National Implementation Plan for Stockholm Convention, after 5 years, by including measures and actions for the 9 new POPs added – deadline 26 August 2012;
- ✓ Reevaluate of the key-priorities identified in the existing NIP and higher prioritize the contaminated sites issue;
- ✓ Increase the collaboration and cooperation between multiple stakeholders in order to facilitate the review of NIP;
- ✓ Include the POPs contaminated sites issues under the National Strategy for management of contaminated sites and give it a higher priority;
- ✓ Allocate funds from national budget for NIP updating and increase the absorption of EU funds, especially for contaminated sites by continue to raise awareness at the local authorities level;
- ✓ Get involved in planned GEF-UNEP-UNIDO-HCH Global project;
- ✓ Attract other external funding besides EU and GEF for solving the POPs issues;
- ✓ Request GEF to extend financial support to Romania. Other new EU Members countries have been confronted that due to their EU Membership GEF funding has been rigorously stopped.

In the second session the participants were divided in two working groups; one is dealing with the policy aspects and the second group is dealing with the technical/implementation aspects.

The two groups had discussed about 2 hours and then presented in the extended group the conclusions, as following:

Group I – Policy aspects

- ✓ it is necessary to include the POPs contaminated sites issues within the national strategy for contaminated sites management, taking into account the immediate need for action in order to remediate it;
- ✓ it is necessary improving the communication between local authorities for environment protection and local public administration which manage the areas where contaminated sites exist in order to find the most efficient measures for remediation;
- ✓ it is necessary to assist the local public administration in preparing the technical documentation for accessing the EU funds for contaminated sites remediation;
- ✓ it is necessary to include the issue of POPs contaminated sites within the National Strategy for Sustainable Development;
- ✓ it is necessary to include the aspects related to the POPs contaminated sites within the Danube Strategy taking into consideration the fact that chemicals substances in soil may reach the tributaries flowing into the Danube.

Group II – Technical/implementation aspects

- ✓ identification of all the POPs contaminated sites and updating of the national inventory, including the inclusions of these data into GIS system;
- ✓ definition of a new standardized methodology for evaluation of these contaminated sites;
- ✓ definition of a new methodology for risk evaluation of these contaminated sites in order to realize a prioritization of remediation actions;
- ✓ clarify the issues of the ownership of these sites for facilitation of the EU remediation funds accession;
- ✓ strengthening of the institutional capacity both at the authorities level and research institutes and analysis laboratories;
- ✓ define/update the limit values under which we consider a site as being remediated;
- ✓ inclusion within the school curriculum the environment issues, including those related to contaminated sites;
- ✓ involvement of the experimented NGOs in solving the problems pose by POPs contaminated sites.

As can be seen from the conclusions of this workshop, the issue of contaminated/potentially contaminated soils with POPs is still a challenge for Romania for the coming years and, therefore, revised action plan referred to in Chapter 4, propose a series of actions to be implemented by the sustained effort of all concerned authorities and operators, NGOs and the affected public.

3.5. Prognosis on production, use and emissions of POPs in the medium and long terms

Concerning the prognosis on unintentional emissions of POPs substances included in Annex C, from the source categories listed in Part II and III of that Annex of the Stockholm Convention, there are no changes from the first version of the NIP. It is worth mentioning that it could not make a forecast for PeCB because there isn't still an inventory of national annual emissions.

In terms of production of POPs substances, as stipulated by the Convention, the POPs substances listed in Annex A should be removed, so no production is expected in the coming years. For POPs substances listed in Annex B it is foreseen to be produced only for the acceptable purposes and specific exceptions provided in that Annex.

Regarding the use of POPs substances listed in Annex A it is expected to continue the recycling of articles containing or that may contain tetra-, penta-, hexa-, and hepta-bromobiphenyl ethers, but no later than 2030. For POPs substances listed in Annex B, is expected to be used for acceptable purposes and specific exceptions listed in that Annex; the evaluation of continue need for these substances will be reviewed in 2015, and every four years thereafter.

3.6. Identification of the population or environments affected by POPs

Currently there are no studies to quantify the POPs emissions impact on health and environmental effects.

3.7. Epidemiological studies on human exposure to POPs

There is not new information on morbidity and mortality caused by POPs.

3.8. Details of any relevant system for the assessment and listing of new chemicals

The practical implementation of the Convention provisions on the need for measures to prevent the production, placing on the market and use of new chemicals and pesticides, which exhibit characteristics of persistent organic pollutants, that are also repeated in Article 3(3) of the Regulation (CE) nor 850/2004 on POPs, is left to be done in the framework of the existing European Union regulatory and assessment schemes for industrial chemicals, plant protection products and biocides.

The new regulatory framework for chemicals, plant protection products and biocides incorporated provisions to prevent the production, placing on the market and use of new substances exhibiting POP characteristics. According to REACH Regulation, substances which are persistent, bioaccumulative and toxic (PBTs) or very persistent and very bioaccumulative (vPvBs) can be subject to authorisation. The strict rules within REACH for authorisation for substances having PBT/vPvB properties should prevent industry to develop new substances having such properties. Pursuant to Regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market, an active substance, safer or synergist can only be approved if it is not a listed POP, PBT or vPvB substance. A substance must be seen as a candidate for substitution if it meets two of the PBT criteria. Specific criteria on persistency, bioaccumulation and toxicity are laid down when a substance shall not be considered as of low risk. The Regulation (EC) No 1451/2007 on biocidal products lists PBTs among substances that should be substituted and not be allowed for use in low-risk products.

3.9. Details of any relevant system for assessment and regulation of chemicals placed on the market

Currently, in Romania, the approval system for plant protection products for agriculture operates under Government Decision no. 1559/2004 on the procedure for approval of plant protection products for placing on the market and their use on the Romanian territory and Regulation (EC) 1107/2209.

3.10. Relevant activities of NGOs

NGOs in Romania have contributed, along with environmental authorities, to the compliance with the requirements of Article 10 of the Convention.

Public information, awarness and education to implement the provisions of Stockholm Convention are the main actions provided in NIP 2005 which will continue in the updated NIP 2011.

NGOs activity was largely financially supported by international donors. One important role was played by GEF Small Grants Programme in Romania. The long-term mission of this programme is to contribute to global environmental benefits through community-level actions, projects implemented by NGOs to protect international waters, preserving biodiversity, reducing the probability of negative effects of climate change, to eliminate the persistent organic pollutants and land management in a sustainable manner.

Among the NGOs with interests on the POPs issues the following NGOs were very active: Environmental Experts Association; Ecological Club UNESCO Pro Natura; Eco-Counselling Centre Galați; ATME Speo-Alpin MH; The Speology Foundation "Speo Bucovina Club" Suceava; Assistance Center for NGOs (CENTRAS); StrawberryNet Foundation, Sf. Gheorghe.

