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## **International POPs Elimination Project**

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

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# **Belarus Country Situation Report on POPs**

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Website- [www.ipen.org](http://www.ipen.org)

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

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

IPEP has three principal objectives:

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

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

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

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

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### What are POPs?

Among the global environmental threats we face today one of the most dangerous is the increasing pollution by a group of chemicals known as persistent organic pollutants, or POPs. POPs are organic chemical

compounds and mixtures that are highly toxic, persist in the environment, bioaccumulative in the fatty tissue of living organisms, can travel long distances in air and water, and tend to migrate from warmer to colder regions of the world.

POPs are the product and by-product of human activities and are of relatively recent origin. The twelve POPs designated by the Stockholm Convention as targets for early global action are all-chlorine-containing organic compounds. They are: aldrin, dieldrin, endrin, chlordane, DDT, hexachlorbenzene, polychlorinated biphenyls (PCBs), polychlorinated dibenzo dioxins, and polychlorinated dibenzo furans.

Unfortunately POPs are not among the top priorities for the Belarusian environmental authorities or non-governmental environmental organizations (NGOs). At present the so-called environmental “priority spheres” include: conservation of biological diversity; rehabilitation of the territories polluted by the Chernobyl disaster; transport pollution prevention; promotion of environmental education; sustainable development.

It is important to mention that the majority of environmental measures for a long period were directed on the elimination of the consequences of the severe Chernobyl catastrophe which happened in 1986. The scale of contamination and long-term consequences were so horrifying that other problems seemed to pale in comparison with the Chernobyl accident. Nowadays the attitude has changed. The Chernobyl question has somewhat (unfortunately) faded into the background, but at the same time its demise has lifted the veil surrounding other problems.

The POPs problem started to be the subject of wide speculation in Belarusian society several years ago after being raised by environmental NGOs and scientists who realized, or at least assumed, that POPs represent a serious danger for the population and the environment of Belarus. Governmental bodies paid heed to the POPs issue only after a series of scandals in Europe with the

discovery of high levels of dioxins in food products, especially chicken.

One reason for such a passive attitude to the POPs problem in Belarus springs from the Soviet period, when chemical pollution issue was controlled by special services (KGB) and nobody outside of that organisation was made aware that such problems existed.

This report unites existing information from different sources about the situation with POPs in the Republic of Belarus. It provides information on sources and levels of POPs, legislation, efforts being undertaken or planned to deal with POPs, a description of the environmental NGOs working on the POPs problem, the status of the implementation of the Stockholm Convention recommendations from environmental NGOs and other POPs related information.

## Sources of POPs

At present there is a scarcity of information at both Government and non-governmental level about the sources of POPs in Belarus. This is because the relevant government departments have not included POPs into a system of national environmental monitoring and consequently the real situation country-wide is unknown. A national profile on chemical substances was officially created as recently as July 2004 and at present is non-functional. It is envisaged it will be operational sometime in January 2005.

## POPs pesticides used in Belarus:

### DDT

- DDT was widely used around the territory of Belarus with its use beginning after the Second World War. Its production started in 1947 and although its official usage was banned in 1970 it was used in some areas until the end of the 1980s. According to official information from Ministry of Agriculture and Food the following quantities of DDT are stored in different places around Belarus:

Territory	Quantity of DDT, kg	
	Total	Including re-packed
Republic of Belarus	4973	2446
Vitebsk region	2280	2280
Grodno region	166+97	166
Minsk region	2430	--

According to official information there are about 476 tones of DDT (and lindane) buried around the Belarus Verchedvinsk region (Sar'yanovsk forestry), Petrikovsk region (Koshevichi forestry, area 52), and the

Slonim region (Albertinskoe forestry, trakt “Petushinyi gai”, area 112). There is also information that during the period 1974-1988, 415.1 tones of DDT (as a part of pesticide mixture) were buried.

While we have some data on the burial places of pesticides, the Ministry of Agriculture and Food doesn't have information about the quantity of DDT buried. Officially, the burial technology as a method of dealing with obsolete pesticides was prohibited in 1998. It should be noted that many people in the villages still use DDT on their private land. They use DDT from their private stores, or sometime DDT from official storages can be stolen.

#### **Aldrin**

- The use of aldrin within the territory of former Soviet Union, including Belarus, was banned in 1972. According to official information from the Ministry of Agriculture and Food, at present there are no quantities of aldrin on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Dieldrin**

- The use of dieldrin within the territory of former Soviet Union, including Belarus, was banned in 1972. According to official information from Ministry of Agriculture and Food, at present there are no quantities of dieldrin on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Heptachlor**

- The use of heptachlor on the territory of former Soviet Union, including Belarus, was banned in 1986. According to official information from Ministry of Agriculture and Food, at present there are no quantities of heptachlor on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Endrin**

- There is practically no data about production and use of Endrin on the territory of Belarus. According to official information from Ministry of Agriculture and Food, at present there are no quantities of endrin on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Chlordane**

- Chlordane was used on the territory of former Soviet Union in the period 1966-1980. There is no data about usage of the pesticide on the territory of Belarus. There is no information when the chlordane was officially banned. According to official information from Ministry of Agriculture and Food, at present there are no quantities of chlordane on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Toxafene**

- Toxafene was produced on the territory of former Soviet Union (in Chapaevsk) until 1987. The usage of toxafene was banned in 1991. According to the official information from Ministry of Agriculture and Food, at present there are no quantities of toxafene on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Mirex**

- There is no data about production and using of mirex on the territory of Belarus. According to official information from Ministry of Agriculture and Food, at present there are no quantities of mirex on the territory of Belarus in disposal facilities/dumps or in stockpiles.

#### **Hexachlorbenzene (HCB)**

- Production of HCB started on the territory of former Soviet Union in 1945. It was banned as a pesticide in 1990 although there were some cases of official use as a pesticide after this date. The last official recorded use was in 1997 with the use of 1,46 tones of gamma-hexane, pesticide containing HCB. According to official information from Ministry of Agriculture and Food, at present there are no quantities of HCB (as pesticide) on the territory of Belarus in disposal facilities/dumps or in stockpiles.
- As an industrial chemical, HCB is still used in pyrotechnic mixtures for defense industry. Also it has been used as an intermediate product in the chemical industry.

#### **PCDD/F's in Belarus:**

- An inventory of sources of dioxins and furans has not yet been made. According to the data from National Academy of Sciences of Belarus and environmental NGOs, the following processes can be sources of dioxins and furans in Belarus:
  1. Chemical industry;
  2. Metallurgy;
  3. Production of building materials;
  4. Fires;
  5. Waste incineration (especially, illegal incineration in landfills);
  6. Drinking water chlorination process;  
In Belarus at least in 4 cities (Minsk, Gomel, Grodno, Polotsk, Novopolotsk), the technology of double-chlorination of drinking water is used for disinfection.
  7. Pulp-and-mill industry;

Special attention should be paid to Svetlogorsk pulp-and cardboard plant, as one of the biggest possible sources of dioxins to the environment of Belarus.

8. Some other industrial process.

It should be noted that this is not a complete list of possible sources.

The following industrial plants could also be among sources of dioxins:

- Plant of domestic chemistry (Brest);
- Production association “Naftan” (Novopolotsk);
- Production association “Polimir” (Novopolotsk);
- Plant of domestic chemistry (Borisov);
- JSC “Lesoximik” (Borisov);
- JSC “Minsk varnish-and-paint plant” (Minsk);
- JSC “Lakokraska” (Lida);
- Production association “Ximvolokno” (Mogilev);
- Production association “Ximvolokno” (Grodno);
- Mozyr oil-refining plant (Mozyr);
- Close corporation “Plant of chemical production” (Gomel);
- Production association “Ximvolokno” (Svetlogorsk);
- Pulp-and-cardboard mill (Svetlogorsk).

