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Summary of the National Implementation Plan on persistent organic pollutants

Environmental pollution by dangerous substances such as persistent organic pollutants (POPs) is a problem that should be dealt with at global level. These chemical substances are persistent, toxic and are capable of bioaccumulate in the food chain, and therefore are hazardous to human health and environment. The POPs regulated under the Stockholm Convention are divided into three groups:

- pesticides: aldrin, dieldrin, endrin, chlordane, 1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane) (DDT), heptachlor, mirex, toxaphene, hexachlorobenzene (HCB);
- substances used in industry: polychlorinated Biphenyls (PCBs), HCB;
- substances from unintentional production: polychlorinated dibenzo-p-dioxins (dioxins), polychlorinated dibenzofurans (furans), PCBs, HCB.

Lithuania has signed two international agreements concerning persistent organic pollutants:

- Protocol of 1998 to the 1979 Convention on the Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Aarhus Protocol), signed on June 24, 1998;
- Stockholm Convention on Persistent Organic Pollutants, signed on May 17, 2002.

Article seven of the Stockholm Convention states that each Party shall develop and endeavour to implement a plan for the implementation of its obligations under this Convention. Lithuanian National Implementation Plan on Persistent Organic Pollutants (NIP) is prepared in line with the provisions of the Stockholm Convention on Persistent Organic Pollutants. Ministry of Environment will coordinate the implementation of the NIP.

The period for the implementation of the NIP action programme is from 2006 to 2015. The extension of the ten year period is not recommended due to the fact that scientific knowledge on POPs, their generation and accumulation sources is developing rapidly, the Convention itself and its supplementary documents are still being generated and developed, and it is likely that more new chemical substances will be included in the Stockholm Convention, and additional new measures may be necessary in order to restrict the use or releases of these new POPs substances.

The leading sources of information in the process of development of NIP were facts provided by different state institutions (ministries and their subordinate institutions or services), reports of previously conducted projects, legal acts and reports, prepared in conjunction with the project "Preparation of the National Implementation Plan on Persistent Organic Pollutants under Stockholm Convention".

During the development of the NIP, the general public and stakeholders have not merely been informed about the POPs, but they have actively taken part in the development of the plan. In the course of the public and other interested parties' information campaign on POPs the seminars for the public on POPs, for the undertakings – on PCBs and dioxins, for regional environmental protection departments – on PCBs were held and publications prepared (brochures for enterprises, academic institutions, healthcare establishments, the public, posters, flyers, stickers), TV and radio broadcasts on the exposure to health and environment were organized, the cycle of articles appeared in the newspapers.

During the seminar "Setting of Persistent Organic Pollutants Management Priorities" in March 2005 the drafters of NIP introduced the representatives of the society, enterprises, non-governmental and academic organizations and interested institutions to the present situation of POPs in Lithuania, the problems, priorities and means for solving problems. In the course of the preparation of the NIP not only the observations and proposals expressed during the seminar discussions were taken into consideration, but also the opinion of the interested parties expressed during the entire process of development of NIP was taken into account.

POPs pesticides

POP pesticides are extremely toxic and hazardous to environment and human health. Resulting from these findings, concerns over the use of those pesticides in Lithuania were expressed already in the seventies of last century. However, the first steps to combat the situation with accumulated stockpiles was taken in 1995 in the framework of the Lithuanian pesticide programme. During this programme 3156,6 tons were collected and stored in 27 regions in four years. In the course of implementation of the pesticide waste management programme in 2002-2005 about 3190 tons of obsolete pesticides, including POPs pesticides, were transported from different regions of the country for the disposal abroad. Nevertheless stockpiles of pesticide waste not included in Pesticide Waste Management Programme in the Republic of Lithuania for 2002-2005, is still present in Lithuania, and it still needs to be properly handled and disposed.

Originally, 954 storage depots with pesticides stored in them (including POPs groups) were identified in Lithuania. This soviet time relic was detected throughout the territory of Lithuania, in larger or smaller cities, in the sites of collective farms that used to be situated near lakes or rivers, and therefore they require great attention and environmental research, as they are potential sources of pollution, and may pose risk to the environment and human health.

Chemical analyses of soil and groundwater samples taken from 33 such potential sources of pollution revealed that the concentration of POPs pesticide residues, namely hexachlorobenzene (11 areas) and DDT (15 areas), exceeded the maximum concentration allowed in the soil and ground waters: this clearly shows the need to identify and manage sites polluted with POPs in order to avoid danger to environment and human health.

PCBs

Management of PCBs and PCB containing equipment in Lithuania is regulated by Polychlorinated Biphenyls and Polychlorinated Terphenils (PCBs/PCTs) Management Regulations. The enterprises that may have oil or equipment polluted with PCBs often lack information on PCBs means of detection, impact on human health and handling opportunities. Due to insufficient information and technical facilities the exact content of PCBs and PCB containing equipment cannot be determined, however, after having assessed the available information it can be estimated that 380-450 tons of PCB containing oil in 1100-1300 tons of equipment may currently be present in Lithuania. The possessors of PCB containing equipment must ensure its reduction and/or disposal as soon as possible, but no later than by December 31, 2010.

Previously, waste intended for Lithuanian landfills was disposed without stringent sorting and control requirements. Consequently, various PCB containing equipment ended in the landfills, as well as materials contaminated with PCBs such as oily rags, various surface processing materials containing PCBs used as their additive etc. PCB contamination is detected in the tested landfill leachate, therefore it is necessary to assess the quantities of these substances that load in the environment from the landfills and possible risk posed by them to environment and human health.

With the aim to secure proper implementation of the principles of 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 and proper treatment of hazardous waste, the penalties for the improper treatment of the hazardous waste (including POPs) in Lithuania were tighten up.

POPs from unintentional production

Dioxins and furans are generated and are released into the environment mainly as by-products from combustion of organic materials. Despite of considerable uncertainty in the inventory data for polychlorinated dioxins and furans, the activity categories "Production of energy and heating" and "Uncontrolled combustion processes" are likely to be the principal categories of sources of unintentional POPs pollution in Lithuania.

The general public has little information on the generation and release of dioxins and furans into environment from incineration of waste from private households. The reduction of release is slowed down by the economic situation and insufficiently developed public municipal waste management system, which at present does not cover all legal and natural persons in the territory of Lithuania.

Incineration of medical waste in Lithuania was as yet regarded very insignificant source of emission of dioxins and furans. Based on the collected information the quantities of generated medical waste appeared to be more eminent (1300 tons of medical waste generated in 2004 in Lithuania) than considered before. Therefore in reference to calculations it may be stated that incineration of medical waste is one of the major categories of environmental pollution by dioxins and furans in Lithuania.

To reduce emissions of unintentionally produced POPs from incineration of medical waste, the Medical waste management in health service organisations programme for 2006-2008 was developed. The measures identified in programme will lead to the reduction of risks from improper management of medical waste.

Objectives, means and outcomes of the NIP

The main objective of the NIP, which is the same as the objective of the Stockholm Convention, - having regard to the 15th principle on prevention of Rio Declaration on Environment and Development, - to protect human health and environment from POPs. The objectives of the NIP action programme:

- to identify problems associated with POPs and plan the measures for the improvement of situation;
- to reduce the hazard posed to environment and human health by the used POPs and POPs waste;
- to identify sites polluted with POPs, assess their level of pollution and handle them;
- to reduce the emission of POPs from unintentional production into the environment;
- to receive comprehensive information on the distribution of POPs in the environment and flora and fauna, foodstuffs;
- to disseminate knowledge on POPs and prevention of their generation to interested parties and to the society;
- to strengthen enforcement of POPs management.

According to the National Sustainable Development Strategy, approved by the decision No. 1160 of the Government of the Republic of Lithuania, dated September 11, 2003, the key objective of Lithuania's sustainable development is to reach the existing European Union average by 2020 based on the indicators like economic and social development, effectiveness of utilization of resources, and based on the indicators of environmental pollution – not to exceed the standards set by the European Union, comply with the requirements of international conventions restraining environmental pollution and its effects on world climate.

The provisions of the Stockholm Convention will be accomplished by implementing the measures set out in the NIP, and in particular:

- by improving Lithuanian institutional capacities;
- by safe handling of persistent organic pollutants;
- by developing the public municipal waste management system, in order to include all legal and natural persons in the territory of Lithuania;
- by preparing and implementing the management programme for sites polluted with POPs;
- by disseminating information on POPs to all interested parties and the public;
- by improving POPs monitoring carried out in Lithuania.

Following the implementation of the measures in the NIP on POPs the informational remedies enabling to ensure the protection of environment and human health against negative impact of POPs will be prepared, and safe and legally consistent management of POPs, of waste formed from POPs or of waste containing POPs will be ensured and the release to the environment of POPs from unintentional production will be reduced. The sites potentially polluted with POPs will be assessed in detail and the sites polluted with high levels of POPs substances will be remediated. The public and the interested parties will be provided with relevant information about POPs. Finally, the levels of POPs in the environment, biota, foodstuffs will be assessed.

Financing the implementation of the measures of the NIP action programme

The implementation of the measures anticipated in the NIP action programme will be financed from the appropriations of the Republic of Lithuania, intended for the implementing institutions based on the approved programmes, as well as from the European Union structural funds, Cohesion fund, Global Environment Facility, other national and international foundations or programmes, private funds. A total of 43 mln litas will be necessary in order to implement the measures enshrined in the NIP action programme. According to the Single Programming Document of the Republic of Lithuania for 2004-2006 the support of structural funds will be granted for strengthening of environmental monitoring and prevention, treatment of polluted sites, informing and education of the society. According to the Cohesion Fund Strategy for 2004-2006 the support will be granted for the creation of regional municipal waste management systems, management of hazardous waste, management of foretime pollution, including handling of old pesticides, and for the treatment of polluted sites and storage depots. About 35 mln litas could be allocated by these funds for the implementation of the measures of the NIP action programme.

Following Lithuania's ratification of the Stockholm Convention about 5 mln litas of support could be expected from the Global Environment Facility for managing of contaminated sites and equipment polluted with PCBs. The expenses of handling of equipment and oil polluted with PCBs, that will amount up to 5,5 mln litas, will be covered by the possessors of such equipment and oil, based on the principle "polluter pays". The development of the public municipal waste handling system will take place using the charges paid by the possessors of waste.