Between 2005 to 2010, the Environment Experts Association has participated in many projects on persistent organic pollutants, including: *POPs releases reduction and increased efficiency of the healthcare waste management system flow in Constanța Country*. The project was implemented during August 2005 to April 2006, in partnership with Constanța Public Health Directorate and with the support of the Pneumophtisiology Hospital Constanta.

The project aim was the reduction of POPs releases resulting from the medical waste crematories in Constanta County.

The project results were as follow:

- Increased information and awareness at the local level concerning the medical waste management focused on elimination of POPs in compliance with the Stockholm Convention;
- Medical waste minimization in the Pneumophtisiology Hospital Constanța;
- Increased capacity of hospitals to elaborate and implement medical waste minimization plans, including alternative eliminations methods;
- Increased capacity of hospitals at local level in Constanța County and at national level for practical application of the medical waste minimization plans proposed in the project;

- Increased awareness of the local population concerning persistent organic pollutants demonstrating the solutions at community level concerning the reduction and elimination of POPs using alternative practices;
- NGO's capacity building to elaborate and implement multidisciplinary health-environmental projects.

3.11. Exchange of information, awareness, research and development

In August 2006, Ministry of Environment and Forest, together with INCDPM and UNIDO, organized the regional workshop Mahmudia ˝POPs destruction technologies and decision support tools for evaluation and selection". This workshop was addressed to the Stockholm Convention national focal points from Central and Eastern Europe.

In period 2007 to 2009, the Ministry of Environment and Forest together with UNIDO has organized four consultation meetings and one official launch meeting (November 5, 2009) of the ˝Regional Forum on best available techniques (BAT) and best environmental practices (BEP) for Central and Eastern Europe, Caucasus and Central Asia (CEECCA)". At the launching of this forum, Romania was designated to hold its Presidency for a period of two years. During this period, under the Presidency of Romania, there have been two other meetings, after which were developed two project proposals for the implementation of BAT/BEP in POPs source categories in the CEECCA region to be submitted to GEF for funding approval.

From 2 to 4 November 2009, Ministry of Environment and Forest, together with the Stockholm Convention Secretariat organized a training workshop for the Stockholm Convention national focal points from CEECCA region, on data and information included in guidelines on best available techniques (BAT) and best environmental practices (BEP), adopted by the Conference of Parties to the Stockholm Convention at its third meeting.

With financial support from the regional project GEF/FAO ˝Capacity building for disposal of obsolete pesticides", Ministry of Environment and Forest organized in December 2010 an awareness raising workshop on the risks imposed by POPs contaminated or potentialy contaminated soils, addressed to national authorities, regional and local environmental decision-making authorities.

Through the GEF / FAO has stengthened the training capacity of 7 national experts on developing inventories of stocks of POPs substances, hazardous waste repackaging, developing plans to eliminate stocks of pesticides, development of awareness raising campaigns and on the use of the Pesticide Stock Management System (PSMS) developed by FAO.

In 2011, Ministry of Environment and Forest has conducted a national awareness campaign addressed to all stakeholders on POPs issues in general and with special focus on POPs contaminated or potentialy contaminated soils. In preparation of this campaign, the Ministry of Environment and Forest has prepared materials like awareness guidelines on general information about POPs, on preliminary and detailed contaminated soil investigation and on available funding for remediation, which were disseminated throughout the campaign.

Also, in the process of updatting the NIP, INCDPM organized a series of seminars for all stakeholders, which through the discussion had the aim of bringing to their attention the risks imposed by POPs substances and how their effects on human health and the environment.can be reduced or eliminated.

4. STRATEGY AND ACTION PLAN OF THE STOCKHOLM CONVENTION NATIONAL IMPLEMENTATION PLAN

4.1. Policy aspects

In accordance with Article 11 of the Romanian Constitution, the Romanian state pledges to fulfill in good faith its obligations deriving from the treaty to which is a Party. Thus, by signing and ratifying the Stockholm Convention, Romania committed itself to the effective implementation of the Convention in order to protect human health and the environment against negative effects of POPs. Although is still a very difficult and unstable economic situation not only nationally but globally, Romania it is committed to identify the modalities on how to provide the required financial resources need for the implementation as well as to undertake efforts to attract external funding to cover the incremental costs of the implementation.

Romania will continue to work actively to raise the level of protection and minimise the environmental and health impacts of POPs, nationally as well as in international fora.

4.2. Implementation strategy

In order to set the appropriate national framework for the implementation of the first National Implementation Plan, developed in 2005, Ministry of Environment and Forests developed and promoted the Governmental Decision no 1497/2008 that established:

- coordinating national authority for the NIP implementation;
- coordinating national authority for preparing the annual report on status of implementation of NAP;

- authorities responsible for the implementation of actions needed to achieve the 11 key-objectives identified in the NIP;
- timeframes for NAP implementation and for reporting on the status of implementation of NAP.

It is expected that on the basis of the revised NIP, respectively NAP, the Governmental Decision no 1497/2008 to be amended accordingly in order to designate the responsible authorities for the effective implementation of the measures for "new POPs".

4.3. Key - Objectives

The overall objective of the NIP is to protect human health and the environment from POPs negative effects. According with the obligations under the Convention have been identified four specific objectives:

- banning the production and use of POPs substances (Annex A of the Stockholm Convention);
- restrictioning the use of POPs substances (Annex B of the Stockholm Convention;
- reducing unintentional POPs substances included in Annex C of the Stockholm Convention;
- reducing or eliminating the waste and POPs containing waste stockpiles.

Taking into account these specific targets and considering new POPs substances listed the Convention the current version of the NIP has defined 8 key-objectives, from 11 objectives defined in the first NIP.

Lists of the key-objectives and their group of actions are presented in *Tables 4-1 and 4-2*. The key-objectives and groups of action are itemized in these tables according to the priority rank that resulted from the discussions with stakeholders (ministries, agencies, operators, NGOs, academics, etc.), taking into account the following criteria:

1) to what extent a particular key objective should be addressed in the national environmental protection strategy;

2) to what extent it is considered the responsibility of the involved authorities involved in the initiation, planing and implementing the actions needed to achieve a particular key objective; and

3) to what extent does a particular key objective address directly the most severe environmental problems caused by POPs substances.

In the National Implementation Plan "Action groups" are defined as specific steps needed to achieve key objectives. There are technical, economic, institutional, procedural and informative measures.

In the updated version of NIP ˝action groups" is defined as specific steps needed to achieve key-objectives, as shown in *Figure 4-1*.