It is very important to add that the number of pesticides previously used, and currently in use, within the territory of Belarus are possible sources of dioxins and furans.

According to information from the Republican State Station of the Plants Protection, the following pesticides used in Belarus are sources of dioxins and furans: 2,4D-amine salt, 2,4D-butyl ether, 2,4D-octyl ether, dialen. 1 kg of the pesticide 2,4D contains approximately 2 mkg of dioxins.

These pesticides are still used despite the fact that they contain dioxins and furans.

In 2000 more than 900 tonnes of these pesticides were used. In 2001, more than 480 tonnes of 2,4D were used in different regions of Belarus. In addition to these pesticides there are more than 10 other pesticides containing 2,4D used in Belarus.

## PCBs in Belarus:

- Industrial production of PCBs started in the 1930s. Their production was banned on the territory of former USSR in the beginning of the 1990s. But about 2/3 of their quantity is still in use.

PCBs were mainly used in condensers, transformers, paint production, and in some other process. Unfortunately, the government does not have a register for electrical equipment containing PCBs.

According to information from independent scientists, the majority of industrial condensers and some transformers in Belarusian industry contain PCBs. Almost all of these were produced before 1980. According to different information sources, the average quantity of PCBs in transformers still in use varies between 0.9-1.7 tonnes. Condensers can contain up to 18 kg and their operational life-span {in Belarus} is about 25 years. At present when condensers are taken out of use they become a source of PCBs in the environment. There are no specially-equipped storage areas for PCBs-containing equipment and they are mainly stored on electrical substations.

According to data from the Belarusian Academy of Sciences, annual emission of PCBs from active transformers and condensers [in Belarus] is about 0,3 kg/t for transformers and 2 kg/t for condensers.

- Another source of PCBs is paint production. The industrial enterprise “Lakokraska.” was one of the biggest paint plants within the former USSR. Here PCBs (trade mark sovol) were used as plasticizers in the process paint production until 1998. From 1981 until 1992, 2505,1 tones of sovol (PCBs) were produced by this enterprise which used more that 5000 tones of sovol over the last 30 years.
- Among other sources of PCBs in Belarus, the following processes should be mentioned: the burning of PCBs-contained waste, treatment of scrap metal, transport, waste incineration (including incineration of medical waste, industrial waste, and PCBs-contained waste).

The following table compares available information about POPs sources in Belarus.

POP	Sources of POP	Notes
<b>Aldrin</b>	No	
<b>Dialdrin</b>	No	

<b>Heptachlor</b>	No	
<b>Endrin</b>	No	
<b>Chlordane</b>	No	
<b>Toxafene</b>	No	
<b>Mirex</b>	No	
<b>Hexachlorbenzene (HCB) as a pesticide</b>	No	
<b>Hexachlorbenzene (HCB) as an industrial chemical</b>	Used in pyrotechnic mixtures for defense industry, intermediate product in chemical industry.	
<b>DDT</b>	Different burial places.	According to official data, there are about 497 tones of DDT in different storages. And also there are some pesticide storages with unknown content that could possibly contain DDT.
<b>PCBs</b>	Old transformers, condensers produced during Soviet period, which contain PCBs; Burning of PCBs-contained waste; treatment of scrap metal; transport; some reservoirs could be sources of PCBs; paint production, especially industrial enterprise "Lakokraska".	Possibly, not all processes are mentioned here due to absence of the National POPs monitoring.
<b>PCDDs</b>	Chemical industry; metallurgy; production of building materials; fires; waste incineration (especially, illegal incineration in landfills); some other industrial process; some pesticides: 2,4D-amine salt, 2,4D-butyl ether, 2,4D-octyl ether, dialen.	Possibly, not all processes are mentioned here due to absence of the National POPs monitoring.
<b>PCDFs</b>	The same as PCDDs.	

## Levels of POPs

### PCDD/F's in Belarus:

#### Permitted levels

The permitted level of dioxins/furans has yet to be announced, but we might assume they wouldn't be higher than the standards for dioxins/furans in Russia:

Maximum permissible concentration, MPC of dioxins in air: 0,5 pg/m<sup>3</sup>;

The MPC level of dioxins (2,3,7,8-PCDD) in water (drinking, ground, and surface water): 20 pg/l.

#### Levels in food

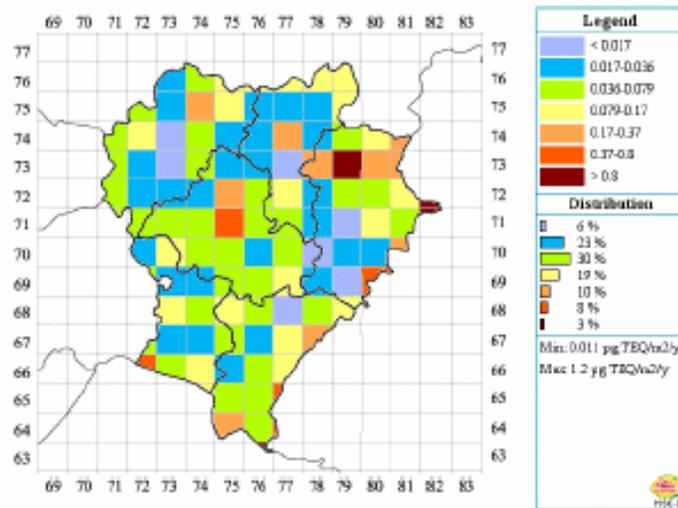
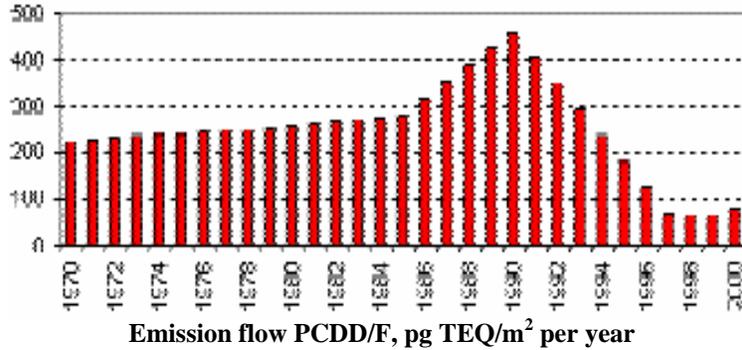
It's practically impossible to cite an acceptable or tolerable daily intake (TDI) content of dioxins and

furans in food products. Once again this is due to the failure of the government to develop a monitoring system for food products. The same situation exists for dioxin/furans in the environment.

This is because the Belarus government has not fully included dioxins/furans into a system of national monitoring so officially there are no data available on concrete dioxins/furans levels. However, we do have some data on emissions produced by Ministry of the Environment.

Dioxins/furans levels and emissions based on *theoretical* estimation data produced by Meteorological Synthesizing Centre – East, EMEP

[www.msceast.org](http://www.msceast.org)



The territory allocation of emission PCDD/F in 2000, pg TEQ/m<sup>2</sup> per year

Anthropogenic emission of PCDD/F, g TEQ per year (official data are bold)

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
107	94	81	68	55	42	29	<b>16</b>	<b>16</b>	<b>15</b>	<b>18</b>

## POPs pesticides in Belarus:

At present we have some data on levels of the following POPs pesticides: DDT, aldrin, and endrin. There is no data on levels of other POPs pesticides. Information on levels of DDT, aldrin, and Endrin is official data presented by the Ministry of the Environment. We don't have any independent information concerning these pesticides.