1. Preface

During the last decades the use of chemical substances and the importance of chemical industry has been significantly increasing in Lithuania and globally. As an unfortunate consequence more and more toxic substances are released into the environment. Many of the released substances have a negative effect on human health and environment. One such group of chemicals is Persistent Organic Pollutants (POPs). These substances cause great concern due to the following properties:

- they are extremely persistent, i.e. under normal conditions they remain undegraded in the environment for a long time;
- bioaccumulative properties, as these pollutants are better soluble in fat than in water, resulting in accumulation in fatty tissues of humans and other living organisms;
- they can "travel" in the air, water, migrating species (fish, birds); high concentration of these substances is detected in Arctic ecosystems, where these substances were never produced or used;
- they remain toxic for a very long time, alongside with other properties inherent to the substances of this group, and their long-term toxicity poses extremely great concern.

In 2001 a convention was adopted in Stockholm, the principal objective of which is to protect human health and environment against negative impact of POPs. The Convention regulates 12 extremely hazardous substances. The substances regulated under this international agreement may be classified in three groups:

- pesticides: aldrin, dieldrin, chlordane, 1,1,1-trichloro-2,2-bis (4-chlorophenyl)ethane) (DDT), heptachlor, mirex, toxaphene, hexachlorobenzene (HCB);
- industrial substances: polychlorinated biphenyls (PCBs), HCB;
- substances from unintentional production: polychlorinated dibenzo-p-dioxins (PCDD) and dibenzofurans (PCDF), PCBs, HCB.

Article seven of the Convention states that each Party shall:

- develop and endeavour to implement a plan for the implementation of its obligations under this Convention;
- transmit its implementation plan to the Conference of the Parties within two years of the date on which this Convention enters into force for it; and
- review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.

On May 17, 2002 the Government of the Republic of Lithuania signed the Stockholm Convention. One of the first steps of Lithuania in implementing the Convention requirements is the development of the POPs National implementation plan (NIP). The project supporting the development of the POPs NIP was signed on February 4, 2004. The project was funded by the Global Environment Facility and implemented through the United Nations Development Programme.

NIP is a comprehensive strategic document, which aims to create and improve POPs management system with the help of the principles of sustainable development and by protecting the environment and human health. NIP lays down Lithuania's actions in 2006-2015 for implementing the Convention requirements. The structure of the NIP is in line with the Convention

requirements and the NIP drafting guidance prepared by the United Nations Environment Programme.

NIP consists of three main parts:

- Assessment of current situation (information about POPs situation in Lithuania);
- Implementation strategy (NIP objectives, evaluation of effectiveness of implementation, implementation costs/funds);
- Action programme (action plans with measures).

The key information sources of the developed NIP consisted of information provided by different state institutions (ministries and their subordinate institutions and services), reports of the previously implemented projects, legal acts and reports of the Republic of Lithuania, prepared on the basis of the project "Preparation of a National Implementation Plan on Persistent Organic Pollutants under Stockholm Convention".

During the development of the NIP, the general public and stakeholders have not merely been informed about the POPs, but they have actively taken part in the development of the plan. During the seminar "Setting of Persistent Organic Pollutants Management Priorities" in March 2005 the drafters of the NIP introduced the representatives of the society, enterprises, non-governmental and academic organizations and interested institutions to the present situation of POPs in Lithuania, the problems, priorities and means for solving problems. In the course of the preparation of the NIP not only the observations and proposals expressed during the seminar discussions were taken into consideration, but also the opinion of the interested parties expressed during the entire process of development of the NIP was taken into account.

2. Evaluation of the current situation

2.1. General information about Lithuania

2.1.1. Geographical location and population

Lithuania is a small country, situated in Central Europe, by the Baltic Sea with a thousand years' of statehood traditions. From a regional point of view, Lithuania is commonly described as a Baltic state (size of the territory – 65 303 km²). The country borders with five neighbouring states. Lithuania has a northern border of 588 km with Latvia and eastern and southern border of 660 km with Belarus. In south-west Lithuania borders with Poland (the length of the border – 103 km) and the Russian Federation (273 km). More than ¾ of Lithuanian borders extend along rivers and lakes. The Lithuanian economic zone (about 6400 km²) in the Baltic Sea reaches the waters of Sweden. The length of Lithuanian seaside is 90,6 km.

Pic. 1. Map of Lithuania

Lithuania's landscape varies between hilly areas and flat plains. Lithuania has 816 rivers longer than 10 km and 2834 lakes exceeding the area of 0,5 ha. The longest river is the Nemunas river, the length of which in Lithuanian territory amounts up to 475 km. The largest lake is the Druksiai lake (42,26 km²). Geographically the territory is divided into clayey plains (55,2 % of the country's territory), sandy plains (17,8 %), hilly moraine highlands (21,2 %), seaside plains (2,2 %) and river valleys (3,6 % of the country's territory). According to the information of the State forestry accounts as to January 1, 2004, forest land occupies 2068,1 ha in Lithuania and the country's forest coverage is 31,7 %.

Against the common belief, Lithuania does have many mineral resources. 17 types of mineral products have been found and explored in our country. Oil, limestone, dolomite, sand, gravel, clay, chalk marl, turf, opoca and sapropel are all produced in Lithuania. Extremely important are the vast resources of construction materials and their raw materials that suffice not only for the development of city and road building, but also for cement and ceramic industry.

Lithuania has about 3,48 mln inhabitants, 67 % of them live in cities and 33 % - in rural areas. Lithuania is settled with people of different nationalities: Lithuanians (83,45 %), Polish (6,74), Russians (6,31), people of other nationalities (3,5 %). According to the Constitution of Lithuania, the national language is Lithuanian, which belongs to the group of Baltic languages within the family of Indo-European languages.

Vilnius is the capital of the Republic of Lithuania. It's the biggest city of the country with about 600 000 inhabitants. The historical centre of Vilnius, the old part of the city, is one of the largest in Europe (360 ha). It contains the most valuable historical and cultural heritage. The buildings in the old part of the city – about 1,5 thousand of them – have survived from very different ages and all architectural styles of Europe can be found here. Though Vilnius is called a city of baroque, you may also find gothic, renaissance, classicism buildings. The key accents of the city, representing the capital, are the Gediminas castle and the Arch-Cathedral square. They seem to be the gate to the historical centre of the metropolis. Due to its unique nature in 1994 the old town of Vilnius was included in the list of UNESCO World Cultural Heritage.

2.1.2. Political structure of the country

Lithuania is an independent democratic republic. Lithuanian Constitution protects natural human rights and freedoms, guarantees the right to choose any religion freely, to manifest it in public or in private, unite into political, national and social organizations and protect one's own rights and freedoms according to the laws. The sovereign will of Lithuanian citizens is expressed directly in referendums or indirectly – through the elected representatives of the authority. The public authority in the country is executed by the Parliament (Seimas), the President of the Republic of Lithuania, the Government and the Judiciary.

The President of the Republic is the head of the state. The President decides on the main issues of foreign policy, signs international treaties, appoints and recalls the representatives of the country's diplomacy in foreign countries and international organizations, appoints the Prime Minister with the consent of the Seimas, assists him in forming the Government, approves its composition, accepts the resignation of the Government, appoints and dismissed the ministers and other state officials upon the recommendation of the Prime Minister, proposes to the Seimas the candidates of the judges of the Supreme Court and of its chairman, appoints the judges and the chairman of the Court of Appeal, the judges and the chairmen of county and district courts, proposes to the Seimas the candidatures of the three judges and of the chairman of the Constitutional Court, as well as those of the Ombudsman, chairman of the board of the Bank of Lithuania, appoints the commandant of the Army and the head of the Security service upon the approval of the Seimas, is the chief head of the state armed forces, performs other important actions of public governance.

141 representative of the nation - member of the Seimas - elected directly and by secret ballot for a period of four years, is working in the Seimas of the Republic of Lithuania. The Seimas considers and adopts the amendments to the Constitution, issues laws, adopts decisions on referendums, appoints the elections of the President of the Republic of Lithuania, approves or disapproves the candidature of the Prime Minister of the Republic of Lithuania, proposed by the President of the Republic, as well as the Government programme submitted by the Prime Minister for approval, institutes or disestablishes the ministries of the Republic of Lithuania on the proposal of the Government, supervises the activities of the Government, appoints the judges of the Constitutional Court, of the Supreme Court and the chairmen of those courts, appoints and dismisses the Ombudsman, the chairman of the board of the Bank of Lithuania, sets the date of the municipality council elections, approves the state budget and supervises its implementation, fixes public taxes and other charges, ratifies and denounces international treaties of the Republic

of Lithuania, establishes the administrational division of the country, imposes direct governance, military and extraordinary situations, announces mobilization and adopts a decision on the use of military forces.

The Government of the Republic of Lithuania is composed of the Prime Minister and the ministers. The Government of the Republic of Lithuania administers the state affairs, safeguards the territorial immunity, guarantees the state's safety and public policy, implements the laws, the resolutions of the Seimas on the implementation of the laws and Presidential decrees, coordinates the activities of the ministries and other institutions subordinate to the Government, prepares the draft state budgets and organizes their implementation, submits the draft laws to the Seimas for consideration, makes contacts with foreign countries and international organizations, performs other duties afforded to the Government under the Constitution and the laws.

The Constitutional Court consists of 9 judges appointed for a period of nine years and for one term only. The Constitutional Court is renewed in one third every three years. The three judges are appointed by the Seimas from the candidates proposed by the President of the Republic, the Chairman of the Seimas and the chairman of the Supreme Court. The chairman of the Constitutional Court is appointed by the Seimas on the proposal of the President of the Republic from the judges of that Court. The judges of the Constitutional Court shall act independently of any public institution, individual or organization and shall follow the Constitution of the Republic of Lithuania exceptionally. The Law of the Courts of the Republic of Lithuania determines the formation and the competence of the courts. The courts with special powers may not be formed in Lithuania in the time of peace. Only the citizens of the Republic of Lithuania may become judges.

The territory of the country is divided into 10 districts. The districts consist of the sites belonging to 9 city, 43 regional and 8 newly formed municipalities. The territories of the municipalities are on their part divided into subdistricts. Each district has the county governor appointed by the Government; the main task of his administration is to guarantee the compliance with the Constitution and the laws in the territory of his district.

The local self-government is implemented by city and regional municipality councils. They are elected by secret ballot for a period of three years by the inhabitants of the administrative unit – citizens of Lithuania. The municipalities are headed by city or region mayors. They are elected by the members of the municipality councils.