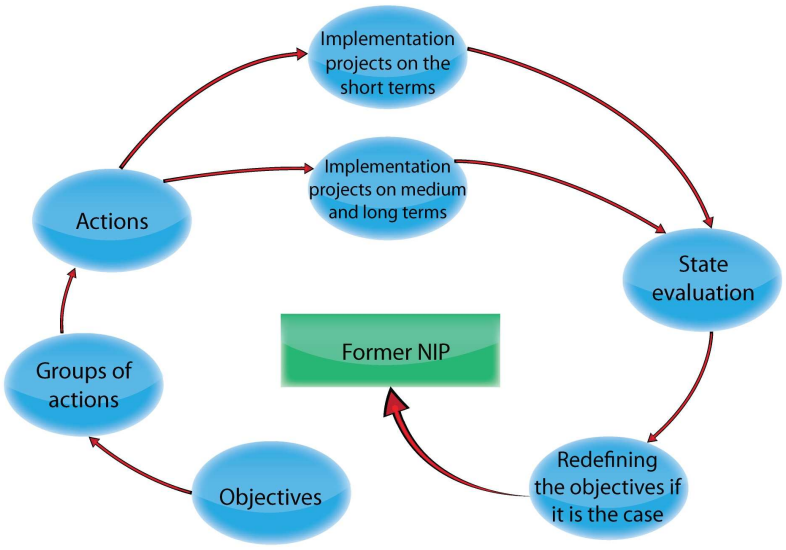


Figure 4-1 - Correlations between Objectives and Actions

Table 8-1 - Key-Objectives

Priority	Key Objective	
I	**Key Objective 1:**	Elimination of brominated diphenyl ethers from the waste stream
II	**Key Objective 2:**	Risk reduction for perfluorooctanic sulfonic acid (PFOS) with its salts and perfluorooctanic sulphonyl fluoride (PFOS-F)
III	**Key Objective 3:**	Elimination of PCBs containing equipments
IV	**Key Objective 4:**	Reduction of unintentional emissions of POPs
V	**Key Objective 5:**	Improvement of environmental protection performance in agriculture
VI	**Key Objective 6:**	Remediation of POPs contaminated soils (including soils with historical pollution)
VII	**Key Objective 7:**	Information and public awareness
VIII	**Key Objective 8:**	Research and development

Table 4-2 – Groups of actions

Groups of actions	Responsible authority	Key Objective / Order of priority
1.1 Registration for specific exceptions under the Convention	Ministry of Environment and Forests National Environment Protection Agency	**Key Objective 1: Priority I** Elimination of brominated diphenyl ethers from the waste stream
1.2. Implementation of measures for screening and separation techniques for materials containing brominated diphenyl ethers	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
1.3. Implementation of measures to stop the recycling of articles containing brominated diphenyl ethers, after the implementation of screening and separation techniques	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
1.4. Implemetation of measures to store in a safe manner materials and articles containing brominated diphenyl ethers when screening and separation techniques are not readily available	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
1.5. Implemetation of measures to stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention	Ministry of Environment and Forests National Environment Protection Agency National Environmental Guard Customs National Authority	
1.6. Implemetation of measures to prevent the export of items recovered from recycling in accordance with Part IV and / or Part V, 1b of Annex A	Ministry of Environment and Forests National Environment Protection Agency National Environmental Guard Customs National Authority	
1.7. Equipping and training of relevant authorities (eg. Customs and border control authorities) to allow them to control; identify and, where necessary, intercept shipments of waste containing brominated diphenyl ethers	Ministry of Environment and Forests National Environmental Guard Customs National Authority	
1.8. Assessing occupational exposure of staff working	Ministry of Health	

Groups of actions	Responsible authority	Key Objective / Order of priority
in facilities where articles and wastes potentially containing brominated diphenyl ethers are stored, sorted, treated, recycled, recovered or disposed of	Economic operators	
1.9. Implementation of best available techniques guidelines specific to brominated diphenyl ethers prepared by Stockholm Convention's expert bodies	National Environment Protection Agency Economic operators	
1.10. Evaluation and determination of need to implement any remedial actions of the materials containing brominated diphenyl ethers landfills	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators	
Groups of actions	**Responsible authority**	**Key Objective / Order of priority**
2.1. Registration for acceptable purposes and specific exceptions under the Convention	Ministry of Environment and Forests National Environment Protection Agency	
2.2. Implementation of best available techniques and best environmental practices destruction technologies for waste containing PFOS in current production and industrial uses of PFOS	National Environment Protection Agency Economic operators	
2.3. Implementation of measures for safe storage of waste containing PFOS when destruction technologies are not readily available	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
2.4. Investigations into landfills where waste from PFOS producers or from PFOS industrial users (paper, carpet, textile, chromium plating and other industries having used PFOS) are deposited; drinking water from reservoirs and wells in the vicinity of these landfills and also around the PFOS production and user areas should be analysed	National Envinronment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies National Administration "Romanian Waters" National Environmental Guard Economic operators	**Key Objective 2: Priority II** Risk reduction for perfluorooctanic sulfonic acid (PFOS) with its salts and perfluorooctanic sulphonyl fluoride (PFOS-F)
2.5. Monitoring rivers and lakes located close to landfills and proction and industrial use areas	National Administration "Romanian Waters" Economic operators	
2.6. Monitoring occupational exposure at production	Ministry of Health	

Groups of actions	Responsible authority	Key Objective / Order of priority
and industrial use facilities and to implement appropriate occupational health and safety measures	Economic operators	
2.7. Implementation of measures to stop using the PFOS contaminated sludge as a biosolid to agricultural areas or other soils	Ministry of Agriculture and Rural Development Ministry of Environment and Forests Economic operators	
2.8. Implementation of measures to crease the use of PFOS in open applications (eg. in impregnated/surface modified paper, insecticides, chemically driven production, carpet, textile, leather, furniture, detergents)	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
2.9. Promotion of PFOS alternatives substances used in open applications under the acceptable purposes	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
2.10. Implementation of measures to use closed-loop systems when using PFOS in industrial applications	National Environment Protection Agency Economic operators	
2.11. Identification and ceasing using stocks containing PFOS (eg. fire fighting foams, carpets and others)	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies National Environmental Guard Economic operators	
2.12. Implementation of measures to destroy stocks containing PFOS	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators	
2.13. Implementation of measures to cease the recycling of carpets containing PFOS	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
2.14. Implementation of measures to cease deposition of materials identified as containing PFOS (in particular carpets, furniture and textiles) in landfills and to store them to await proper destruction	Ministry of Environment and Forests National Environment Protection Agency Economic operators	

Groups of actions	Responsible authority	Key Objective / Order of priority
3.1. Periodically update of the inventories of in use/out of use PCBs containing equipments	Ministry of Environment and Forests National Environment Protection Agency Economic operators	**Key Objective 3: Priority III** Elimination of PCBs containing equipments
3.2. Continue actions for removal of the out of use PCBs containing equipments	Economic operators	
3.3. Gradual replacement of in use PCBs containing equipments	Economic operators	
3.4. Identification of PCBs in open applications (construction, sealants and flooring)	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies National Environmental Guard Economic operators	
3.5. Stimulation of economic operators in order to eliminate in use PCBs containing equipments	Ministry of Environment and Forests	
Groups of actions	**Responsible authority**	**Key Objective / Order of priority**
4.1. Promotion of "cleaner"industrial and domestics fuel alternatives use	Ministry of Transports and Infrastructure Ministry of Environment and Forests	**Key Objective 4: Priority IV** Reduction of unintentional emissions of POPs
4.2. Implementation of measures to improve the energy efficiency	Ministry of Economy, Trade and Bussines Environment	
4.3. Encouraging production of any type of renewable energy	Ministry of Economy, Trade and Bussines Environment Ministry of Environment and Forests	
4.4. Implementation of measures to reduce POPs emissions from the energy sector	Ministry of Economy, Trade and Bussines Environment Ministry of Environment and Forests	
4.5. Identification of economic incentives to promote "cleaner" vehicles use	Ministry of Transports and Infrastructure Ministry of Environment and Forests	
4.6. Improvement of infrastructure in transport sector	Ministry of Transports and Infrastructure	
4.7. Implementation of specific BAT/BEP to reduce air pollution from all POPs source categories	Ministry of Environment and Forests Economic operators	
4.8. Periodically inventory update and monitoring of unintentional emissions of POPs	National Environment Protection Agency Economic operators	