Data on Hexachlorbenzene (HCB) are presented separately, because it was used also as an industrial chemical.

### Levels of Pesticides

#### DDT

- Air: In the period of 1977-1989, the annual average level of DDT in the air was in the

range of 0,32-0,86 ng/m<sup>3</sup>, with a maximum of 16,0 ng/m<sup>3</sup>.

After 1990 the annual average level of DDT was 10 times less – 0,05 ng/m<sup>3</sup>, maximum 0,16 ng/m<sup>3</sup>.

- Water (near the places of pesticides burial): DDT level is 21-33 ng/l, maximum 68 ng/l.
- Soil (agricultural land): At present DDT is lacking in soil. Last time it was found in 1944, and the average level was about 0,0015 mkg/kg.
- Soil (near the places of pesticides burial): DDT level is about 4,6 mkg/kg.

#### Aldrin

- Water (near the places of pesticides burial): the level of aldrin is 7-17 ng/l.

## Endrin

- Water (near the places of pesticides burial): the level of endrin is 11-70 ng/l.

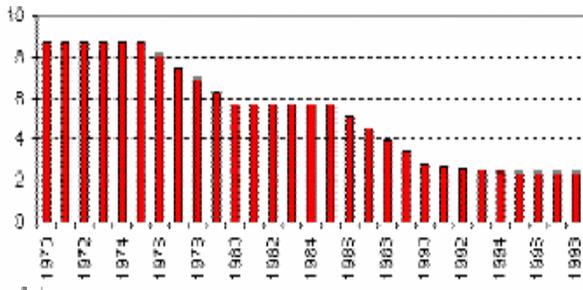
## HCB

### Permitted levels

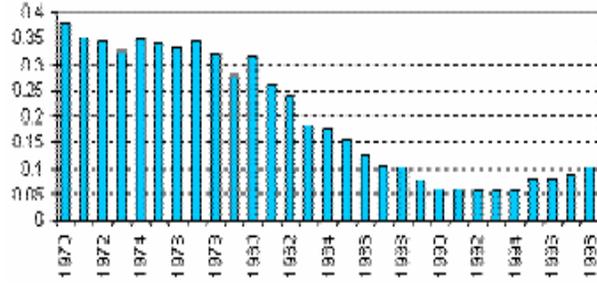
In Belarus the MPC level of HCB in the air of working area is 0,9 mg/m<sup>3</sup>. In water 0,5 mg/l.

### Levels

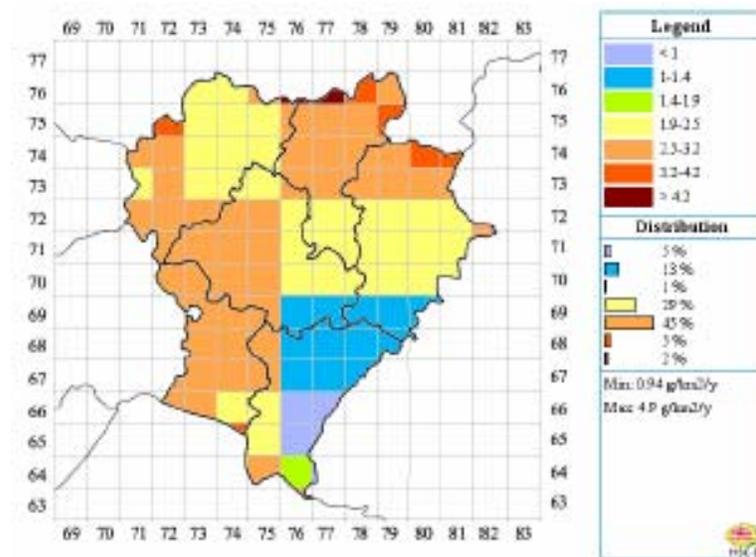
Officially there are no data on definite levels of HCB in Belarus. The data below about HCB was produced by Meteorological Synthesizing Centre – East, EMEP, [www.msceast.org](http://www.msceast.org)



Emission flow HCB, g/km<sup>2</sup> per year



Concentration of HCB in the air ng/m<sup>3</sup>



The territory allocation of emission HCB in 1998, g/km<sup>2</sup> per year

## PCBs

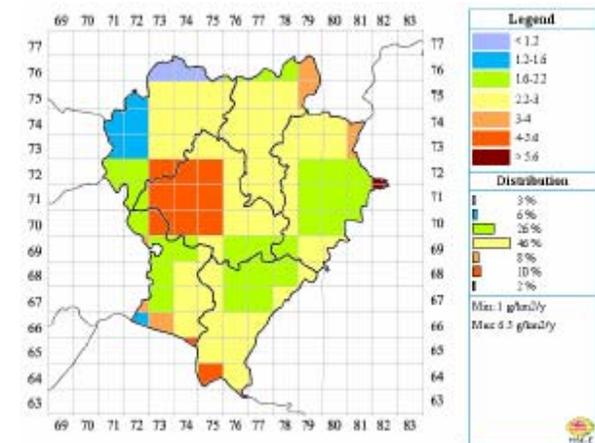
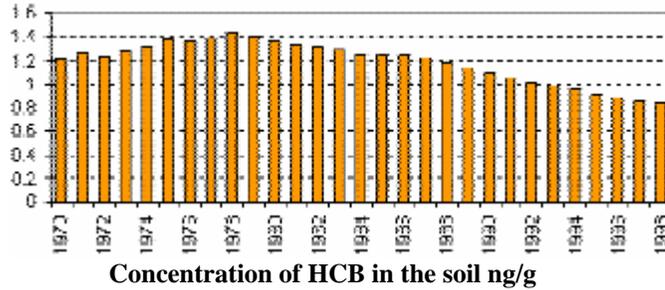
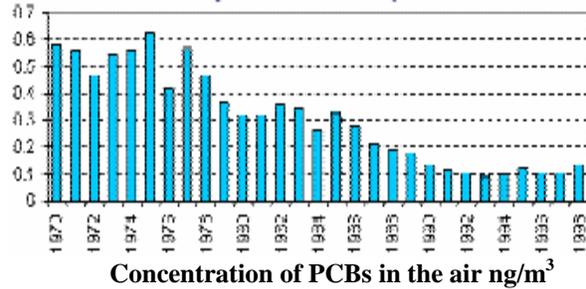
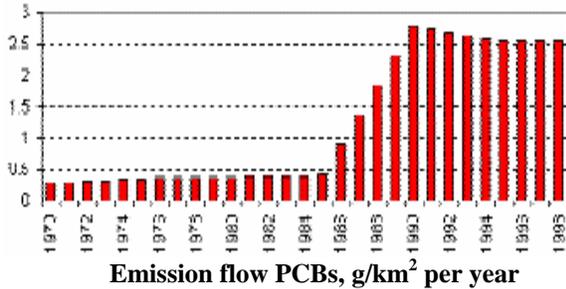
### Permitted levels

There are following MPC levels for PCBs in Belarus:

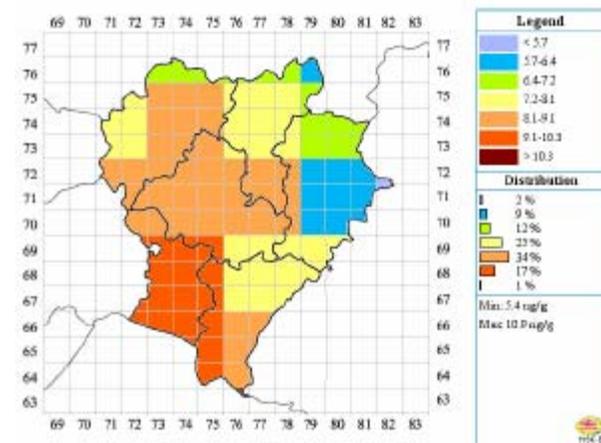
- MPC level for the air of working area is 1 mg/m<sup>3</sup>;
- MPC level (threechlorinedyfenil) for water 0,001 mg/l;
- MPC level for soil hasn't been developed yet, but the Russian MPS of 0,06 mg/kg, is used widely.