2.1.3. Economic development

The years after the reinstatement of independence were very difficult and complicated in terms of development of Lithuania's economy. The country's economy developed in the transition of two economic systems – one governed in a centralized manner and the other by the free market. Year 1995 is considered the turning-point of the Lithuanian economy. Then was the first time following the reinstatement of statehood that the increase of the gross domestic product (GDP) in 3,3 % was recorded. The Russian economy crisis in 1998 made a considerable negative impact on Lithuanian economy, in the result of which the country's economy experienced a loss up to one milliard litas. This determined the decrease of GDP in 3,9 % in 1999, compared to the indicator of the previous year. However, this trend was short-term and in 2000 the GDP again increased by 3,3 %, compared to the previous year. During the last several years the economy of the country was experiencing rapid growth. In 2003 the GDP considerably increased (9,7 %). The growth of GDP, compared to the year 2003, was observed in 2004 as well. During that year the highest increase was observed in the types of activity related to production and consumption: industry, wholesale and retail sale. It could be noted that the unemployment rate also decreased during that period, as it dropped from 17 % (in 2001) to approximately 11 % (in 2004).

During the period of economic transformation the great part of it was occupied by unofficial economic activity that was estimated to 23,4 % of GDP. The expansion of unofficial economy in Lithuania is positively overcome by the development of eurointegration activities.

The industry sector was quite well developed in Lithuania, and prior to the reinstatement of independence almost a half of the GDP was created there. As this sector was closely integrated in the common economy of the former Soviet Union, it was the industry sector that experienced the deepest depression during the transitional period. After regaining the independence the restructuring of the economy took place during the first decade. The economic restructuring comprised of such important areas of reform as creation of private property and its legal establishment, reform of the administrative structure that ensured the rapid transition from the model of centralized planned governance towards the liberal market economy, and a new structural model of a holding, where small and medium-size businesses play a major role. Almost all essential legal prerequisites for the development of industry were created – nearly all enterprises were privatized, the legal basis regulating the activity of the enterprises was created and real competition was realized.

Compared to other European countries, the following industrial sectors are relatively more sizeable in the structure of Lithuanian industry:

- food and beverage industry;
- textile and clothing industry;
- refined petroleum products industry;
- industry of electronics and electrotechnics;
- wood processing branches and those using wood products.

The current Lithuanian energy economy was formed by 1990 and was oriented towards rapid growth rates of energy demand domestically and regionally. During the transitional period towards the market economy the consumption of energy decreased more than 50% due to the decline of economic activity. Nuclear energy is the most important source of energy in the country. It provides about one third of all the energy consumed in Lithuania. Other important sources of energy are petroleum products and natural gas. The use of coal has decreased more than 10 times after regaining of independence.

During the transitional period, the transport sector experienced the least transformational decline. The privatization and restructuring of the transport sector was carried out in two stages up to 2005. Following the completion of the restructuring and privatization, the state will own solely the transport infrastructure of strategic importance.

Urban development in Lithuania has its own specific features. Due to the historical traditions of the country and its economic development its urban network is not that dense as in Western European countries. Agriculture still remains extremely important in the country's economy. In the course of developing the urban network an initiative to strengthen 10 centres to perform regional functions was launched. It is important to note that 10 successfully developed centres with regional servicing functions now became the administrative centres of the new districts.

The last decade was characterized by comprehensive changes affecting Lithuanian rural areas. The decline of collective farming and the rapid formation of private agriculture has not only changed the agriculture production fundamentally, but it also affected the entire life of the dwellers in the rural areas.

Following the reinstatement of Lithuania's independence in 1991, laws on private land property were drafted. Following the privatization of collective and state farms in 1992, agricultural partnerships and other agricultural enterprises were formed alongside with the farmers' farms. The farm areas of the arable crops of the farmers expanded almost ten times during the period of independence. The agricultural production and the production structure also underwent rapid changes (the production of vegetables increased most). The changes affected not only the scale of agricultural production and the structure of the production, but also the quality and the amount of used fertilizers and other agricultural chemicals. For example, the average usage of pesticides for farmlands was 2,1 kg/ha in 1990, and merely 0,45 kg in 2000. Furthermore, the quality of the used pesticides improved greatly.

The establishment of market economy, the rapid processes of property restitution and privatization re-introduce the importance of protection of biodiversity, natural resources and of their rational utilization. This was especially in the forestry sector. Lithuania' s forest coverage increased in more than one percent during the period from 1993 to 2002 and was 31,2 %.

The varietal composition of the stands almost did not change during this period. Lithuanian forests are mostly occupied by pinewoods and fir woods; woods of black alders, white alders, asps, oaks and ashes comprise about 20 %. The other varieties of trees form one percent. A considerable part of the country's forests consists of mixed stands.

2.1.4. Environmental and sustainable development policy and legal regulation

On May 1, 2004 Lithuania became a full member of the European Union, and thus the country’s environmental policy is formed in the context of the European Union environmental policy. All the member states of the European Union, including Lithuania, are obliged to seek the introduction of the principles of sustainable development. According to the recommendations of the meeting of the European Council (Barcelona, 2002) and point 162 of the Implementation plan of the World Summit of Heads of State and Government in Johannesburg (in 2002) the National Sustainable Development Strategy was prepared and approved by the resolution of the Government. According to the same strategy the key objective of Lithuania's sustainable development is to reach the current average of the European Union by 2020 based on the indicators of economic and social development, utilization of resources and effectiveness, indicators of environmental pollution - not to exceed the standards allowed by the European Union, to comply with the requirements of international conventions restricting the environmental pollution and effects on global climate. The strategy anticipated the following priorities of Lithuania's sustainable development:

- moderate and sustainable development of branches of economy and of regional economy;
- reduction of social and economic differences between regions and inside the regions, by preserving their individuality;
- reduction of environmental impact of the leading branches of economy (transport, industry, energy, agriculture, accommodation, tourism);
- more effective use of natural resources and waste management;
- reduction of hazard to human health;
- combating of global climate change and its effects;
- better protection of biodiversity;
- better protection of the landscape and its rational management;
- raising the employment, reduction of unemployment, poverty and social exclusion;
- maintenance of Lithuania's cultural individuality.

The key objectives and priorities of environmental strategy of the Republic of Lithuania are defined in the State Environmental Strategy, approved by the resolution of the Seimas. These objectives are also reflected in the State Long-term Development Strategy, which identifies the following guidelines of Lithuania's long-term environmental development:

- implement the principle of sustainable development;
- precondition the rational use, protection and restoration of natural resources;
- ensure the proper quality of the environment according to the rules and standards of the European Union;
- raise the forest coverage of the country and the value of forest environmental protection.

The basis for the implementation of the priorities set out in State Long-term Development Strategy and other strategic documents lies in the Single Programming Document of the Republic of Lithuania for 2004-2006. This document and the Cohesion Fund Strategy for 2004-2006 anticipates investment guidelines in the sphere of environmental protection for 2004-2006. The EU structural support utilization strategy for 2007-2013 is prepared for the subsequent investment period. The legal basis for the implementation of Lithuanian environmental policy lies in the Law on Environmental Protection of the Republic of Lithuania adopted in 1992.

2.2. Persistent organic pollutants in Lithuania

2.2.1. Pesticides

Pesticides were introduced in Lithuania before the Second World War. According to the information from the Ministry of Agriculture, the amount of pesticides imported to Lithuania increased annually between 1961 and 1987, reaching a total volume of about 11 thousand of tons per year. In this regard it should be noted that the imports of pesticides were constantly higher than the use with resulting accumulation of pesticide stockpiles. In the years 1990-1999 the amount of pesticides used each year was decreasing, but later their use again increased. The table 1 below shows the quantity of imported pesticides in the country during the period of 1961-2003.

Table 1. Quantity of imported pesticides in 1961–2003

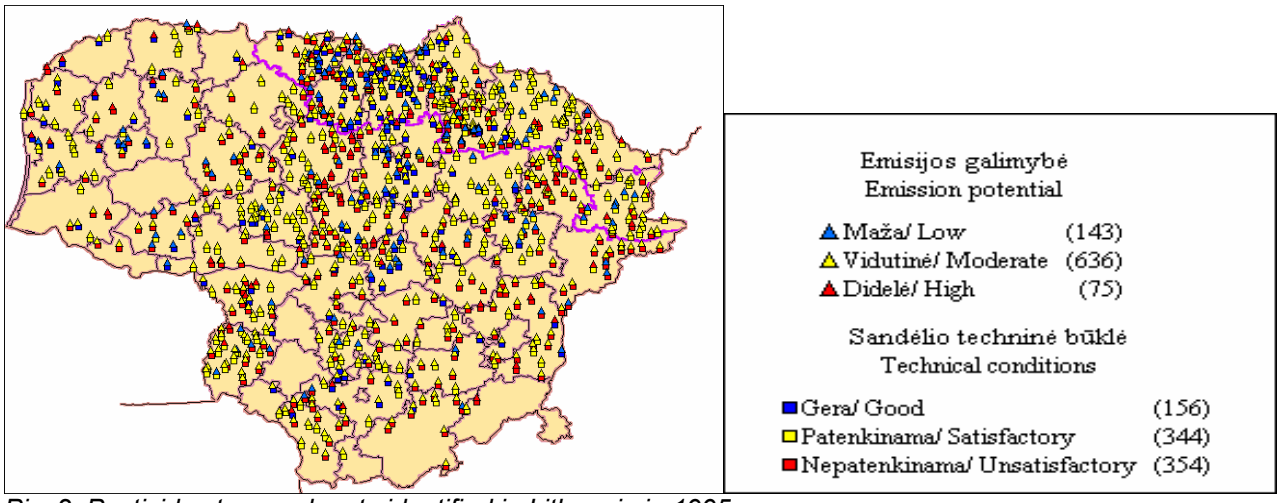
Year	1961	1971	1981	1986 - 1990	1991	1999	2000	2001	2002	2003
Quantity of imported pesticides (t)	1 937	3 975	5 912	10 000–11 000 (each year)	5 200	584	646,4	760,5	980	1 192

In the 1950-60's most of the pesticides sprayed in the country's fields were extremely toxic and very toxic. In 1970's, following the prohibition of use of DDT, very toxic but less stable pesticides started to prevail (DDT and similar pesticides were replaced with toxaphene, lindane). From 1987 the range of pesticides essentially changed and by 1991 the most popular pesticides used were of low and medium toxicity.

The use of most POPs pesticides was prohibited or restricted even in soviet times. The independent Lithuania inherited a dangerous heritage – large stockpiles of pesticide waste. A large part of the accumulated pesticides is of unknown composition. A part of these unknown stored pesticides are prohibited and persistent organic pesticides.

In 1995 all pesticide storage depots present in Lithuania were inventoried. More than 800 storage depots with a total of about 4500 tons of pesticides were found (see pic. 2 for geographical distribution). Unfortunately the measurements of the precise coordinates of the depots were not

taken during this inventory and no common inventory forms were drawn up. Consequently the information on the state of the storage depots and the quantity of substances stored therein was not comprehensive. In total, 954 of current or former pesticide storage depots have been inventoried in Lithuania.