Groups of actions	Responsible authority	Key Objective / Order of priority
5.1. Promotion of plants protection products use having low risk for human health and environment	Ministry of Agriculture and Rural Development Ministry of Environment and Forests National Environment Protection Agency National Fitosanitary Agency	**Key Objective 5: Priority V** Improvement of environmental protection performance in agriculture
5.2. Implementation of measures for sustainable management and use of plant protection products currently allowed to be placed on the market on agricultural soils	Ministry of Agriculture and Rural Development Ministry of Environment and Forests National Environment Protection Agency National Fitosanitary Agency	
Groups of actions	**Responsible authority**	**Key Objective / Order of priority**
6.1. Periodic inventorying of POPs contaminated/potentially contaminated soils, including soils with historically pollution	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators	**Key Objective 6: Priority VI** Remediation of POPs contaminated soils (including soils with historical pollution)
6.2. Prioritizing with the view of remediation of POPs contaminated soils inventoried, based on risk assessment on human health and environment	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators	
6.3. Development of remediation activities for POPs contaminated sites, in accordance with the "polluter pays principle" in order to reduce risks	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators	
6.4. Permanent monitoring of POPs contaminated soils and remediated land	National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators	
Groups of actions	**Responsible authority**	**Key Objective / Order of priority**
7.1. Permanent information and awareness of authorities, businesses and public about the harmful effects of POPs on human health and environment	Ministry of Environment and Forests Ministry of Health National Environment Protection Agency	

Groups of actions	Responsible authority	Key Objective / Order of priority
	Regional Environment Protection Agencies Local Environment Protection Agencies NGOs	**Key Objective 7: Priority VII** Information and public awareness
7.2. Encouraging/stimulating economic operators to use alternatives to POPs substances	Ministry of Environment and Forests Ministry of Agriculture and Rural Development National Environment Protection Agency National Fitosanitary Agency	
7.3. Running information/public awareness campaigns about the impact of the POPs emissions from transport sector	Ministry of Environment and Forests Ministry of Transports and Infrastructure NGOs	
7.4. Promotion and facilitation of increased awareness on potential harm of materials containing brominated diphenyl ethers currently use (eg. furniture, carpets or mattresses with recycled back-coating containing polybrominated diphenyl ethers)	Ministry of Environment and Forests National Environment Protection Agency Research institutes NGOs	
7.5. Exchange information on and experiences of successful environmentally sound handling, management and disposal of articles and wastes containing brominated diphenyl ethers	Ministry of Environment and Forests National Environment Protection Agency Economic operators	
7.6. Promotion of the implementation of analytical techniques and technologies specific to brominated diphenyl ethers	National Environment Protection Agency Research institutes Economic operators	
7.7. Raising awareness of the environmental and human health effects of PFOS, providing training to relevant professionals on how to handle collection, storage and disposal of PFOS	Ministry of Environment and Forests Ministry of Health National Environment Protection Agency Research institutes Economic operators	
7.8. Raising awareness and training of farmers on sustainable management and use of plant ptotection products currently allowed to be placed on the market	Ministry of Agriculture and Rural Development Ministry of Environment and Forests National Environment Protection Agency National Fitosanitary Agency	

Groups of actions	Responsible authority	Key Objective / Order of priority
7.9. Facilitation of information exchange on management and remediation of POPs contaminated soils	Ministry of Environment and Forests National Environment Protection Agency Regional Environment Protection Agencies Local Environment Protection Agencies Economic operators NGOs	
Groups of actions	**Responsible authority**	**Key Objective / Order of priority**
8.1 Evaluation of POPs harmful effects on human health and environment	Research institutes	**Key Objective 8: Priority VIII** Research and development
8.2. Determination the extent of brominated diphenyl ethers in recycling and waste streams	Research institutes	
8.3. Assessment of long-term chemistry of polybrominated diphenyls ethers in landfill sites and the fate and risk of polybrominated diphenyls ethers release from landfills into the environment	Research institutes	
8.4. Assessment of industries'current and historical practices in managing sludge	Research institutes	
8.5. Costs evaluation of management and remediation of POPs contaminated soils, including the related cost of not using drinking watter wells and of restricting fishing	Research institutes	
8.6. Assessment of the toxicity and ecotoxicity of alternatives to PFOS	Research institutes	
8.7. Assessment whether other materials recycling streams are affected by materials containing PFOS	Research institutes	

The schedule for the implementation of group of actions in order to achieve the specific objectives is presented in *Table 4-3*, below, and includes 3 terms:

- Short term – 2012-2015;
- Medium term – 2012-2020;
- Long term – 2012-2030.

The schedule for implementation of Stockholm Convention action plan is correlated with existing action plans for energy, transport and agriculture, as well as the time horizons considered in the National Strategy for Sustainable Development of Romania.

Table 4-3 - Schedule for the implementation of the Stockholm Convention Action Plan

Groups of actions	2012	2013	2014	2015	2016-2020	2021-2025	2026-2030
1. Elimination of brominated diphenyl ethers from the waste stream							
1.1. Registration for specific exceptions under the Convention							
1.2. Implementation of measures for screening and separation techniques for materials containing brominated diphenyl ethers							
1.3. Implementation of measures to stop the recycling of articles containing brominated diphenyl ethers, after the implementation of screening and separation techniques							
1.4. Implemetation of measures to store in a safe manner materials and articles containing brominated diphenyl ethers when screening and separation techniques are not readily available.							
1.5. Implemetation of measures to stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention							
1.6. Implemetation of measures to prevent the export of items recovered from recycling in accordance with Part IV and / or Part V, 1b of Annex A							
1.7. Equipping and training of relevant authorities (eg. Customs and border control authorities) to allow them to control; identify and, where necessary, intercept shipments of waste containing brominated diphenyl ethers							
1.8. Assessing occupational exposure of staff working in facilities where articles and wastes							

potentially containing brominated diphenyl ethers are stored, sorted, treated, recycled, recovered or disposed of							
1.9. Implementation of best available techniques guidelines specific to brominated diphenyl ethers prepared by Stockholm Convention's expert bodies							
1.10. Evaluation and determination of need to implement any remedial actions of the materials containing brominated diphenyl ethers landfills							