- Air (urban area): average level is 0,5-40 ng/m<sup>3</sup>;
- Air (rural area): average level is 0,002-2 ng/m<sup>3</sup>;
- Water: average level is 1-90 ng/l;
- Soil: No data available

The data below about PCBs was produced by Meteorological Synthesizing Centre – East, EMEP, [www.msceast.org](http://www.msceast.org)



The territory allocation of emissions of PCBs in 1998, g/km<sup>2</sup> per year



The territory allocation of annual average concentrations of PCBs in 1998, ng/g

**Total emissions, 2004**

<b>PCDD/Fs</b>	22.5
<b>HCB</b>	0.5
<b>PCBs</b>	0.5

Generally, it's necessary to underline that the data presented above is a result of theoretical modeling and cannot be compared with practical measurements. The reason is once again being the failure of the government to include PCDD/Fs, HCB and PCBs into a system of national monitoring due to lack of technical and financial resources.

**Damage caused by POPs**

Damage caused to humans and other species by POPs is well-documented and includes an acknowledged {ever-growing} list of effects. There are many examples in countries describing the far-reaching consequences of POPs impacts. Belarus can not present any example as a result of very strict policy of the national security

service during the Soviet period of Belarusian history. The question of POPs existing was referred to the questions of national security and under the control of KGB. At present no data about damage caused by POPs in Belarus (neither official nor non-official) is available for public viewing. The general population was unaware of the existence of POPs until only a few years ago.

## Laws currently regulating POPs

At present there is no specific legislation on POPs in Belarus, although some documents mention POPs issues briefly. The major documents available containing some information on POPs (and especially on POPs pesticides), are the following:

Legal/normative instrument	Responsible department	Category of regulated substances in response to POPs
Law of RB (Republic of Belarus) "About sanitary-epidemiological well-being of population", 12/05/2000	Ministry of Health Protection	Dangerous for people's health factors of the environment, including chemical substances
Law of RB "About industrial safety of dangerous enterprisers", 10/01/2000	Ministry of Emergency Situations	Emergency-dangerous chemical substances, including high-toxics
Law of RB "About Waste", 26/10/2000	Ministry of Natural Resources and Protection of the Environment (MoE)	Dangerous waste
Law of RB "About transportation of dangerous freights", 06/06/2001	Ministry of Transport and Communications	Emergency-dangerous chemical substances, including high-toxics
Law of RB "About quality and safety of food raw materials and food products for life and health of people", 29/06/2003	Ministry of Health Protection	Chemical substances which can be contained in food products and food raw materials.
Law RB "About protection of the environment", 17/07/2002	MoE	Chemical substances as potential pollutants for the environment
Law RB "About protection of atmospheric air", 10/07/1997	MoE	Discharges of chemical substances into atmospheric air
Water codex of RB, 15/07/1998	MoE	Discharges of chemical substances into water bodies.
National Strategy of Sustainable Development, 2004		Minimization of POPs problem in Belarus
Resolution of the Council of Ministers of RB "About perfection of the system of state hygienic regulation and registration chemical and biological substances...", # 1807, 14/12/2001	Ministry of Health Protection	Chemical and biological substances, including pesticides
Resolution of the Council of Ministers of RB "About ascertainment of ban and restriction on things transportation via custom boarder of RB", # 218, 18/03/1997	State Customs Committee of RB	Dangerous waste, toxic chemicals

- The List of Dangerous Chemicals (Approved by the Ministry of Health and the Ministry of Labor and Social Protection, March 19, 2002). According to this document, people working in some way with the chemicals from the list have to receive free milk. POPs are also in this list;
- Also there are more than 12 resolutions made by Ministry of the Environment that regulate the air pollution by dangerous chemical substances.

Undoubtedly, this regulation is absolutely insufficient for a successful solution of the POPs problem. Basically, concrete measures specifically targeting POPs are included only in National Strategy for Sustainable Development (NSSD 2020). NSSD contains practical recommendations on solutions to the POPs problem, including steps for chlororganic pesticides and PCBs. It's necessary to admit that all recommendations from NSSD concerning POPs issue were taken into account by Ministry of the Environment while preparations of NIP for Stockholm Convention. Other laws speak generally about waste issues, which could be

applied to POPs. This legislation practically means that POPs are under control. Despite the fact this legislation is seemingly adhered to by the companies and organizations dealing with waste and other processes related with POPs, we need to have legislation specifically on POPs.

According to information from unofficial sources such legislation will be prepared during 2005.

Also: there are two Resolutions of the Council of Ministers on Implementation of Stockholm Convention in Belarus: 26/12/2003 № 06/102-920 and 06/100-566.

Separately, in this report we will cover the legislation related to the accession and implementation of Stockholm Convention on POPs.

## **NGOs and POPs**

### **Awareness of POPs of NGOs and society**

There are a number of different non-governmental organizations in Belarus and about 100 work on environmental issues. Several years ago there were practically no NGOs working on POPs issues, but now there are several. These are notably:  
environmental group Foundation for Realization of Ideas (FRI) (Minsk),  
International Public Organization (IPO) Ekoprojekt (Minsk),  
IPO Ecosphere (Minsk),  
NGO Krynica (Molodechno),  
NGO Nerush (Baranovich),  
NGO Endo (Mogilev),  
Belarusian division of International Academy of Ecology (NGO).

There several local groups that work with issues related to POPs, (like waste and pesticides). One of leading NGOs working specifically on POPs and anti-toxic issues in Belarus is the environmental group Foundation for Realization of Ideas (FRI), a member of the International Persistent Organic Pollutants Elimination Network (IPEN). Also it has to be mentioned that there are several independent experts working on POPs problem, mainly from Belarusian Academy of Sciences.

Generally the current level of awareness among NGOs on POPs issues has to be described as inadequate. The reason for this is the absence of motivated activists actively involved in dealing with this issue/problem. Before accession of Belarus to Stockholm Convention, environmental NGOs, (and especially local groups) didn't have an effective tool for co-operation with the authorities in the field of POPs. The implementation of Stockholm Convention provides such a tool and it is

envisaged more NGOs will be involved in POPs and the problem they pose in Belarus.

The level of awareness among Belarusian society is absolutely unsatisfactory. The main reason is the insufficient level of information distribution about POPs problem. Mass media does practically nothing to present the information on problems related to chemical pollution and POPs.

One reason for this is possibly the media's quest for profit rather than acting as an information source for public. Also, as a result of the general public's lack of interest of issues relating to chemical contamination etc., the topic gets scant coverage.

Another reason of the lack of information through the media is journalists usually don't understand the POPs issue/problems themselves. Only a few of the biggest newspapers have specialist journalists working specifically on environmental issues. As a result, media channels' environmental articles are usually written by "ordinary" journalists.