Pic. 2. Pesticide storage depots identified in Lithuania in 1995.

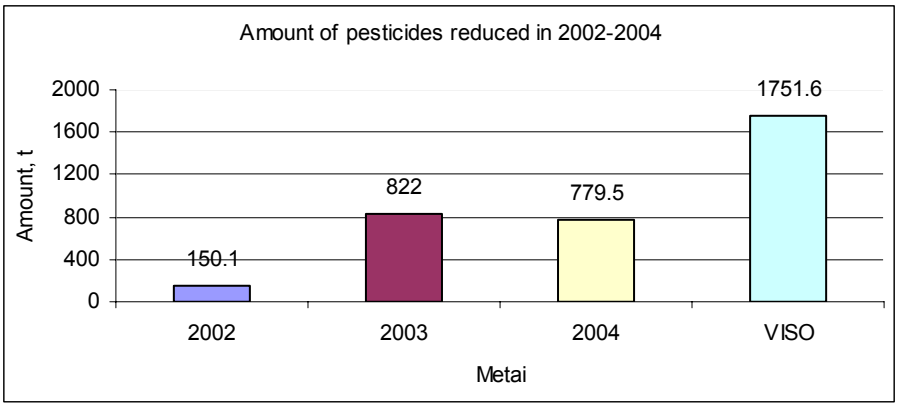
Following the first inventory of pesticide storage depots, the found stockpile was re-sorted, re-packed and transported to 44 central warehouses. Between 1996-1999 3257,9 tons of obsolete pesticides were managed (sorted, repackaged, weighted, taken into central warehouses) in 28 regions. 714 tons of unknown pesticides kept in 18 regional storage depots were identified by laboratory analysis. Report of JSC "Vilsuva" on the amounts of pesticides handled by August 1999 states that 9,438 tons of DDT were found, but the major part of it – 9,041 tons – was transported to the central warehouses. 1,572 tons of toxaphene, 0,483 tons of lindane and 0,21 tons of liquid DDT were also identified (see table 2).

Table 2. POPs pesticides identified in 1996-1999

POPs pesticide	DDT	DDT no.	Toxaphene	Lindane
Amount, t	9,438	0,21	1,572	0,483

More specific information on POPs pesticides was compiled by Dutch experts together with the specialists of the Ministry of Environment during the inventory conducted in 2001. The key objective of this research was to clarify the quantity of pesticides attributed to POPs group stored in the central warehouses of Lithuania and to identify their state. 29 storage depots out of 44 central warehouses were inventoried. The information on the persistent organic pesticides accumulated in the visited storage depots (about 11 tons of DDT and 1,577 tons of lindane were found) and on the state of those pesticides and their storage depots was collected.

The State Strategic Waste Management Plan establishes management of pesticide waste accumulated prior to the reinstatement of Lithuania's independence as a priority area action, to be tackled through the Pesticide Waste Management Programme in the Republic of Lithuania for 2002-2005. This programme foresees the management and disposal of about 2500 tons of accumulated pesticide waste and the cleaning up of 185 pesticide storage depots. The disposal of pesticides was planned to be undertaken at a domestic hazardous waste incineration facility, to be finalised in 2005. However, as the construction of this facility was delayed, 1751,6 tons of obsolete pesticides were exported for disposal to Germany in 2002-2004 (pic. 3).



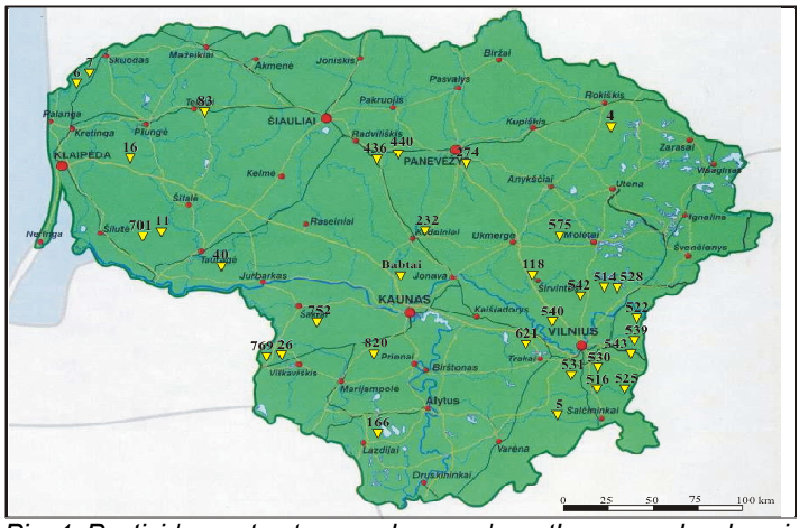
Pic. 3. The quantity of pesticides reduced in 2002-2004

The pesticide waste included in the Governmental pesticide waste management programme will also be exported to Germany and handled there in 2005. In total during the period of 2002-2005 about 3190 tons of old pesticides were transported to Germany for disposal. This included 7,65 tons of DDT that was stored in Marijampole district, in the storage depot owned by Kazlu Ruda municipality.

According to Ministry of Environment there are still stockpiles of pesticide waste not included in the Government pesticide waste management programme. This includes 950 tons of pesticide waste buried at Zigmantiskes, Bausiskes and Kretinga. 154,2 tons of old pesticide waste are also accumulated in two private companies. According to Lithuanian laws the liable for waste management are their possessors, and in the event if the possessor is not known, the respective municipality shall bear the responsibility for their management.

The remaining pesticide waste will be managed with the help of budgetary finances of Lithuania or international funds. A separate question is what to do with the 954 pesticides storage depots (including the ones of POPs group) identified. This soviet times relic was detected throughout Lithuanian territory, in larger or smaller cities, in the former sites of collective farms situated by lakes or rivers. Therefore these sites require great attention and environmental research due to their potential of environmental pollution.

A first priority list consisting of 33 pesticide storage sites proposed by Lithuanian Geology Service (LGS) was surveyed for their environmental pollution level (see pic. 4) in the framework of the project "Preparation of the national implementation plan on persistent organic pollutants under the Stockholm convention". The chemical analysis of the collected soil and groundwater samples revealed levels of POPs pesticides, hexachlorobenzene (11 sites) and DDT (15 sites), that exceed the maximum permissible concentration in the soil. Therefore, in order to avoid endangering the environment and human health, the polluted with POPs sites must be identified and managed so that the contamination will not spread. It should be stressed that larger number of samples needs to be collected and analysed, before solid conclusions and corresponding management response can be developed for each site.



Pic. 4. Pesticide waste storage places, where the survey level environmental pollution assessment was carried out

Lithuania still does not have a settled legal basis concerning the polluted sites and the persons responsible for management and for control have not been identified yet. Accordingly, in order to avoid further negative impact on the environment and health of individuals living close to polluted sites it is necessary to take urgent action: it is essential to create the legal basis, determine the level of pollution and undertake management action.

The legislation regulating the control and management of POPs pesticides in Lithuania is provided in table 3.

Table 3. Legislation regulating the control and management of POPs pesticides in Lithuania

No.	Title	Connection with POPs
1.	*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*	The manufacture, placing on the market and use of all the chemical substances from intentional production, regulated by the Convention (including POPs pesticides), except general exceptions, is prohibited
2.	*Resolution of the Government of the Republic of Lithuania On the implementation of European Parliament and Council Regulation No 850/2004 of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC*	The responsibilities of institutions in the process of implementation of the Regulation 850/2004/EC were determined
3.	*Resolution of the Government of the Republic of Lithuania concerning the supplement of the Resolution No. 388 of the Government of the Republic of Lithuania dated April 7, 2004 "On the Approval of Procedure for the Submission of Reports to European Commission Related to the Implementation of the European Union Environmental Sector Legislation and on the Supply of Information Necessary for the Drafting of Reports to the European Environmental Agency"*	Supplements the procedure for submitting reports to the European Commission with the section "Persistent organic pollutants" and names the institutions and information to be provided by the state institutions to the Ministry of Environment which produces persistent pollutant management reports to the European Commission
4.	*63:2004 "Prohibited Active Substances in Plant Protection Products"*	The active substances in plant protection products, the use and placing on the market of which is prohibited, are listed here.

No.	Title	Connection with POPs
5.	*Order No. 217 of the Minister of Environment of the Republic of Lithuania dated 14 July, 1999 „On waste management regulations"*	Stipulate the detailed procedure for waste collection, storage, transportation, use, disposal, record, identification, declaration, sorting, labelling and attribute POPs waste to hazardous waste
6.	*Resolution No. 519 of the Government of the Republic of Lithuania dated 12 April, 2002 "On State Strategic Waste Management Plan"*	The priority of hazardous waste management is distinguished – management of waste accumulated prior to the reinstatement of Lithuania's independence
7.	*Resolution No. 310 of the Government of the Republic of Lithuania dated 05 March, 2002 "On pesticide management programme in the Republic of Lithuania for 2002-2005"*	The programme foresees that prohibited and unsuitable pesticides shall be disposed of in an environmentally safe manner, and these works will be performed based on regulations determining the disposal of hazardous waste
8.	*Order No. 143 of the Minister of Environment of the Republic of Lithuania dated 29 March, 2002 „On pesticide waste management regulation"*	Sets out the requirements for pesticide waste management and reduction of pesticide waste storage depots
9.	*Council Regulation (EEC) No. 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community*	The transboundary shipment of hazardous and other waste will be allowed only if the exporting country is not technically capable, does not possess the necessary objects and capacity or places suitable for the management of waste in an effective and environmentally safe manner; the movement of such waste within the Community would be applied the procedures of prior written notification and written consent
10.	*Regulation (EC) No. 304/2003 of the European Parliament and of the Council of 28 January 2003 concerning the export and import of dangerous chemicals*	Chemical substances and products which include all the POPs listed in annexes A and B to the Stockholm convention, shall be applied the prohibition of export based on the provisions of the Convention

2.2.2. Polychlorinated biphenyls

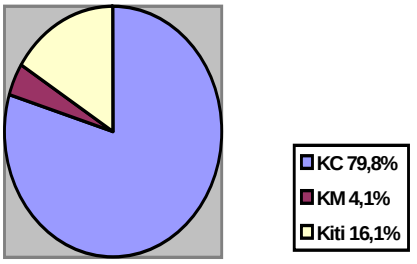
PCBs are the group of synthetic chlorinated hydrocarbons consisting of 209 congeners. The difference between these compounds lies in the number of chlorine atoms and in their position in the molecule. Due to their excellent technical characteristics these substances were very widely used in different sectors, consequently large quantities of PCBs were released in the environment.