Groups of actions	**2012**	**2013**	**2014**	**2015**	**2016-2020**	**2021-2025**	**2026-2030**
2. Risk reduction for perfluorooctanic sulfonic acid (PFOS) with its salts and perfluorooctanic sulphonyl fluoride (PFOS-F)							
2.1. Registration for acceptable purposes and specific exceptions under the Convention							
2.2. Implementation of best available techniques and best environmental practices destruction technologies for waste containing PFOS in current production and industrial uses of PFOS							
2.3. Implementation of measures for safe storage of waste containing PFOS when destruction technologies are not readily available							
2.4. Investigations into landfills where waste from PFOS producers or from PFOS industrial users (paper, carpet, textile, chromium plating and other industries having used PFOS) are deposited; drinking water from reservoirs and wells in the vicinity of these landfills and also around the PFOS production and user ares should be analysed							
2.5. Monitoring rivers and lakes located close to landfills and proction and industrial use areas							
2.6. Monitoring occupational exposure at production and industrial use facilities and to implement appropriate occupational health and safety measures							
2.7. Implementation of measures to stop using the PFOS contaminated sludge as a biosolid to agricultural areas or other soils							
2.8. Implementation of measures to crease the use of PFOS in open applications (eg. in impregnated/surface modified paper, insecticides, chemically driven production, carpet, textile, leather, furniture, detergents)							
2.9. Promotion of PFOS alternatives substances used in open applications under the acceptable purposes							
2.10. Implementation of measures to use closed-loop systems when using PFOS in industrial							

applications							
2.11. Identification and ceasing using stocks containing PFOS (eg. fire fighting foams, carpets and others)							
2.12. Implementation of measures to destroy stocks containing PFOS							
2.13. Implementation of measures to cease the recycling of carpets containing PFOS							
2.14. Implementation of measures to cease deposition of materials identified as containing PFOS (in particular carpets, furniture and textiles) in landfills and to store them to await proper destruction							
Groups of actions	**2012**	**2013**	**2014**	**2015**	**2016-2020**	**2021-2025**	**2026-2030**
3. Elimination of PCBs containing equipments							
3.1. Periodically update of the inventories of in use/out of use PCBs containing equipments							
3.2. Continue actions for removal of the out of use PCBs containing equipments							
3.3. Gradual replacement of in use PCBs containing equipments							
3.4. Identification of PCBs in open applications (construction, sealants and flooring)							
3.5. Stimulation of economic operators in order to eliminate in use PCBs containing equipments							
4. Reduction of unintentional emissions of POPs							
4.1. Promotion of "cleaner"industrial and domestics fuel alternatives use							
4.2. Implementation of measures to improve the energy efficiency							
4.3. Encouraging production of any type of renewable energy							
4.4. Implementation of measures to reduce POPs emissions from the energy sector							
4.5. Identification of economic incentives to promote "cleaner" vehicles use							
4.6. Improvement of infrastructure in transport sector							
4.7. Implementation of specific BAT/BEP to reduce air pollution from all POPs source categories							
4.8. Periodically inventory update and monitoring of unintentional emissions of POPs							
5. Improvement of environmental protection performance in agriculture							
5.1. Promotion of plants protection products use having low risk for human health and environment							
5.2. Implementation of measures for sustainable management and use of plant protection							

products currently allowed to be placed on the market on agricultural soils							
6. Remediation of POPs contaminated soils (including soils with historical pollution)							
6.1. Remediation of POPs contaminated soils (including the soils with historical pollution)							
6.2. Prioritizing with the view of remediation of POPs contaminated soils inventoried, based on risk assessment on human health and environment							
6.3. Development of remediation activities for POPs contaminated sites, in accordance with the "polluter pays principle" in order to reduce risks							
6.4. Permanent monitoring of POPs contaminated soils and remediated land							

Groups of actions	**2012**	**2013**	**2014**	**2015**	**2016-2020**	**2021-2025**	**2026-2030**
7. Information and public awareness							
7.1. Permanent information and awareness of authorities, businesses and public about the harmful effects of POPs on human health and environment							
7.2. Encouraging/stimulating economic operators to use alternatives to POPs substances							
7.3. Running information/public awareness campaigns about the impact of the POPs emissions from transport sector							
7.4. Promotion and facilitation of increased awareness on potential harm of materials containing brominated diphenyl ethers currently use (eg. furniture, carpets or mattresses with recycled back-coating containing polybrominated diphenyl ethers)							
7.5. Exchange information on and experiences of successful environmentally sound handling, management and disposal of articles and wastes containing brominated diphenyl ethers							
7.6. Promotion of the implementation of analytical techniques and technologies specific to brominated diphenyl ethers							
7.7. Raising awareness of the environmental and human health effects of PFOS, providing training to relevant professionals on how to handle collection, storage and disposal of PFOS							
7.8. Raising awareness and training of farmers on sustainable management and use of plant ptotection products currently allowed to be placed on the market							
7.9. Facilitation of information exchange on management and remediation of POPs contaminated soils							

8. Research and development							
8.1. Evaluation of POPs harmful effects on human health and environment							
8.2. Determination the extent of brominated diphenyl ethers in recycling and waste streams							
8.3. Assessment of long-term chemistry of polybrominated diphenyls ethers in landfill sites and the fate and risk of polybrominated diphenyls ethers release from landfills into the environment							
8.4. Assessment of industries'current and historical practices in managing sludge							
8.5. Costs evaluation of management and remediation of POPs contaminated soils, including the related cost of not using drinking watter wells and of restricting fishing							
8.6. Assessment of the toxicity and ecotoxicity of alternatives to PFOS							
8.7. Assessment whether other materials recycling streams are affected by materials containing PFOS							

5. FINANCIAL RESOURCES FOR NIP IMPLEMENTATION

The costs that need to be covered by Romania as a Party to the Stockholm Convention are considered to be linked primarily to its contribution to General Trust Fund for the functioning of the Convention, as well as to the financing mechanism (GEF).

Even though many of the measures required meeting the commitments under the Convention have already been taken, financial resources and incentives in respect to those national activities that are intended to achieve the objective of this Convention in accordance with its plans and priorities are still needed.

The largest costs in the coming years will probably be linked to the implementation of NAP, which is the most important part of the NIP. Major elements of costs relates to the implementation of the actions included on NAP towards achieving the 8 key-objectives identified, namely:

- actions for elimination of brominated diphenyl ethers from the waste stream;
- actions for risk reduction for perfluorooctanic sulfonic acid (PFOS) with its salts and perfluorooctanic sulphonyl fluoride (PFOS-F);
- actions for elimination of PCBs containing equipments;
- actions for reduction of unintentional emissions of POPs;
- actions for improvement of environmental protection performance in agriculture;
- actions for remediation of POPs contaminated soils (including soils with historical pollution).

Financial resources should also be allocated to the information and awareness raising activities as well as to research and development at national level.