Speaking generally about the coverage of environmental issues in the national media it is necessary to mention that usually this section (especially state-run ones) prefer not to criticise too heavily the authorities inaction on general environmental issues. The most common environmental topics include Chernobyl and radioactive pollution, household waste, environmental education, air pollution from transport, biodiversity.

In other words, they try to cover the topics which are familiar to the majority of population and not to touch "scientific" problems like POPs.

Another problem is a very low awareness level on POPs issues among decision makers, officials engaged in governmental organizations, and even in environmental-protection organizations. It seems the Ministry of the Environment doesn't pay a lot of attention to educating the officials on who the responsibility for environment protection rest.

### **NGO capacity on POPs**

The majority of NGOs simply don't have the resources or the man-power / capacity to work on POPs issues. Another problem is that a lot of environmental activists lack motivation on what they see as a complex "scientific" issue. So, before there can be a real involvement of NGOs into the process of implementation of Stockholm Convention, it is absolutely necessary to organize an educational campaign for environmental activists, especially for the members of local environmental groups.

From our point of view, we see this as an opportunity for the NGOs in Belarus to play a crucial role in helping to solve the POPs problem at a local level. Local knowledge is vital. Local groups are often more aware of the local situation and are in the unique position to be able to provide the authorities with information and

disseminate information about POPs and the Stockholm Convention among the local population, an activity the local authorities don't normally organize, especially in regions.

It is much easier for a NGO to organize a fruitful co-operation with local and regional authorities than to attempt doing it at national level and it is possible that some local environmental NGOs already have good relations with their local environmental authorities and local officials. These people are often ready for a good working collaboration with local NGOs.

NGOs have the ability to influence at the local level on the implementation process of Stockholm Convention, especially in "hot spot" regions.

NGOs can control the implementation of the scheme in their regions; they can propose some concrete activities to be implemented at a local level.

We believe it is necessary for the initiative for co-operation between NGOs and local authorities on the implementation of the Stockholm Convention should come from non-governmental sector. However, we also believe the successful implementation of the Stockholm Convention is possible only with the co-operation between the different sectors.

Speaking about activity on a national level, only a small number of NGOs currently have the capacity to work effectively on POPs issue on a national level. These are FRI, Ekoproject, and Ekosphere.

### **Current level of NGO communication and coordination (nationally, regionally, and internationally) on POPs**

The general level of NGOs communication and coordination in Belarus can only be considered as being poor. There are no strong environmental NGOs in Belarus at the present time. One of the reasons for this is during Soviet rule NGOs activity was prohibited. Practically all the NGOs in Belarus have been established during the last 10-15 years. Consequently they have little experience in public work, in contrast to their foreign colleagues.

It has also been noted that the authority's attitude to NGOs is far from ideal and one of the reasons why a lot of Belarusian environmental NGOs prefer to focus on very general issues, like environmental education or sustainable development thus avoiding working on environmental problems that may lead to a conflict with the authorities.

The communication situation with NGOs working on POPs issue is quite different and there is a good level of communication between these groups.

In 2004, the environmental group Foundation for Realization of Ideas created an electronic discussion

group *Greenbel*, which now serves as a communication point between environmental NGOs, including those working on POPs. Activists of NGOs, working on anti-toxic issues have regular meetings with other NGOs to exchange information.

It must be said that while the level of Belarusian NGOs communications on an international level is still poor, it can be seen to be improving, albeit slowly.

Currently only FRI and Ecosphere (among the NGOs dealing with POPs) have established productive co-operation and a regular exchange of information and expertise with foreign and international organizations acting with POPs issues.

### **POPs information produced and disseminated by NGOs before IPEP began**

The quantity of information about POPs produced and disseminated by NGOs before IPEP was insufficient. Several NGOs, including Ecoproject, Ecosphere, Nerush, Endo and some others produced a number of leaflets about POPs. In the frame of its anti-toxic campaign, FRI produced a number of information materials about POPs in general and the situation in Belarus in particular. These were disseminated among authorities, educational institutions, NGOs and local citizens. Some were used by authorities during preparation of a background document for accession of Belarus to the Stockholm Convention.

In early 2004, FRI also began publishing an independent environmental magazine *Dirty Dozen*. This focuses on chemical safety and POPs and is the only media focusing on this issue. Nowadays it is disseminated freely among a wide range of subscribers, including environmental NGOs, government officials, scientists, educational institutions, health care organizations and the wider media.

Another important action on POPs organized by NGOs before IPEP was the conduction of the first National Conference "Persistent Organic Pollutants in the Environment of Belarus". This was organized by Ecoproject and FRI in co-operation with Ministry of the Environment and the World Bank in 2003.

This conference became a meeting point for many environmental NGOs, scientists, and officials from different institutions. The most important result of the conference was the creation of a Petition to the President of Belarus and other authorities with the request to accept the Stockholm Convention. This petition was signed by a number of environmental NGOs and representatives from Academy of Science, Parliament and other official institutions. This conference and elaboration of the petition is an example of common work of Belarusian NGOs on POPs issue.

## NGOs, that are involved in the NIP process

As stated earlier there are three NGOs partly involved with the NIP process:

- Environmental group Foundation for Realization of Ideas (FRI) – member of IPEN;
- IPO Ecoproject;
- IPO Ecosphere – member of IPEN.

Unfortunately the participation of these NGOs in the NIP process is somewhat restricted because the Ministry of the Environment has decided not to include representatives of NGOs into the interdepartmental council responsible for the NIP. Consequently NGOs have no opportunity to participate in the process except indirectly, which is of course far from an ideal situation.

## Efforts to deal with POPs

POPs issue was first raised at an official level in Belarus in 2003. After the accession of Belarus to the Stockholm Convention, the Ministry of Natural Resources and Protection of the Environment of Belarus became a responsible governmental agency for the implementation of the Convention. It also coordinates the efforts of other official organizations dealing with POPs issues.

But, the main state body which realizes management of chemical substances is the Ministry of Economy of Belarus and its Main department of branches of fuel-energy complex, chemical, microbiological, and pharmaceutical industry and balances of fuel-energy resources.

The following organizations in Belarus are also responsible for POPs issues:

- Ministry of Health Protection;
- Ministry of Energy;
- Ministry of Economy;
- Ministry of Agriculture and Food;
- Ministry of Industry;
- Ministry of Communication;
- Ministry of Emergency Situations;
- Ministry of Foreign Relations;
- Ministry of Defense;
- Ministry of Building and Architecture;
- National Academy of Sciences;
- Belarus Railway;
- State organization “Belneftehim” (responsible for oil and chemistry issues in Belarus);
- State organization “Bellesbuprom” (responsible for forest and pulp-and-mill industry).

## Responsibilities for dealing with POPs (government organizations)

### Ministry of the Environment

- Implementation of the Stockholm Convention in Belarus;
- Coordination of work with POPs issue in Belarus;
- Development of monitoring system for POPs in Belarus;
- Organization of local investigation to clarify the situation with POPs levels in Belarus;
- Preparation of a background for legislation on POPs issue.

### Ministry of Agriculture and Food:

- Conduct an inventory of obsolete POPs pesticides (deadline: 01.07.04);
- Ensure the continuation of re-packaging of obsolete pesticides and the organization of their safe storage at special facilities (deadline: 01.01.05);
- Conduct local monitoring of the environment in places of disposal or stockpiles of obsolete pesticides (deadline: 01.01.05);
- Creation of an activity plan for prevention of pesticides migration from places of their disposal into environment (including ground and surface water, air, soil) (deadline: 01.11.04).