Initially the attention to identify PCBs has been concentrating on closed applications: electric transformers and capacitors, where PCBs have been used for a considerable time and quantities. By controlling the operation and management of identified PCB containing equipment, releases of PCBs can be avoided and humans and the environment can be protected against negative effects of these pollutants.

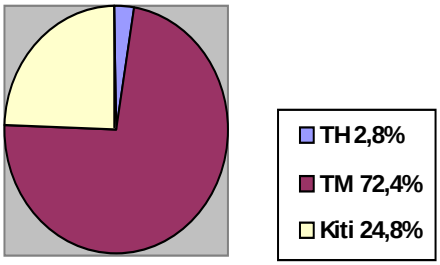
Though PCBs nor PCB containing equipment were ever manufactured in Lithuania, PCB containing transformers and capacitors have been found in the country. The major part of the equipment polluted with PCBs and currently used in Lithuania was manufactured in the former Soviet Union.

KC-type capacitors comprise the largest group of the PCB containing capacitors (see pic. 5 (a)). TM-type transformers (see pic. 5 (b)) and KM-type capacitors theoretically should not be contaminated with PCBs, but according to test results (see table 4) the amounts of PCBs exceeding the allowable limit value of 50 ppm are found in some types of that equipment (in particular transformers regularly topped up with oil). Other PCB containing equipment is mostly imported from Germany and Hungary (this equipment constitutes 16,1 % of the overall number of the identified capacitors and 24,8 % of the overall number of the identified transformers).

a)



b)



Pic. 5. Distribution by type of the equipment potentially polluted with PCBs and currently used in Lithuania (other – equipment manufactured outside the Soviet Union): a) capacitors b) transformers

Table 4. Types of KM-capacitors and TM-transformers, in which the concentration of PCBs detected in Lithuania is ≥ 50 mg/kg

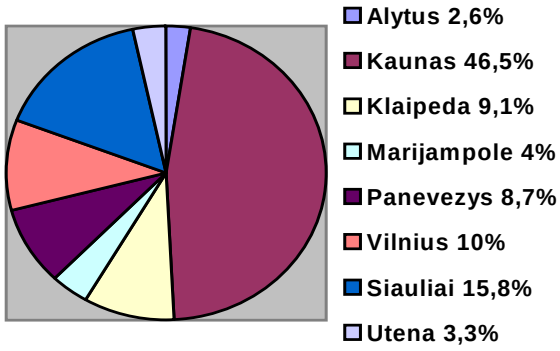
Type of equipment	Year of manufacture	Overall weight (kg)	Amount of oil (kg)	PCB concentration (mg/kg)
TMZ-1000/10	1965–1979	4 180–5 320	1 030–1 500	80–1 500
TM-1600/10	1968–1970	4 700–5 400	1 200–1 500	165–210
TMZ-1600/10	1979–1989	4 485–6 210	1 100–1 630	60–210
TMZ-630/10	1971–1976	2 825	750	50
TM-1000/10	1964	4 980	1 680	1 500
TAM-1000/10	1964	4 920	750	50
TMZ-1000/1084Y1	-	-	-	110
TM 630/10	-	-	-	90
TM 400/10-70	-	-	-	100
KM-0,38-13	1970	-	-	1700

Based on the conducted research the major possessors of equipment filled with PCB containing oil in Lithuania are water supply, petroleum processing and metal processing enterprises. The considerable amount of such equipment is still used in other sectors of industry. It still remains unclear how much equipment polluted with PCBs is used in the systems of supply and distribution of power energy. Major difficulties related to the identification of such equipment in the power energy supply system concern the fact that the enterprises managing these processes still have not fully inventoried the equipment, and there is even less information on the proportion of the equipment polluted with PCBs.

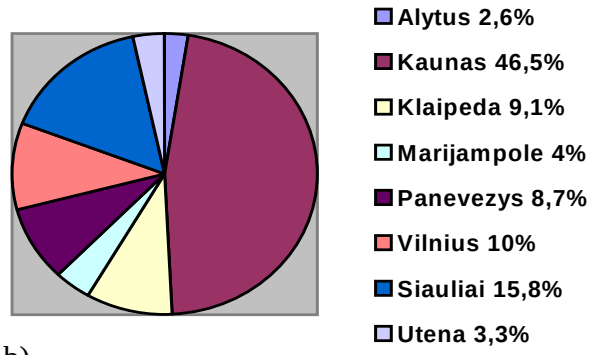
Additional significant quantities of PCB contaminated equipment and PCB containing oil are possible in power energy supply sector, as the major part of the equipment in this sector consists of TM-type transformers and KM-type capacitors (as referred above, despite of the fact that in

theory this type of equipment should not be contaminated with PCBs, the conducted analyses unveil cases where the concentration of PCBs is exceeding the allowable limit).

According to the information available, the largest part of the equipment in Lithuania is accumulated in Kaunas region (see pic. 6 (a)), but considering the quantities of PCB containing oil in the equipment it has been established that its amount is quite evenly distributed among the regions with major concentration of Lithuanian industrial enterprises (Kaunas, Panevezys, Vilnius and Siauliai regions) (see pic. 6 (b)). Distribution of the equipment by number of units does not match the distribution of the amount of oil, as some enterprises have accumulated more capacitors and other enterprises possess more transformers which are heavier than capacitors.



a)



b)

Pic. 6. Distribution by regions of PCB containing equipment identified in Lithuania: a) by number of units of the equipment; b) by amount of oil contained in the equipment

The major part of the equipment identified in Lithuania is still in operation. Therefore collection of information on this type of equipment is complicated. It may be estimated that the information about 70-80 % of PCB containing equipment is currently available. Taking all contributing factors referred above into consideration it can be estimated that 380-450 tons of PCB containing oil in 1100-1300 tons of equipment may be present in Lithuania.

Another problem causing difficulties in the process of identification of PCB containing equipment and PCBs in Lithuania is lack of information on such substances, their existence, methods of identification, legal requirements, means of management. This problem is relevant for the employees of the enterprises-possessors and their directors, but also for the representatives of supervisory and enforcement institutions.

With the aim to secure proper implementation of the principles of 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 and proper treatment of hazardous waste, the penalties for the improper treatment of the hazardous waste (including POPs) in Lithuania were tighten up.

Table 5. Concentration of PCBs in Kaunas, Siauliai and Silute landfill leachate

Place of sampling	**Concentration of PCBs in landfill leachate (µg/l)**
Kaunas city Lapiu landfill, sample No. 1	0,411
Kaunas city Lapiu landfill, sample No. 2	0,460
Silute landfill, sample No. 1	0,075
Silute landfill, sample No. 2	0,067
Siauliai city Kairiu landfill, sample No. 1	0,088
Siauliai city Kairiu landfill, sample No. 2	0,131

Previously, waste intended for Lithuanian landfills was disposed without sorting and control. Consequently, various PCB-containing equipment ended in the landfills, as well as materials contaminated with PCBs, such as of oily rags, various surface processing materials containing PCBs used as their additive etc. As a part of the project "Preparation of the National implementation plan on persistent organic pollutants under Stockholm Convention" samples of the leachate from three Lithuanian landfills were taken and PCBs analysis performed in them. The analysis of all the samples of landfill leachate showed the presence of PCBs in them (see table 5).

The landfill leachate analysis results show that PCBs may load in the environment from landfills. Therefore the amounts of PCBs loading in the environment from the landfills and the possible danger to the environment and human health must be assessed and management measures should be taken.

The Single Programming Document of the Republic of Lithuania for 2004-2006, which forms a basis for the reception of the support from the EU structural funds, notes that Lithuania has many polluted sites, particularly former military sites that have not been properly assessed for environmental pollution. Therefore the POPs NIP contains the measure "Identification and treatment of former pollution and sites ". The aim of this measure is to turn the polluted sites into treated sites (the priority is to be given to the sites of former military units). The final aim is to protect the inhabitants of adjacent areas by complying with European Union directives regulating the quality of ground and surface water. It is foreseen that during the implementation of this measure particular attention should be given to PCBs contamination, as the former military bases are a potential source of such pollution.

Legislation regulating the control and management of PCBs is listed in table 6.

Table 6. Legislation regulating the control and management of PCBs in Lithuania

No.	Title	Connection with POPs
1.	*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*	The production, placing on the market and use of all the chemical substances from intentional production, regulated by the Convention, except general exceptions, is prohibited
2.	*Resolution of the Government of the Republic of Lithuania concerning the implementation of European Parliament and Council Regulation No 850/2004 of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC*	The responsibilities of institutions in the process of implementation of the Regulation 850/2004/EC were determined
3.	*Resolution of the Government of the Republic of Lithuania concerning the supplement of the Resolution No. 388 of the Government of the Republic of Lithuania dated April 7, 2004 "On the Approval of Procedure for the Submission of Reports to European Commission Related to the Implementation of the European Union Environmental Sector Legislation and on the Supply of Information Necessary for the Drafting of Reports to the European Environmental Agency"*	Supplements the procedure for submitting reports to the European Commission with the section "Persistent organic pollutants" and names the institutions and information to be provided by the state institutions to the Ministry of Environment that produces persistent organic pollutant management reports to the European Commission
4.	*HN 36:2002 "Prohibited and Restricted Substances"*	Prohibition to place PCBs on the market and use PCBs with certain exceptions
5.	*Order No. 217 of the Minister of Environment of the Republic of Lithuania dated 14 July, 1999 „On Rules on Waste Management"*	Stipulate the detailed waste collection, storage, transportation, use, disposal, record, identification, declaration,

No.	Title	Connection with POPs
		sorting, labelling procedure and attribute POPs waste to hazardous waste
6.	*Order No. 473 of the Minister of Environment of the Republic of Lithuania dated 26 September, 2003 "On Rules on Polychlorinated biphenyls and polychlorinated terphenyls (PCBs/PCTs) management"*	Regulate PCBs management. Transposing the requirements of the Directive 96/59 on PCBs
7.	*Order No. 679 of the Minister of Environment of the Republic of Lithuania dated 19 December, 2003 "On Plan for the Decontamination and/or Disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls (PCB) and Equipment Containing PCB"*	
8.	*Council Regulation (EEC) No. 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community*	The transboundary shipment of hazardous and other waste will be allowed only if the exporting country is not technically capable, does not possess the necessary objects and capacity or places suitable for the management of waste in an effective and environmentally safe manner; the movement of such waste within the Community would be applied the procedures of prior written notification and written consent
9.	*Regulation (EC) No. 304/2003 of the European Parliament and of the Council of 28 January 2003 concerning the export and import of dangerous chemicals*	Chemical substances and products, which include all the POPs listed in annexes A and B to the Stockholm convention, shall be applied the prohibition of export based on the provisions of the Convention

2.2.3. Persistent organic pollutants from unintentional production

Dioxins and furans, (and also HCB and PCBs) form unintentionally and are released in the environment as by-products of incomplete combustion of chlorine containing organic substances.