It is expected that the estimated financial resources will be provided by the economic operators, taking into account the "polluter pays principle", state and local budgets, as well as by various external donors (EU, World Bank, etc.).

ANNEX 1

1.A. POPs substances listed in Annexes A, B and C of Stockholm Convention

Annex A – Elimination	Annex B – Restriction	Annex C – Unintentional production
1. Aldrin 2. Chlordane 3. Dieldrin 4. Endrin 5. Heptachlor 6. Hexachlorobenzene (HCB) 7. Mirex 8. Toxaphene 9. Polychlorinated Biphenyls (PCB) 13. Chlordecone 14. Hexabromobiphenyl 15. Pentabromodiphenyl ether 16. Lindane 17. Alpha-hexachlorocyklohexane 18. Beta-hexachlorcyclohexane 19. Octabromodiphenyl ether 20. Pentachlorobenzene (PeCB) 22. Endosulfan	10. DDT 21. Perfluorooctane sulfonic acid (PFOS)	11. Polychlorinated dibenzo-p-dioxins (PCDD) 12. Polychlorinated dibenzofurans (PCDF) HCB PCB PeCB Also stockpiles and wastes

1.B. Substances currently under review by the POPRC

Step 1. Screening criteria, Annex D	Step 2. Develop a risk profile Annex E	Step 3. Develop a risk management evaluation, Annex F	To be considered at COP6 in 2013 Including proposal for listing
Pentachlorophenol (PCP)	Hexachlorobutadiene (HCBD) Polychlorinated naphtalenes (PCNs) Shortchained chlorinated paraffins (SCCP)	–	Hexabromocyclododecan, HBCD

ANNEX 2

POPRC-6/2: Work programmes on new persistent organic pollutants

The Persistent Organic Pollutants Review Committee,

Taking note of decisions SC-4/10–SC-4/18, by which the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants amended Annexes A, B and C to the Convention to list nine new chemicals therein,

Recalling decision SC-4/19, by which the Conference of the Parties established indicative elements of a work programme to provide guidance to the parties on how best to eliminate listed brominated diphenyl ethers, and to restrict or eliminate perfluorooctane sulfonic acid (PFOS) and its salts, perfluorooctane sulfonyl fluoride (PFOSF) and other chemicals listed in Annex A or B to the Convention at the fourth meeting of the Conference of the Parties,

Mindful of the importance of providing guidance on the elimination of listed brominated diphenyl ethers and the restriction or elimination of PFOS and its salts, PFOSF and other chemicals listed in the annexes to the Convention,

Noting that the following work has been undertaken in accordance with the work programme outlined in decision SC-4/19:

(a) Parties and observers have submitted information on brominated diphenyl ethers, PFOS, its salts and PFOSF and other chemicals newly listed in Annex A or B to the Convention at the fourth meeting of the Conference of the Parties as requested in paragraphs 1 (a)–(c) of the annex to decision SC-4/19 and on the basis of a questionnaire developed by the Committee at its fifth meeting;

(b) The Secretariat has gathered and compiled the submitted information, made it available on the website of the Convention and summarized it;[1]

(c) The Committee has at its fifth meeting developed terms of reference for a technical paper with the following objectives:

(i) To assess the possible health and environmental impacts of recycling articles containing brominated diphenyl ethers;

[1] UNEP/POPS/POPRC.6/INF/5 and UNEP/POPS/POPRC.6/13, annex II.

(ii) To review the long-term environmental desirability of the recycling of articles containing brominated diphenyl ethers;

(iii) To identify the best available technology and best environmental practices for the recycling of articles containing brominated diphenyl ethers;

(d) The draft technical paper has been prepared and submitted to the Committee at its sixth meeting,[2]

Having reviewed the information provided by parties and observers on the chemicals newly listed in Annexes A and/or B to the Convention and in the draft technical paper,

Having identified potential gaps in the information provided by parties pursuant to paragraphs 1–4 of decision SC-4/19,

Recognizing that the rendering of timely and appropriate technical assistance in response to requests from developing-country parties and parties with economies in transition is essential for the implementation of the recommendations set out in the annex to the present decision,

Decides that the recommendations on how to fill the identified information gaps and the recommendations on the elimination of brominated diphenyl ethers from the waste stream and on risk reduction for PFOS, its salts and PFOSF as contained in the annex to the present decision should be submitted to the Conference of the Parties at its fifth meeting for its consideration.

Annex to decision POPRC-6/2

Recommendations on the elimination of brominated diphenyl ethers from the waste stream and on risk reduction for perfluorooctane sulfonic acid (PFOS) and its salts and perfluorooctane sulfonyl fluoride (PFOSF)

I. Recommendation on the elimination of brominated diphenyl ethers from the waste stream

1. The Committee reviewed the information provided by parties and observers on newly listed persistent organic pollutants and in the draft technical paper. On the basis of this information, the Committee identified potential gaps in the information and developed recommendations on the

[2] UNEP/POPS/POPRC.6/2/Rev.1.

elimination of brominated diphenyl ethers from the waste stream, including on how to fill the information gaps identified.

A. Overall recommendation

2. The objective is to eliminate brominated diphenyl ethers from the recycling streams as swiftly as possible. To meet this objective, the principal recommendation is to separate articles containing brominated diphenyl ethers as soon as possible before recycling. Failure to do so will inevitably result in wider human and environmental contamination and the dispersal of brominated diphenyl ethers into matrices from which recovery is not technically or economically feasible and in the loss of the long-term credibility of recycling. Initially, the main focus should be on developed countries handling primary flame-retarded[3] articles containing higher concentrations of brominated diphenyl ethers and attention should be paid to identification and treatment of brominated diphenyl ethers in articles for both domestic use and for export.

3. Time is short because articles containing brominated diphenyl ethers are already present in many existing waste streams as a result of the time frame of former production of these articles. Brominated diphenyl ethers should not be diluted since this would not reduce the overall quantity in the environment. In some cases, it is likely that the quantities in waste have reduced significantly from their peak concentration levels.

4. To prevent similar difficulties with other substances, parties should step up efforts to regulate chemicals with the aim of preventing the production and use of chemicals that exhibit the characteristics of persistent organic pollutants in compliance with paragraphs 3 and 4 of Article 3 of the Stockholm Convention.

B. Recommendations for short-term activities

5. The key recommendation for the short-term in countries in a position to do so, especially developed countries, is to establish and apply screening techniques and to separate materials containing brominated diphenyl ethers in order to stop these materials from being recycled. In detail, the recommendations are:

☐ To begin establishing national control schemes for recycling of waste potentially containing brominated diphenyl ethers and to implement effective screening and separation techniques for material containing brominated diphenyl ethers.

[3] That is articles for which the flame retardant content was added for the purposes of flame retardancy rather than articles which contain some flame retardant as a consequence of contaminants in recyclate.

☐ Following the implementation of effective screening and separation techniques, to stop the recycling of articles containing brominated diphenyl ethers.