### Tasks for dealing with PCBs-contained equipment

- Conduct an inventory of PCBs-contained equipment and PCBs-contained wastes (01.09.04);
- Securing the safe running of acting PCBs-contained equipment (permanently);
- Develop a plan of action for the environmental-friendly storage of PCBs-contained waste (deadline: 01.10.04);
- In co-operation with the Ministry of the Environment create a list of PCBs objects for further inclusion into National Environment monitoring system (deadline: 01.09.04).

### Ministry of Health Protection:

- Develop a method of dioxins analyzing and PCBs in food products and drinking water (deadline:01.10.04);
- Conduct selective control of PCBs content in food products and drinking water (deadline: 01.01.05);

- Develop a monitoring scheme for PCBs control in food products and drinking water (deadline: 01.01.05).

It is difficult to predict at present how these activities will be realized. It should be mentioned that the level of co-operation between different ministries is far from ideal. Also, at present we know that some deadlines have already been exceeded. Another ‘alarm bell ringing’ is the very low level of co-operation between environmental NGOs and the mass media leading us to question how with such poor communication these activities will be realised?

## **Efforts of dealing with POPs (monitoring)**

At present POPs are not included into the system of national environmental monitoring in Belarus. The only exception is DDT. Levels of DDT in several agricultural places are measured regularly.

As written above, the Ministry of Environment, together with the Ministry of Health and some other organizations are responsible for the creation of a system of POPs monitoring, especially dioxins and PCBs in the environment.

The Ministry of Health is responsible for the organization of a monitoring system of dioxins and PCBs in food products and drinking water.

The implementation of any monitoring plan depends on input from different governmental bodies and it is necessary to solve some financial and technical problems.

There is no official information on when POPs will begin to be monitored, but possible the Ministry of Health will start some sampling control on dioxins and PCB in late and perhaps during 2005 a system of permanent monitoring will be launched.

Unfortunately, there is no information about how the Ministry of the Environment plans to publish the results of any monitoring. Most likely the data will be summarized and included into the Annual National Environmental Report, published by MoE. Maybe it will be possible for environmental NGOs to obtain more concrete results of monitoring? But that of course is a point to discuss with governmental officials.

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

Belarus accessed to Stockholm Convention in December 2003 with the signing of the Decree by the President of the Republic of Belarus. According to this Decree the Council of Ministers – Government of Belarus was designated to take measures for implementation of that Decree.

The same day (26.12.2003) the Council of Ministers issued instructions № 06/102-920 and № 06/100-566 on the functioning of the Ministry of the Environment within the framework of the implementation of the Stockholm Convention.

Almost three months later, (March 5, 2004) the Council of Ministers issued a Resolution № 237 about the implementation of the Stockholm Convention. According to this Resolution the Ministry of the Environment was defined as being:

- national coordinating centre, responsible for information exchange according to Stockholm Convention;
- state body responsible for implementation of Stockholm Convention.

The Ministry of the Environment was also given a commission to form a coordination council on the Stockholm Convention within three months.

So, Belarus had become a real part of the Stockholm Convention. Significant contribution to make this event happened was made by non-governmental environmental organizations from Belarus and abroad.

Given this contribution it is considered by many working in the field of POPs throughout Europe and beyond as unjust that representatives of environmental NGOs were not included into the coordination council on implementation of the convention. Thus, NGOs have only the slightest possibility to actively participate in the process by making recommendations for further dissemination among council members through non-official contacts. This of course limits their involvement and the public’s participation in the consultation process to a very unsatisfactory degree. The lack of civil society participation in the formulation of the NIP also runs counter to the Convention itself. Article 7 of the Stockholm Convention describes the obligations of Parties in developing their NIPs. The Convention requires consultation “...with national stakeholders, including women’s groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans.”

At present the National Implementation Plan is being developed by official experts from different ministries and scientific institutes. Because the draft of the NIP is not ready yet, the NGO’s and the public do not have detailed information on it progress. The basic activities in the framework of NIP are listed in the Section **Efforts to deal with POPs** of this report.

Unfortunately, there is no information on when the NIP will be officially released.

The official timeframe for the preparation of NIP is 2004-2006. Belarus got a grant from the GEF (implementing agency - World Bank) for the

preparation of NIP. The total budget is 564 450 USD. Note that the Guidelines of the Global Environment Facility (GEF) also reflect the importance of NGO participation in GEF-financed projects. In its policy on public involvement, the GEF states that “Effective public involvement is critical to the success of GEF-financed projects...making use of the skills, experiences and knowledge, in particular, of non-governmental organizations (NGOs), community and local groups, and the private sector in the design, implementation, and evaluation of project activities.”

We should also like to point out that the MoE and other responsible governmental organizations have not provided full information about the preparation process to the media and the environmental NGOs. Only some general information is accessible.

Consequently the process of preparation of NIP is going without full participation of the public and public interest groups in contrast to Article 7 of the Stockholm Convention and GEF funding policies.

## Public awareness activities

Public awareness activities on the POPs issue in Belarus have been poorly organized and what information there is available has mostly been provided by public interest groups like FRI.

The Ministry of the Environment and the majority of other official organizations involved in the implementation of Stockholm Convention and NIP preparation pay little or no attention to public awareness. They do not produce any information about the process of the implementation of the Convention, or about POPs and their effects on the environment and public health. However, they seem to be genuinely appreciative of the NGOs who organize public awareness campaigns.

At the time of writing we can say that practically all activity on raising public awareness on POPs in Belarus is being conducted by environmental non-governmental organizations. Unfortunately, as only a small number of groups are dealing with the issue the effectiveness of their activity isn't as high as they would wish. However, their efforts do highlight, especially in the regions, the chronic lack of environmental information on POPs in the country.

One example of a highly successful NGO public awareness effort is the publication of the environmental magazine *Dirty Dozen*. This is devoted to the problems of chemical pollution and POPs.

Yet another example of a successful public awareness effort is the outstanding environmental film “Invisible Danger”, produced by the Foundation for Realization of

Ideas in 2003. This film was the winner of the National Environmental Film Festival and widely distributed among different organization in Belarus consequently attracting public attention to the problem of POPs pollution through the media of art/film.

It's extremely important to reinforce the importance of a concerted public awareness effort on POPs in the near future in order to implement the Stockholm Convention effectively.

As an example of a planned NGO's activity on the implementation of the Stockholm Convention we would like to present some key points of a project “NGOs participation in implementation of Stockholm Convention on POPs in Belarus”, currently being prepared by FRI:

### Objectives of the project:

- To raise awareness among environmental NGOs activists on POPs issue;
- To involve regional and local community-based environmental NGOs in Belarus into the process of the implementation of Stockholm convention on persistent organic pollutants;
- To establish a framework for further co-operation between environmental NGOs and Government departments in the implementation of the Stockholm Convention;
- To disseminate information about POPs among different sectors of Belarusian society including the local level.

### Target groups:

- Local, regional, and national environmental NGOs;
- Local and regional authorities responsible for environmental protection and health;
- Local, regional, and national media organisations.