Notwithstanding the fact that The procedure for submission of information on sources of pollution and determinative pollutants emitted (released) from them, requires the enterprises to provide information on the emission of dioxins, furans and HCB, none of the enterprises has provided such information. Further no measurements of traces of dioxins and furans in the soil, sediments, animals (from 2005 measurements of dioxins/furans in fish have been commenced) or plants are in fact performed in Lithuania.

Information on the emission of dioxins and furans to the environment in Lithuania may be obtained from three reports[1] based on theoretical approximation and estimation of dioxin and furan emissions to the environment according to the emission factors identified for each source of pollution. The assessment of the emitted dioxins and furans in all the three reports is based on the same methodology prepared by the United Nations Environment Programme; however, the three

[1] "Inventory of Dioxin and Furan Releases in Lithuania", final report prepared by the COWI A/S, Denmark, dk-TEKNIK ENERGY & ENVIRONMENT, Denmark, COWI Baltic, Lithuania, 2002.
„*Dioxin emissions in Candidate Countries", interim report prepared by the TNO*, Netherlands, 2004.
Report prepared by the Ministry of Environment of Lithuania according to the requirements of *UN Convention on Long-Range Transboundary Air Pollution*

reports show different results. That can be explained by different interpretation of the available information by the experts carrying out the studies. Further, the results are also influenced by the data availability and the variation in statistical data over time.

Following the evaluation of the inventory data and notwithstanding the high level of uncertainty, the activity categories "Energy production and heating" and "Uncontrolled processes of combustion" are the most likely to be the main categories of sources of pollution in Lithuania. The main sources of pollution of the activity category "Energy production and heating" (2,6 g I-TEQ/emission to air) are household heating and food preparation using biofuel. The key sources of pollution in the activity category "Uncontrolled combustion processes" (14 g I-TEQ/emission to air) are waste incineration in households and fires in the landfills. Incineration of hazardous waste in boiler-rooms may be assessed as secondary source of pollution due to the current scales of incineration and the control of incinerated waste.

The changes in the main emission categories during the last couple of years caused by economic and other changes in the country are negligible, while all the other categories form merely a very small part of the emissions. Therefore during the process of development of the NIP the regard was essentially had to the possible new sources of release into the environment of dioxins and furans in Lithuania (the amount of pollutants emitted in the result of incineration of medical waste was also specified) and to the assessment of their effects on the overall amount of emissions into the environment. As the country has no pulp production sites, this huge pollution source of aquatic environment is of no relevance to Lithuania. The major part of dioxins and furans loading in the products in Lithuania generate in the process of paper production. The uncontrolled combustion processes are the only identified source of influx of pollutants into the soil. It must be noted that dioxins and furans present in the waste can sooner or later cause the predicted or unpredicted influx of pollutants into the soil. The amount of pollutants loading in the waste is regarded as approximate to the amounts of pollutants emitted to the ambient air. The main sources of pollution to waste are the same as in case of emission of pollution to the ambient air, i.e. household heating and waste incineration.

One of the new sources the release from which has significantly increased during the last years is the incineration of animal bone waste. About 8 tons of bone meal are incinerated each day in the animal bone waste incineration installation set-up in Lithuania. Thus about 3000 tons of such waste is incinerated within a year. The bone incineration installation is provided with modern treatment installations, so the assessment of emission may be applied an average level emission factor (50 µg TEQ/t). Therefore the yearly emission constitutes 0,15 g I-TEQ/per year.

Other very important source of release of dioxins and furans to the environment is medical waste incineration. Until recently this source has been qualified in Lithuania as very insignificant. Based on the collected information the quantities of generated medical waste appeared to be more eminent (1300 tons of medical waste was generated in 2004 in Lithuania) than considered before. Unfortunately, the major part of this waste is incinerated in installations without appropriate treatment of emissions. Consequently, when estimating the emissions to the environment, the highest emission factor should be applied. This results in dioxin emissions to air of approximately 10 g I-TEQ/per year. Based on these calculations it can be concluded that incineration of medical waste is one of the main source categories of dioxin pollution in Lithuania.

The third source of emission of dioxins and furans not included in the previous assessments due to the lack of information is incineration of oils polluted with PCBs. According to information compiled during the PCBs inventories, oils polluted with are being incinerated. Though the PCBs concentration in oil does not exceed the maximum allowable concentration (50 ppm), the practice

causes considerable quantities of dioxin and furan release into the environment. The total of such emissions may amount to 10-20 g I-TEQ per year.

In summary it can be stated that from 38 to 48 g I-TEQ of dioxins and furans are released into the air in Lithuania each year (see table 7).

Table 7. Potential release of dioxins and furans from all sources in Lithuania by Main Categories

Main Category	**Potential release in g I-TEQ/year**							
	Air		**Water**		**Land**	**Product**		**Residues**
	Medium	**Range**	**Medium**	**Range**	**Medium**	**Medium**	**Range**	**Medium**
Waste incineration	**20,22?**	**10,15-30,00**						**1,14**
Hazardous waste incineration	15?	10,00-20,00						0,64
Medical/hospital waste incineration	5,07	0,15-10						0,5
Animal bone waste incineration	0,15							
Metal production	**0,09**	**0,003-0,03**	**?**		**?**	**?**		**0,24**
Foundries	0,008	0,003-0,03	?		?	?		0,01
Aluminum production	0,08		?		?	?		0,22
Thermal wire reclamation								
Power generation and heating	**2,6**	**1,1-5,2**						**0,88**
Fossil fuel power plants	0,08	0,03-0,16						0,004
Biomass power plants	0,01	0,007-0,03						0,004
Household heating and cooking - biomass	2,4	1,1-5						0,86
Domestic heating - fossil fuels	0,05	0,03-0,08						0,008
Production of mineral products	**0,38**	**0,07-0,52**	**?**		**?**	**?**		**0,06?**
Cement production	0,34	0,06-0,4			?	?		0,06
Lime production	0,002	0,001-0,01	?		?	?		?
Brick and ceramics production	0,02	0,002-0,05			?	?		?
Glass production	0,02	0,004-0,04			?	?		?
Asphalt mixing	0,001	0,001-0,01			?	?		
Transportation	**0,07**	**0,03-0,11**						**?**
Uncontrolled combustion processes	**14**	**1,3-32**	**?**		**0,3?**			**13?**
Fires/burnings - biomass	0,86	0,02-2,6	?		0,3			?
Landfill fires	5,5	0,68-10						
Uncontrolled waste burning	6,4	0,52-17	?		?			12
Accidental fires in vehicles and houses	1	0,06-2	?					1
Production of chemicals	**?**		**?**			**0,42**		**?**

Main Category	Potential release in g I-TEQ/year							
	Air		Water		Land	Product		Residues
	Medium	Range	Medium	Range	Medium	Medium	Range	Medium
and consumer goods								
Primary pulp and paper production						0,006		
Secondary paper production			?			0,41	0,08-0,61	?
Petroleum refineries	?							?
Miscellaneous	**0,08**	**0,01-0,16**			**?**	**0,00004?**	**<0,004**	**0,21?**
Drying of biomass	0,00004	<0,0004			?	0,00004	<0,004	?
Smoke houses	0,08	0,01-0,16			?	?		0,21
Tobacco smoking	0,0007	<0,001						
Disposal/landfilling			**0,1?**	**0,04-0,34**		**0,02**	**0,005-0,11**	**3,1**
Landfill leachate								
Sewage/sewage treatment			0,1	0,04-0,34				3,1
Composting			?			0,02	0,005-0,11	
Hot spots	**?**		**?**		**?**			
Total	**38?**	**12,7-68**	**0,1?**	**0,04-0,34**	**0,3?**	**0,43?**	**0,09-0,72**	**18?**

In addition to the information available on the possible release of dioxins and furans to the environment in Lithuania, it is important to note another possible source of pollution of those substances – they are wooden railway sleepers, of which about 60 to 80 thousand units (4000-6000 tons) are taken out of use in Lithuania each year. According to the applied requirements these sleepers may be used for about 20 years, but the major part of them serve even longer and currently Lithuanian railway performs the replacement works of the railway sleepers made in 1970-1980.

At present there is no exact information available on the type of substances with which the railway sleepers used in Lithuania are polluted. The probability that the railway sleepers used in Lithuania are impregnated with PCB is low (based on the references to the materials used for impregnation no PCB components were present in impregnation mixtures), but yet the possibility of potential pollution of railway sleepers with PCB may not be excluded. In such circumstances the waste should be considered as hazardous waste and the release of dioxins and furans into the environment would increase.

The legislation regulating the reduction and control of persistent organic pollutants from unintentional production in Lithuania is provided in table 8.

Table 8. Legislation regulating the reduction and control of persistent organic pollutants from unintentional production in Lithuania

No.	Title	Connection with POPs
1.	*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*	It requires that in two years following coming into force of the Regulation the member states perform the inventory of sources of PCDD/F, HCB, PCBs and PAH release to the air, water and soil. The means of detection, description and reduction of such release should be listed in the national implementation plans, which should accordingly be drafted according to the Convention

No.	Title	Connection with POPs
		requirements
2.	*Resolution of the Government of the Republic of Lithuania concerning the implementation of European Parliament and Council Regulation No 850/2004 of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC*	The responsibilities of institutions in the process of implementation of the Regulation 850/2004/EC were determined
3.	*Order No. 80 of the Minister of Environment of the Republic of Lithuania dated 27 February, 2002 „On regulations for the Issuance, Renewal and Repeal of Permits of Integrated Pollution Prevention and Control"*	*Based on Directive 96/61/EC.* By issuing the IPPC permit to enterprises involved in at least one of the type of activities listed in annex 1 to the IPPC regulations the limit values of pollutants are determined according to the informational document of "best available techniques" of manufacture prepared by the European Union for a certain type of activity. Annex 1 to the regulations encompasses the key fixed sources of POPs pollution.
4.	*Order No. 699 of the Minister of Environment of the Republic of Lithuania dated 31 December, 2002 „Environmental Requirements for Waste Incineration"*	Determine conditions of operation, limit values of released pollutants, including dioxins and furans and technical requirements for all enterprises operating or planning the operation of waste incineration installations or installations of integrated incineration attributed to main generation sources of POPs from unintentional production
5.	*Order No. 136 of the Minister of Environment of the Republic of Lithuania dated 27 March, 2002 "Procedure for the submission of information on sources of pollution and basic pollutants emitted (released) from them"*	Economic operators, the economic activity of which falls under the list of types of economic activity contained in annex 1 to the regulations for issuing, renewal and repeal of permits of integrated pollution prevention and control, shall be obliged to submit reports on the pollutants emitted to the air and water, the limit values of which are exceeded.