☐ To store in a safe manner materials and articles containing brominated diphenyl ethers when screening and separation techniques are not readily available.

☐ To stop the export of waste materials containing brominated diphenyl ethers except for the purpose of environmentally sound disposal in the importing country as set forth in paragraph 1 (d) of Article 6 of the Stockholm Convention.

☐ To alert, equip and train the relevant authorities (for example, Customs and border control authorities) to allow them to control, identify and, where necessary, intercept shipments of wastes containing brominated diphenyl ethers.

☐ To generate and collect information on releases of brominated diphenyl ethers and unintentionally produced brominated organic compounds such as polybrominated dibenzodioxins and polybrominated dibenzofurans (PBDD/PBDF) in emissions to air and in the solid residues from thermal processes used in treating materials contaminated with brominated diphenyl ethers.

☐ To identify disposal options that would comply with the Stockholm Convention guidelines to be developed for the destruction of wastes containing brominated diphenyl ethers. These may include best available technique incinerators with effective primary and secondary combustion zones that operate under best environmental practice conditions with continuous monitoring and sampling to ensure that brominated diphenyl ethers and/or PBDD/PBDF are not released.

☐ To collect information relevant to the establishment of best available techniques and best environmental practices for treatment and disposal techniques for materials containing brominated diphenyl ethers.

☐ To assess occupational exposures of staff working in facilities where articles and wastes potentially containing brominated diphenyl ethers are stored, sorted, treated, recycled, recovered or disposed of. Appropriate precautions should be taken to minimize any occupational exposure.[4]

6. Additional short-term goals could include:

[4] International Labour Organization Convention concerning Safety in the use of Chemicals at Work, No. C170, 1990 and ILO Recommendation Concerning Safety in the Use of Chemicals at Work, No. R177, 1990.

☐ To endeavour to promote the commercialization of separation techniques, which have already been evaluated in trial plants or which have yet to be developed, for removing brominated diphenyl ethers from plastic matrices to permit continued recycling.

☐ To develop a system or mechanism to prevent the entry of substances that exhibit characteristics of persistent organic pollutants into the recycling stream as soon as they are identified.

☐ To promote and facilitate public awareness-raising on the potential harm of materials containing polybrominated diphenyl ethers currently in use (e.g., furniture, mattresses or carpet with recycled back-coating containing polybrominated diphenyl ethers).

7. Since the presence of brominated diphenyl ethers is less well characterized in developing countries and countries with economies in transition it is further recommended:

☐ To exchange information on and experiences of successful environmentally sound handling, management and disposal of articles and wastes containing brominated diphenyl ethers.

☐ To encourage developed countries to promote the transfer to developing countries of screening and separation techniques.

☐ To undertake a more detailed survey in representative countries in each region to determine the extent of brominated diphenyl ethers in recycling and waste streams. This should be supported by capacity-building efforts and measures to raise the awareness of all stakeholders.

C. Recommendations for medium-term activities

☐ To promote and implement analytical techniques and technologies specific to brominated diphenyl ethers.

☐ To improve and extend as necessary disposal options to ensure compliance with Stockholm Convention obligations and guidelines, taking into account the relevant decisions of the Persistent Organic Pollutants Review Committee on the updating of the Basel Convention technical guidelines on the environmentally sound management of persistent organic pollutants.

☐ To evaluate surveys conducted in developing countries and countries with economies in transition and apply their conclusions, where appropriate, to other countries with similar waste

streams. If the survey indicates a significant presence of materials containing brominated diphenyl ethers, screening techniques should be implemented.

☐ To undertake further assessment and produce best available technique and best environmental practice guidance. These tasks should be undertaken by the Stockholm Convention's expert bodies and include consideration of polybrominated diphenyl ethers and PBDD/PBDF releases from smelters and other thermal recovery technologies, including secondary metal industries, cement kilns and feedstock recycling technologies.

8. The main recommendations in respect of deposition of and deposited polybrominated diphenyl ethers in landfills are:

☐ To assess further the long-term chemistry of polybrominated diphenyl ethers in landfill sites and the fate and risk of polybrominated diphenyl ether release from landfills into the environment.

☐ To reduce releases of polybrominated diphenyl ethers from landfills by avoiding the landfilling of materials containing them. Significant reductions can be made by restricting the landfill disposal of waste streams with high concentrations of brominated diphenyl ethers. This does not, however, need to apply to the landfill sites in which proper management is applied to isolate the landfill contents from the environment.

☐ To assess and determine any necessary remediation measures in landfills. In some cases (such as sites vulnerable to erosion, those which are below the water table or vulnerable to flooding) this may even require the removal of materials containing polybrominated diphenyl ethers from landfills for further destruction.

D. Recommendations for long-term activities

☐ To prioritize for remediation activities landfills, sediments and production, manufacturing and treatment sites that present significant risks to human health and/or the environment.

☐ To evaluate surveys conducted in developing countries and countries with economies in transition and apply their conclusions, where appropriate, to other countries with similar waste streams. If the survey indicates a significant presence of materials containing brominated diphenyl ethers, provisions for technology transfer should be implemented.

II. Recommendations on risk reduction for PFOS, its salts and PFOSF

9. The Committee reviewed the information provided by parties and observers on newly listed persistent organic pollutants. On the basis of this information, the Committee identified potential gaps in the information and developed recommendations on the risk reduction for PFOS, its salts and PFOSF, including on how to fill the information gaps identified.

10. The recommendations on risk reduction measures are given in chronological order of the life cycle of PFOS and processes and materials containing PFOS to address systematically the related risks. The recommendations are provided in a short-term, medium-term and long-term framework. A number apply to both the production and usage of PFOS in various applications. Given that PFOS precursors may contribute to the overall presence of PFOS in the environment, the recommendations below consider, as appropriate, the management of PFOS and PFOS-related chemicals.

11. Countries in a position to do so, especially developed countries, are encouraged to take up these recommendations as soon as possible and exchange their experiences and success stories with other countries. The transfer of knowledge and technology, including capacity-building to identify PFOS in articles and applications and monitor PFOS in the environment, should be promoted to support full participation in global efforts to reduce PFOS risks.

A. Recommendations with regard to PFOS production and industrial use

Short term

 To use best available technique and best environmental practice destruction technologies for wastes containing PFOS in current production and industrial uses of PFOS. No landfilling of these wastes should be permitted, unless leachate containing PFOS is properly treated.

 To ensure safe storage when destruction technologies are not readily available.

 To launch urgent investigations into landfills where waste from PFOS producers or from PFOS industrial users (paper, carpet, textile, chromium plating and other industries having used PFOS) are deposited. Drinking water from reservoirs and wells in the vicinity of these landfills and also around the PFOS production and user areas should be analysed.

 To assess industries' current and historical practices in managing sludge. If contaminated sludge has been applied as a biosolid to agricultural areas or other soils, such practices should be stopped.

 To monitor rivers and lakes and, in particular, the fish in the lakes and rivers close to landfills and production and industrial use areas. Depending on the PFOS levels in fish, an advisory board for fish consumption should be established.