### Activities in the frame of the project:

1. Educational program, including the following:
  - trainings on Stockholm Convention and POPs for NGOs;
  - trainings on Stockholm Convention and POPs for authorities;
  - trainings on Stockholm Convention and POPs for mass media.
2. Co-operation program, including the following:
  - Round tables on Stockholm Convention implementation for NGOs, authorities and mass media;
  - Development of local strategies of co-operation between environment NGOs and authorities for successful implementation of Stockholm Convention;

- Presentation of these strategies to local authorities and their further approval;
  - Conduction of a national round table on Stockholm Convention implementation for NGOs, authorities and mass media;
  - Presentation of strategies for co-operation to Ministry of the Environment and other national authorities, responsible for implementation of the Stockholm Convention.
3. Informational program, including the following:
- Production of printed materials about Stockholm Convention and POPs for dissemination among specific target groups.

## **Recommendations on a solution to the POPs problem in Belarus Public interest NGO perspective**

The following recommendations are based on the results of discussions of activists working in environmental NGOs in Belarus and abroad.

From the viewpoint of environmental NGOs the following recommendations can be applied in order to solve the POPs problem in Belarus:

### **Key principles**

- Priority of the environment issue in taking the political and economic decisions on POPs;
- Priority of the health preservation of the present and future generations in Belarus and abroad from the negative impact of POPs;

### **Activities**

- To develop a legislative basis on POPs with regard to Belarusian conditions and international requirements;
- To make an inventory (locating and registering) of sites and sources of POPs in Belarus;
- To develop a database of sources of POPs;
- To locate POPs hot spots in Belarus, evaluate the level of danger and propose solutions;
- To carry out measures concerning regulations, prohibitions and environmentally-friendly liquidations of primary and secondary sources of POPs contamination;
- To utilize POPs, POPs contaminated equipment and POPs contaminated waste with the help of environmentally-friendly methods and technologies;

- To organize a monitoring system of POPs in the environment of Belarus;
- To organize a monitoring system of POPs in food products and drinking water;
- To organize technical support for POPs monitoring through equipping laboratories with modern devices of analytical control and the creation of new laboratories with highly qualified personnel;
- To develop a list of environmentally-friendly technologies for POPs elimination with regard to their effectiveness, economic suitability and possibility of use in the territory of Belarus;
- To support scientific research on POPs problem in Belarus for a better understanding of the problem and ways of finding solutions;
- To organize a program on rehabilitation of territories contaminated by different kinds of POPs;
- To organize a system of preventive measures regarding the safety of the workforce during the POPs-related work and the complex of medical and biological measures during the extraordinary situations (fires, explosions, floods, etc.);
- To start an informational and educational campaign on POPs and their impact on the environment and public health for population;
- To inform the population about the process of implementation of the Stockholm Convention;
- To create an informational centre on POPs problems.

## **Alternatives to POPs**

- **PCBs**
- Substitute materials, processes, and products have been developed to replace current uses of PCBs. Numerous alternatives are available.
- Cutting-edge non-incineration destruction technologies can eliminate PCBs, contain all residues, and minimize risk to workers and communities.

- **Dioxins**

Because there is already a large burden of dioxins in the global environment which will persist for generations, aggressive measures must be implemented if the exposure of the human population is to be significantly decreased.

Since all uses of chlorine and chlorinated organic chemicals are suspected of dioxin formation at one or more stages in their life cycle, the phase-out of dioxins necessitates the phase-out of all chlorine chemistry. The implementation of a programme to phase-out dioxin releases from industry should be based on the following principles: Zero means zero. Dioxin releases from

industry must be eliminated, not simply reduced. The current environmental burden will take years to decrease because of the persistence of these chemicals and their continual recycling throughout the environment. Given the known health threat, especially to the developing foetus and breast fed child, it would be wholly inappropriate for environmental regulatory bodies and governments to permit the release of any additional dioxin into the environment.

The use of pollution control devices, filters, treatment systems and disposal methods such as burning or burying simply shifts chemicals from one environmental medium to another or simply delays their release until a later date. Therefore to achieve zero releases of dioxin from industry, attention should be focused preventing the release of dioxin by changing the industrial processes and feed stocks that result in its formation.

In the largest dioxin producing sectors for which alternatives are available and feasible, action should be taken immediately. Those sectors that require longer implementation phases should be placed on time lines for dioxin elimination. Major sources of dioxins which need to be urgently considered include the following:

### *. Incineration and other combustion sources*

Burning waste and waste incineration are outdated non-environmentally friendly methods of dealing with waste. Indeed, the United Nations Environment Program estimates incineration to be responsible for 69% of the global dioxin contamination. The main alternative to incineration is a recycling program. In order to do so, three assumptions of waste management must be replaced with three new principles. Instead of assuming that society will produce ever-increasing quantities of waste, waste minimization must be given top priority. Discards must be segregated, so that each fraction can be optimally composted or recycled, instead of the current system of mixed-waste disposal. And industries must redesign their products for ease of end-of-life recycling.

Industrial process wastes tend not to be as mixed as municipal or health care wastes, but many of them are chemically hazardous. Clean Production is an approach to industrial redesign that seeks to eliminate hazardous byproducts, reduce overall pollution, and create products and subsequent wastes that are safe within ecological cycles. The principles of Clean Production are:

- the Precautionary Principle, which calls for precaution in the face of scientific uncertainty
- the Preventive Principle, which holds that it is better to prevent harm than remediate it
- the Democratic Principle, under which all those affected by a decision have the right to participate in decision-making

- and the Holistic Principle, which calls for an integrated life-cycle approach to environmental decision-making.

A variety of tools are being employed to implement Clean Production, from policy measures like right-to-know and tax reforms, to UN assistance to firms engaged in Clean Production.

Clean Production cannot answer the problem of existing stockpiles of hazardous wastes, which need some form of treatment besides incineration. A number of programs are developing technologies to address this problem. The standards that have evolved for such technologies are:

- high destruction efficiencies
- containment of all byproducts
- identification of all byproducts
- and no uncontrolled releases.

### *2. Pulp and paper*

Alternative technology is available in the pulp and paper industry for bleaching (Harriman & Capps 1989). Presently, oxygen based and other non-chlorine based bleaching methods are available and in increasing use (see eg Henricson 1993, Kukkonen 1993). Chlorine use in this industry is therefore possible to avoid and should be phased out.

### *3. PVC*

A PVC phase-out programme should be established with progressive reductions towards zero for the production and use of PVC. A ban on short life PVC uses such as packaging, toys and non-essential medical supplies should be implemented immediately. All uses of PVC in areas susceptible to fire and products subject to combustion based recycling should be prioritised in time lines for phase-out.

### *4. Chlorinated aromatic chemicals*

A phase-out programme should be established, especially concentrating on open uses of pesticides and substances such as 1,4-dichlorobenzene which are in globally widespread domestic use. Products which are associated with the production of highly dioxin-contaminated wastes, such as the chlorophenols, should be prioritised.

Phasing out all uses of chlorine and chlorinated organic chemicals involves significant economic and technological change that will require phased implementation. While immediate action should be given to priority sectors listed above, the following

dioxin producing sectors should be placed on time lines for phase-out, with schedules based on magnitude of releases. Those for which alternatives are available should be phased out rapidly and research for alternatives in other applications must be given a high priority.

### **1. Chlorinated solvents**

A timetable for the phase-out of production and use of all chlorinated solvents should be established. Alternatives for chlorinated chemicals such as intermediates, catalysts and speciality chemicals should be developed. Some chlorine-free alternatives to chlorohydrin and phosgene intermediates have already been developed (Robert 1994).

### **2. Chlorine-related pesticides**

A phase-out timetable should be initiated. The National Academy of Sciences reported that farmers can adopt organic farming methods, reduce or eliminate the use of synthetic pesticides and still enhance their profits and crop yields (NAS 1989).