2.3. Review of Lithuanian legal basis regulating persistent organic pollutants

2.3.1. Prohibited and restricted chemical substances

Law on Chemical Substances and Preparations states that the use and placing on the market of chemical substances and preparations that are proved by scientific research and approved by international practice to be hazardous to human health and environment, may be prohibited or restricted.

The use and placing on the market of plant protection products, which contain prohibited or restricted active substances are regulated by Lithuanian hygiene standard HN 63:2004 "Prohibited Active Substances in Plant Protection Products". The prohibition of placing on the market and use of PCBs with certain exceptions is stipulated in Lithuanian hygiene standard HN 36:2002 "Prohibited and Restricted Substances".

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 (Regulation 850/2004/EC) prohibits the production, supply to the market and use of all the chemical substances from intentional production regulated by the Convention, save general exceptions. Regulation 850/2004/EC provides no exceptions for eight chemical substances (aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene), even if their application is provided by the Convention, i.e. Regulation 850/2004/EC determines more stringent requirements than the international agreement on POPs. Lithuanian legal provisions are in full compliance with the Convention requirements on the prohibitions and restrictions of POPs chemicals.

2.3.2. Regulation and assessment of available and new chemical substances

Regulation 850/2004/EC requires the member states and the Commission to take account of the POPs criteria provided by the Convention through assessment and regulation systems of the available and new chemical substances and pesticides, as well as to take appropriate measures for the control of the available chemical substances and pesticides and prevent the production, supply to the market and use of new chemical substances and pesticides that exhibit POPs characteristics.

Several systems of assessment and regulation of available and new chemical substances and pesticides are currently applicable in Lithuania, regulated by the following legislation:

- Law on Chemical Substances and Preparations provides that the enterprises, before supplying for the first time the new chemical substance to the market must notify it to the institution authorized by the Ministry of Environment. The notification procedure on new substances placed on the market, the extent of the documents to be provided, requirements for submission of additional information on those substances, conditions for placing on the market of those substances, the rights and obligations of the notifying person and of the competent Lithuanian institution are regulated by the Notification Procedure on the New Chemical Substances Placed on the Market. This procedure does not apply to biocidal and plant protection products regulated by other legislation. Procedure for Assessment of the Risks Posed by Chemical Substances to Human Health and Environment determines the general principles and requirements of assessment of the risk posed by new and available chemical substances to human health and environment.
- Law on Plant Protection provides that only registered means of plant protection may be produced, imported, sold, stored and used in the Republic of Lithuania. The registration of plant protection products must take place in compliance with the Regulations for Registration of Plant Protection Products Containing New Active Substances and Regulations for Registration of Plant Protection Products Containing Active Substances Included in the List of Active Substances. The purpose of these regulations is to establish the registration procedures for plant protection products, the active substances of which are included in the List of Active Substances that May be Contained in Plant Protection Products. The assessment of each of the active substance must take place in accordance with the Regulations for the Assessment of Plant Protection Products and Adoption of the Decisions On Their Registration.
- Regulations for Authorization and Registration of Biocides allow the production and supply to Lithuanian market of biocides that have been authorized or registered. These regulations define the principles for authorization and registration of biocides, but the consistent authorization and registration system for biocides is established in Regulations for Authorization and Registration of Biocides. These regulations also provide the requirements and conditions for authorization, registration and production permits of biocides.

Lithuanian legal basis fully complies with the Convention requirements to take account of the POPs criteria provided in the Stockholm Convention through the assessment and regulation systems of the available and new chemical substances and pesticides and to take up the appropriate measures for the control of chemical substances and pesticides and prevent the production, supply to the market and use of new chemical substances and new pesticides that exhibit POPs characteristics.

2.3.3. Prohibition of import and export

Regulation (EC) No. 304/2003 of the European Parliament and of the Council of 28 January 2003 concerning the export and import of dangerous chemicals transposing the provisions of Rotterdam convention into the European Community provides that prohibition of export shall be applied to chemical substances and products listed in annex V, which include all the POPs listed in annexes A and B to the Convention.

The Hazardous Chemical Substances and Preparations Export and Import Procedure prohibits the import to Lithuanian territory of chemical substances and preparations and products intended for use in Lithuania, listed in annex V to the Regulations 304/2003/EC, which includes all POPs contained in annexes A and B to the Convention according to the provisions of that Convention.

2.3.4. Handling and transportation of accumulated stockpiles and waste

The Law on Waste Management stipulates the basic provisions for waste management in Lithuania. The Waste Management Regulations specify the detailed procedure for collection, storage, transportation, use, disposal, record, identification, declaration, sorting, labelling of waste and attributes POPs waste to hazardous waste.

The basic provisions of the Convention on the management of accumulated stockpiles and waste are transposed into Lithuanian legislation through Regulation 850/2004/EC. The regulation requires that the accumulated stockpiles of prohibited chemical substances be managed as waste by means indicated in part 1 of annex V, and information on accumulated stockpiles of chemical substances exceeding 50 kg, the use of which is still allowed, shall be provided to the competent institutions of the member states by June 2005.

Member states shall monitor the reported stockpiles. In addition, it is required that the manufacturers and waste keepers avoid the contamination of waste by POPs. The regulation prohibits the means of disposal or use, enabling the use, recycling, recovery or re-use of chemical substances listed in annex IV (i.e. all the POPs regulated by the Convention) with certain exceptions, where the concentration limits of pollutants in waste are not exceeded, or in other cases provided by the member states or their competent authorities, in the event of waste management by means listed in part 2 of annex V.

The implementation of provisions of international agreements on POPs in the sphere of waste management in Lithuania also takes place by means of legislation regulating pesticide waste management and disposal of PCBs:

- The State Strategic Waste Management Plan distinguishes the priority in the sphere of management of hazardous waste – management of pesticide waste accumulated prior to the reinstatement of Lithuania's independence, which is implemented through the Pesticide Management Programme in the Republic of Lithuania for 2002-2005. The programme provides for the disposal of prohibited and obsolete pesticides in an environmentally safe

manner. The Pesticide Management Regulation determines the requirements for cleaning-up and remediation of pesticide waste storage depots. The regulation states that mixed, prohibited pesticides and pesticides unsuitable for use shall be disposed in an environmentally safe manner.

- The management of PCBs is regulated by Polychlorinated Biphenyls and Polychlorinated Terphenyls (PCBs/PCTs) Management Regulations and Basic Provisions for the Plan of Reduction and/or Disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls (PCBs/PCTs) and PCB Containing Equipment and Plan for the Reduction and/or Disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls and PCB Containing Equipment. The regulations provide that the possessors of PCB containing equipment indicated in point 4 of those Regulations shall ensure the reduction of such equipment as soon as possible, but no later than by December 31, 2010.

The transportation of POPs, waste containing POPs or waste contaminated with POPs is regulated by Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and decision III/1 of the Conference of the Parties to the Convention (amendment to the Basel Convention), Council Regulation (EEC) No. 259/93 of 1 February 1993 on the Supervision and Control of Shipments of Waste within, into and out of the European Community and the Particulars on the Procedure of Supervision and Control of Shipments of Waste within, into and out of the European Community. Basel Convention requires that the parties apply appropriate measures to ensure that the transboundary movement of hazardous and other waste is allowed only in cases if the state of export does not have the technical capacity and the necessary facilities, capacity or suitable disposal sites in order to dispose of the wastes in question in an environmentally sound and efficient manner. Regulation 259/93/EEC states that the movement of such waste within the European Community requires prior written notification and consent procedures. Export outside the European Community for disposal is prohibited, and export for recovery is allowed only to OECD countries, allowing the waste is imported for recovery. The transportation of hazardous waste in Lithuania is also regulated by the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR), the Law Concerning Carriage of Dangerous Loads by Car, Railway and Inland Waterway Transport, Government resolution "On the Carriage of Dangerous Loads by Road Transport in the Republic of Lithuania".

2.3.5. Reduction of persistent organic pollutants from unintentional releases

Reduction of POPs from unintentional releases in Lithuania is mostly motivated by permits developed, issued, renewed and repealed in accordance with the Regulations for the Issuance, Renewal and Repeal of Permits of Integrated Pollution Prevention and Control (IPPC).

When issuing the IPPC permit to the enterprises engaged in at least one of the type of activities listed in annex 1 to the IPPC regulations, the limit values of the pollutants shall be determined according to the guidance document of "best available techniques" prepared by the European Union for a certain type of activity. Annex 1 to the regulations encompasses the key fixed sources of POPs pollution.

All enterprises operating or planning the use of waste incineration installations or integrated incineration installations attributed to the key sources of POPs formation from unintentional production must be applied the Environmental Requirements for Waste Incineration, which determine operation conditions, limit values and technical requirements for emissions, including dioxins and furans. LAND 19-99 Basic Waste Incineration Requirements is applied to the extent that it complies with the provisions of Environmental Requirements for Waste Incineration, and shall be deprived of its legal force from December 28, 2005.

2.4. Institutional structure for management and control of persistent organic pollutants in Lithuania

POPs are one of the most dangerous chemical substances ever used in industry and agriculture in such large quantities throughout the history of humanity. The management of chemical substances in Lithuania under the procedures established by the laws is exercised by Ministry of Environment, State Non Food Products Inspectorate, Ministry of Health, Ministry of Labour and Social Security, Ministry of Agriculture and in certain cases – other state and municipal institutions. Each of those institutions exercises the functions attributed to them in accordance with the legislation of the Republic of Lithuania. For example, Ministry of Environment plays an essential part in drafting and issuing legal acts regulating chemical substances and their placing on the market. Ministry of Health is responsible for the administration of hygiene standards concerning prohibited and restricted chemical substances and biocide legal acts.

Nevertheless it was cited above that almost all of the POPs have become or will become waste (also are contained in waste) within the next several years and it is essential to describe also the institutional structure exercising waste management.

2.4.1. Ministry of Environment

Ministry of Environment is the lead institution preparing and setting national policy for environmental protection, forestry, utilization of natural resources, geology and hydrometeorology, territorial planning, constructions, housing provision, apartments and communal holding service state policy and coordinating its implementation. Ministry of Environment plays an essential role in drafting and issuing legislation regulating chemical substances and their placing on the market (for ex., establishes the procedure for obtaining permits by enterprises whose economic-commercial activity results in waste exceeding the set limit quantities, determines the hazardous waste identification and declaration procedure, also hazardous waste packaging and labelling procedure (the stored or transported hazardous waste must be packaged and marked)). Ministry of Environment further oversees the management of all waste, controls the implementation of all the applicable requirements and tasks, coordinates the activities of other state institutions, county governors and municipalities in the sphere of waste management, seeks for additional sources of financing for waste management projects prepared by state institutions and municipalities.