 To monitor occupational exposure at production and industrial use facilities and to implement appropriate occupational health and safety measures.

Medium term

 If contamination has occurred, to carry out remediation activities in accordance with the polluter-pays principle to reduce risk.

 For recording remediation technologies, strategies and associated damages, to document the cost of management and remediation, including the related cost of not using drinking water wells and of restricting fishing. Such information should be included, as appropriate, in the national implementation plan and/or reports submitted under Article 15 of the Stockholm Convention.

B. Recommendation on risk reduction from PFOS use

12. Taking into account the information contained in the guidance document on alternatives to PFOS and its derivatives and additional information provided thereafter:

Short term

 To withdraw or cease open applications (e.g., in impregnated/surface modified paper, insecticides, chemically driven oil production, carpet, textile, leather, furniture, detergents).

 To identify and implement alternatives in open applications under acceptable purposes (fire-fighting foam and ant baits). For a range of other acceptable-purpose applications, alternatives are used in developed countries and appear available in practice.

 If using PFOS in industrial applications, to do so in closed-loop systems. Releases of PFOS from industrial processes should be retained by best available technique and best environmental practice treatment technologies. Resulting sludge, adsorbents and wastes containing PFOS should be destroyed and not deposited.

 To continue to gather information on experiences of using PFOS alternatives in the areas of acceptable purposes and specific exemptions. This information should be compiled to support the work of the Conference of the Parties in evaluating the continued need for these chemicals.

 To assess the toxicity and ecotoxicity of alternatives to PFOS.

C. Recommendation on risk reduction for PFOS in existing stocks

Short term

 To identify and cease using stocks containing PFOS (fire-fighting foams, carpets and others). Such stocks should be collected and stored.

 To raise awareness of the environmental and human health effects of PFOS, providing training for relevant professionals in how to handle collection, storage and disposal of PFOS.

Medium term

 To develop and implement strategies to destroy stocks containing PFOS.

D. Recommendation on risk reduction for recycling of articles containing PFOS

Short term

 To make parties aware that the use of carpets containing PFOS in applications other than those for which they were originally intended, such as in gardening, may lead to releases.

 To cease the recycling of carpets containing PFOS.

E. Recommendation on risk reduction from PFOS in consumer products deposited in municipal landfills

Short term

 To cease deposition of materials identified as containing PFOS (in particular carpets, furniture and textiles) in landfills and to store them to await proper destruction.

Medium term and long term

 To assess the extent to which PFOS releases occur in the recycling of paper, textiles and impregnated furniture.

 To assess whether other material recycling streams are affected by materials containing PFOS.

 To monitor releases of PFOS, among other contaminants, from municipal landfills. Monitoring should also be undertaken of the groundwater, surface water and biota that could be affected by releases from landfills.

 When releases are discovered, to apply appropriate measures, including leachate control.

F. Recommendations on risk reduction from releases from contaminated sites

Short term

 To establish and implement a strategy for identifying and monitoring sites contaminated with PFOS in accordance with Article 6 of the Convention.

Medium and long term

 To gather information on remediation technologies for sites contaminated with PFOS.

 To encourage the exchange of information and country experiences on sound management and remediation of contaminated sites.

 To take action to remediate sites contaminated with PFOS.

ANNEX 3

Abbreviations

POP	Persistent Organic Pollutant
DDT	Benzene, 1, 1' – (2, 2, 2 – Trichloroethylidene) bis (4 – chloro)
HCB	Hexachlorobenzene
PCDPD	Poly chlorinated dibenzo – p – dioxins
PCDF	Poly chlorinated dibenzo furans
PCB	Poly chlorinated biphenyls
PAH	Poli aromatic hydrocarbons
PFOS	Perfluorooctane sulfonic acid
PFOS-F	Perfluorooctane sulfonil fluoride
Tetra BDE	Tetrabromobiphenyl ether
Penta BDE	Pentabromobiphenyl ether
Hexa BDE	Hexabromobiphenyl ether (Hexabromobifenil eter)
Hepta BDE	Heptabromobiphenyl ether
Octa BDE	Octabromobiphenyl ether
PBDEs	Polybromobiphenyl ethers
PeCB	Pentachlorobenzene
HCH	Hexachlorocyclohexane
DEEE	Electrical and electronic eqiupments waste
SC	Stockholm Convention on POPs
CP	Conference of Parties
GEF	Global Environment Facility
UNIDO	United Nations Industrial Development Organization
MSP	Medium Size Project
LEP	Law of Environmental Protection (Law 137 /1995 & Law 294 / 2003)
LAP	Law of Atmospheric Protection (Law 655 / 2001)
NIP	National Implementation Plan
NIRDEP	National Institute for Research & Development in Environmental Protection
PPC	Public Power and Cogeneration

EIM	Environmental Impact Assessment
SEA	Strategic Environmental Assessment
GDP	Gross Domestic Product
BAT	Best Available Technique
BEP	Best Environmental Practices
CLRTAP	Convention of Long Range Transport of Air Pollutants
MEF	Ministry of the Environment and Forest
MH	Ministry of Health
METB	Ministry of Economy, Trade and Business
MTI	Ministry of Transports and Infrastructure
MFP	Ministry of Public Finance
MAI-CPC	Ministry of Administration and Interior / General Inspectorate for Emergency Situations
MARD	Ministry of Agriculture and Rural Development
NEG	National Environmental Guard
PUB	Polytechnical University of Bucharest
NEPA	National Environmental Protection Agency
REPA	Regional Environmental Protection Agency
RDIPP	Research and Development Institute for Plant Protection
SSC	Secretariat of Stockholm Convention
UNITAR	United Nations Institute for Training and Research
IUPAC	International Union of Pure and Applied Chemistry
CA	Chemical Abstract
NSRF	National Strategic Reference Framework
NSSD	National Strategy for Sustainable Development
ISPE	Institute for Studies and Power Engineering

ANNEX 4

Refereces

National Institute for Research & Development for Environmental Protection, 2012, "Study on updating national implementation plan of Stockholm Convention on persistent organic pollutants (POPs)"

National Institute of Statistics, 2008, 2009, 2010, Romanian Statistical Yearbook

National Environmental Protection Agency, 2009, 2010, State of Environment Report

European Commission, Annual report for the Regulation (EC) no 850/2004 on persistent organic pollutants, 2006, 2007, 2008, 2009, 2010, 2011, 2012

European Commission, Tri-annual report for the Regulation (EC) no 850/2004 on persistent organic pollutants, 2007, 2010

United Nation Environment Programme, Report on the implementation of the Stockholm Convention on persistent organic pollutants, 2006, 2010

United Nation Economic Commission for Europe, Annual National Emission Inventory and Informative Inventory Report, 2006, 2007, 2008, 2009, 2010, 2011

United Nation Economic Commission for Europe, Report on Strategies and Policies for the Abatement of Air Pollution, 2006, 2008