### **3. Metallurgy**

The use of chlorine in high temperature metallurgy should be phased out.

### **4. Water and wastewater treatment**

Alternatives to using chlorination in drinking water and sewage include ultraviolet light, ozone, hydrogen peroxide, slow sand filtration and membrane filtration. Time lines for the implementation of chlorine-free water treatment methods should be set while insuring that adequate disinfection continues.

### **5. Remediation**

A substantial quantity of dioxin and PCB contaminated materials are present in landfills, sediments and stored industrial wastes. Closed-loop methods for degradation of these materials are in many cases highly developed (eg Jain 1993, review by Picardi et al. 1991) and could be implemented far more widely.

### **6. Economic implications**

Phasing-out dioxin sources will require substantial technological and economic transformation, as numerous products and processes are removed from production or converted to chlorine-free alternatives. Although this conversion will require substantial investment in some sectors, most of the alternative products and processes provide economic benefits in

terms of increased employment, improved efficiency, decreased expenses for chemical conversion procurement, waste disposal, liability and remediation, and the elimination of the social costs associated with damage to health and the environment.

Technological and economic transformation may be difficult to implement and it is essential that workers and communities should not bear the economic burden of these changes. The phasing-out of dioxins should therefore be guided by a democratic transition programme to protect, compensate and provide future opportunities for workers and communities affected by the conversion.

- **HCB**

- HCB can be phased out through the use of clean production systems, pollution prevention, and the use of substitute materials and processes.
- HCB-containing pesticides such as dacthal (DCPA), chlorothalonil, picloram, **3** pentachloronitrobenzene (PCNB) and pentachlorophenol (PCP), as well as those which are sometimes contaminated—atrazine, simazine, and lindane—can all be replaced using integrated pest management techniques.

Alternative materials and processes can be used in place of chlorinated solvents, the production of which generates HCB. For example dry cleaners—the largest users of perchloroethylene—can shift to multi-process wet cleaning. Instead of chlorinated solvents, this approach relies on a combination of heat, steam, vacuum, water, and natural soaps to clean clothing.

- **Pesticides**

The following alternative strategy could be implemented:

- To impose specific taxes on pesticides (on value, amount active ingredient and/or differentiated according to hazard);
- To introduce stricter registration and re-registration procedures, leading to restrictions and removal of less desirable products from the market;
- **E** To organise mandatory training and certification of applicators. More hazardous pesticides should be sold to certified applicators;
- To restrict the use of pesticides in sensitive areas (e.g. along streams).
- To make mandatory to keep records of pesticide applications and the environmental effects of pesticides;
- To strengthen the plant protection extension service on order to provide farmers with better decision support;

- To give specific support to ecological (organic) agriculture.
- **Alternatives for POPs disposal**

It is a common sense approach to prioritize the use of alternative non-combustion technologies for POPs disposal in order to avoid the creation of new resources and the unintentional releases of POPs into the environment. The Stockholm Convention on POPs fully supports this approach. As stated in article 5(c) of the Convention, parties to the Convention are obliged “to promote” processes and “to prevent” the formation and release of chemicals such as dioxins, furans, polychlorinated biphenyls (PCBs) and hexachlorobenzene (HCB). The alternative non-combustion technologies not only prevent the formation and unintentional releases of POPs but the capital cost and their operating costs are also considered to be far less compared to incinerators having state of the art pollution control devices and monitoring.

The following commercialized non-combustion technologies with operating plants are licensed to destroy high strength POPs stockpiles and possibly can be used in Belarus for the destruction of POPs stockpiles:

Gas Phase Chemical Reduction (GPCR),  
 Base Catalyzed Decomposition (BCD),  
 Sodium Reduction (SR),  
 and Super-Critical Water Oxidation Reduction (SCWO).

## **New POPs**

There is very little data available about the situation in Belarus about other dangerous chemicals. The situation has to change when the National profile on chemical substances begins. But at least several chemical substances in Belarus might be of interest in the framework of additions to the Stockholm Convention as new POPs, according to data available at the moment. The most important substance is the Hexachlorocyclohexan (Lindan).

Lindan was one of the most widely used pesticides in the Soviet Union. There were different trademarks of this pesticide. It was officially allowed to use Lindane in Belarus until 1996 but even after 1996 some quantity was used in Belarus. There are some cases when this pesticide is used unofficially on private farms.

According to official data, there are more than 25 tones of Lindane stored, but its likely that far more quantity is situated among unknown pesticide’s mixtures. There are thought to be many burial places of Lindane in Belarus.

Another group of substances that could (and is likely to be in the not to distant future) be included in the Stockholm convention is Brominated Flame Retardants

(BFRs). These substances are quite widely used in the national economy of Belarus. Unfortunately, there is no more detailed data available at the moment about situation with BFRs.

## **Resources on POPs**

As the work on POPs was started only recently, there is a chronic shortage of resources on POPs in Belarus.

National websites on POPs: N/A  
 National databases on POPs: N/A

## **Reports on POPs, published in Belarus:**

- Persistent Organic Pollutants. The sources and assessment of discharges, published by National Academy of Sciences, Minsk 2003
- Persistent Organic Pollutants in the Environment of Belarus, published by FRI and Ekoproject, Minsk 2003;
- Persistent Organic Pollutants, published by FRI, Minsk 2002
- Identification of sources and assessment of discharges of PCBs into environment, Minsk 2000.
- Dioxins: you have right to know, published by Ecosphere, Minsk 2001.

A number of leaflets, booklets, and other informational materials have been produced by different NGOs.

In late 2004, Belarus became a member of GEF Small Grants Program (Implementing agency GEF/UNDP). This program is devoted for support of non-governmental organizations in Belarus, working on GEF SGP priority areas, including POPs.

## **Academic and university institutions, working on POPs problem:**

- Belarusian scientific institute of sanitary and hygiene  
 220012, Minsk, Akademicheskaya str., 8.  
 Ph: +375 17 284 1370, fax: +37517 2840345
- Institute of usage of natural resources and ecology  
 220026, Minsk, Staroborisovski trakt, 10.  
 Ph: +375 17 264 2632
- Belarusian scientific-research centre “Ecology”  
 220050, Minsk, V. Horuzhei str., 31a. Ph: +375 17 234 8072
- Republican scientific-technical Centre of distance diagnostics of the environment

220012, Minsk, Surganova str., 2. Ph: +375 17 284 0923

- Belarus state technological university  
220050, Minsk, Sverdlova str., 13a. Ph: +375 17 226 1432
- Scientific-industrial republican unitary enterprise "Lotios"  
220034, Minsk, Z. Byaduli str., 10

## Academic researchers and specialists on POPs problem:

- Sergey Kakareka (Institute of usage of natural resources and ecology);
- Tamara Kuharchik (Institute of usage of natural resources and ecology);
- Valery Homich (Institute of usage of natural resources and ecology);
- Irina Zastenskaya (Republican Scientific Practical Center of Hygiene);
- Ludmila Rodina (Scientific-industrial republican unitary enterprise "Lotios").

## Laboratories on POPs:

Several state bodies, responsible for management and control of chemical substances have available laboratory infrastructure, which allows them to conduct analyses on POPs presence in different media:

- Laboratory of Republican Scientific Practical Centre of Hygiene (Minsk, Akademicheskaya str., 8);
- Laboratory of Ministry of Natural Resources and Protection of the Environment (Minsk, Kollektornaya str., 10);
- Laboratory of State Centre of Hygiene, Epidemiology, and Public Health (Minsk, Kazinca str, 50);
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