In the POPs context, Ministry of Environment is in charge of the organization of management works of pesticide waste that are financed from the budgetary funds of the Republic of Lithuania. Ministry of Environment is also in charge for the utilization of funds allocated for the pesticide management programme. Ministry of Environment has developed legislation regulating the inventory and handling of PCBs and equipment polluted with PCBs in Lithuania.

In order to ensure the implementation of the provisions of Regulation 850/2004/EC in Lithuania, the Government of the Republic of Lithuania decided to appoint the Ministry of Environment as a competent institution in charge of the implementation of administrative tasks necessary to perform in compliance with the regulation. Ministry of Environment was also obliged to coordinate the activities of other ministries and institutions related to the implementation of the provisions of the regulation, to coordinate the drafting of programmes and plans, develop draft legislation on POPs management in the process of implementation of the regulation.

2.4.2. Environmental Protection Agency

Environmental protection agency (EPA) must ensure the sustained, comprehensive surveillance of environment quality and utilization of natural resources, scientific assessment of obtained information, prognosis and provision of information to state institutions for environmental policy setting purposes.

EPA participates in the development of draft laws, other legal acts regulating environmental protection, environmental monitoring, motivates the application of best available techniques (BAT), integrated pollution prevention, assessment of environmental impact of economic activity.

EPA organizes and contributes to the national environmental monitoring and coordinates its implementation. EPA organizes and carries out chemical and biological research of the environment and pollution sources and further coordinates environmental research, programmes and projects.

EPA compiles environmental pollution release data and data from national environmental monitoring and scientific research. EPA further contributes to improvement of environmental pollution accounting methods. In the field of sampling and analysis, EPA coordinates and supervises the state and economic operators' laboratory control of pollution sources and determines requirements and issues permits to laboratories competent to analyze environmental samples and sources of pollution.

EPA collects and stores data about produced, imported, exported and used chemical substances and preparations in Republic of Lithuania. The data include their properties and possible an impact on environment and human health. EPA provides these data to the stakeholders according to certain procedures. Also EPA manages data bases on chemical substances and preparations and verifies the accuracy of the provided data on chemical substances and preparations. EPA further coordinates interinstitutional activities on chemicals classification and labelling at the national level.

EPA evaluates recieved information and data on new chemical substances placed on the market and according to a certain procedure notifies Europe Commission about new chemical substances.

EPA is required to compile, administer and update the database of PCBs, used PCBs and PCB containing equipment. Economic operators whose pursued economic activity falls under the list of types of activity indicated in annex 1 to the Regulations for the issuance, renewal and repeal of permits of Integrated Pollution Prevention and Control, must compile reports on the pollutants released to air and to water (including HCB, dioxins and furans), exceeding the limit amounts laid down in the permit. These reports are submitted from the companies to the regional environmental protection departments, which further transfer them to EPA. EPA summarizes the information submitted and sends the consolidated report on all basic pollutants emitted (released) in the country to the European Commission under the applicable procedure. EPA together with the Geological Survey under the Ministry of Environment are under an obligation to administer the POPs databases.

2.4.3. State Environmental Protection Inspectorate and regional environmental protection departments

Regional environmental protection departments perform the national environmental monitoring in the regions. They coordinate and control the environmental monitoring performed by the economic operators, analyse the environmental state of the region, take up the measures for the

improvement of national environmental control and submit proposals to interested institutions on the regulation of the utilization of natural resources and improvement of measures for environmental protection. State Environmental Protection Inspectorate and regional environmental protection departments, acting within the limits of their competence, organize and implement the management control of placing on the market, use, release of POPs and of waste containing POPs.

Regional environmental protection departments receive progress reports on the re-packaging - sorting, identification, and disposal of obsolete pesticides from contractors charged with the cleaning up operations. Regional environmental protection departments also collect information from the enterprises on the PCB containing equipment and activities covered by the IPPC regulations on the issuance, renewal and repeal of permits, including the reports on pollutants released to air and water (including HCB, dioxins and furans).

2.4.4. Lithuanian Geological Survey

Lithuanian Geological Survey (LGS) generates and compiles geological data as wells as administers the national geology information system (including information on potential sources of pollution of geological environment – soil, subsoil and groundwater, among them the sites of pesticide storage depots), safeguards the quality of geological environment, surveys and makes prognosis on its changes. LGS implements, coordinates and controls the subsoil monitoring within the entire territory of the country, within the limits of its competence organizes provision of information to the public on the state of subsoil.

2.4.5. Ministry of Health

Ministry of Health develops draft laws, resolutions and other draft legislation within the limits of its competence. Ministry of Health is in charge for the management of hygiene standards concerning the prohibited and restricted substances, prohibited and restricted pesticides and biocide legislation. Ministry of Health also organizes dissemination of health information and health promotion by means of media. Ministry of Health assesses the impact of hazardous waste and its management on human and public health. Ministry of Health further regulates medical waste management in healthcare establishments and coordinates action in this field. In cases where healthcare establishments are not in a position to ensure the safe management of medical waste, Ministry of Health initiates waste management capacity development projects.

2.4.6. State Public Health Service

State Public Health Service under the Ministry of Health develops and approves the lists of chemical substance prohibited and restricted to place on the market and their use restrictions., performs human health risk assessment and public healthcare expertise.

2.4.7. Ministry of Economy

Ministry of Economy develops and approves programmes on waste prevention, also programmes encouraging reduction of the amount of waste forming within production. Ministry of Economy facilitates the creation of markets for products made from secondary raw materials and coordinates the implementation of those programmes.

Ministry of Economy coordinates action to enhance waste management capacities at industrial enterprises. In cases where industrial enterprises are not in a position to safely handle their waste, Ministry of Economy may initiate waste management capacity development projects.

2.4.8. State Non Food Products Inspectorate

State Non Food Products Inspectorate controls the compliance of non-food products (also chemical substances and preparations, including POPs and POPs containing products) placed on the national market to the consumers with the compulsory safety and labelling requirements.

2.4.9. State Food and Veterinary Service/State Inspection of Veterinary Preparations/National Veterinary Laboratory

State Food and Veterinary Service is an independent budgetary institution directly subordinated to the Government of the Republic of Lithuania. The Service implements public policy in food and veterinary sectors and exercises control in all stages of food handling "from stable to table". State Food and Veterinary Service safeguards consumer interests, the quality of food on the national market and exported food with the safety, labelling and other obligatory requirements prescribed by the legal acts. It further ensures veterinary and hygiene control in all stages of food handling (from food-producing plants and animals to food supply for consumers). State Inspection of Veterinary Preparations and National Veterinary Laboratory are under the control of State Food and Veterinary Service.

National Veterinary Laboratory coordinates and implements annual monitoring of residues (including heptachlor, DDT, aldrin, dieldrin, HCB, PCBs) in food and feed. State Inspection of Veterinary Preparations draws up the annual plan of monitoring and together with the National Veterinary Laboratory organizes and implements the collection and generalization of data for the assessment of the measures applied and results obtained. State Food and Veterinary Service controls the implementation of the monitoring plan of substance residues. Residues of contaminants are tested in animals and their meat, milk, poultry, eggs, game, fish and honey.

2.4.10. State Plant Protection Service

State Plant Protection Service is the only institution assigned with the duties of authorization and control of plant protection products. State Plant Protection Service organizes registration of plant protection products and controls their import, trade, storage and use. This institution is assigned with the functions of preventing from placing on the market of such plant protection products that may exhibit POPs characteristics (annex D to the Convention).

2.4.11. Customs Department under the Ministry of Finance

Customs department under the Ministry of Finance implements the control of import and export of POPs and waste containing POPs.

2.4.12. Municipalities

Municipal institutions organize municipal waste management systems necessary for the handling of municipal waste forming in their sites, organize waste management (for ex., old pesticide waste), if the possessor of the waste is impossible to establish or no longer exists.

2.5. POPs management and control: methods and procedures

Legislation prohibiting the use of persistent organic pollutants has been in force in Lithuania since a long and it was applied to the pesticides relevant to Lithuania such as DDT, therefore the attempts in subsequent years were directed towards the inventory, safe storage and management of those pesticides. The Ministry of Environment was in charge of the inventory, storage and

management of the old pesticide waste. Obsolete pesticides were collected from more than 900 smaller storage depots to centralized, safer warehouses in the second half of 1990's. During 2002-2005 these stockpiles were disposed in Germany installations specifically intended for this purpose.

State Plant Protection Service is in charge of controlling the illegal use of pesticides. 87 inspectors in 6 regions implement the control of pesticide distributors and users. The inspectors confiscate and dispose any prohibited substance they find. Such cases are very rare, and merely some tens of kilograms of prohibited pesticides are confiscated annually. No reports have been recorded on the presence of POPs among the confiscated pesticides.

The legislation prohibiting the use and re-use of PCB containing oils have come into force recently. Regional environmental protection departments have taken first steps in inventorying and compiling the register of equipment contaminated with PCBs. This regional data is stored in the central database administered by the EPA. Public institutions may hence control the management of PCB oils and contaminated equipment. The laws also require the labelling of equipment contaminated with PCBs, this will, together with the apparent advantage of risk communication, facilitate the inspection process and the control of possible movements of contaminated equipment. The regional environmental inspectors control the PCBs use and management at enterprise level. These new tasks on PCBs control are integrated in the current compulsory inspection system.

In order to ensure that POPs or other prohibited chemicals are not actually used, the inspectors of the State Non Food Products Inspectorate control the chemical distributors. Currently this enforcement is exercised by 85 inspectors distributed in 6 regions. The controls are made at sales points of household chemicals, distributors of motor chemicals and similar. It is planned that industrial enterprises using or manufacturing chemicals will be inspected for prohibited chemicals or inappropriate use of chemicals by the inspectors of the State Environmental Protection Inspectorate.

The legislation on waste incineration regulates the emission of unintentionally produced POPs. The control and reduction of unintentional POPs is based on the permits issued to industrial enterprises which are required to perform self-monitoring of unintentional POPs. According to the Stockholm Convention requirements and in order to reduce the unintentional POPs emissions to the environment, the best available techniques and the best environmental practices shall be applied for existing and new sources of pollution. In the EU these requirements are implemented through the Integrated Pollution Prevention and Control (IPPC) directive, transposed in Lithuanian legal system by the Regulations for the Issuance, Renewal and Repeal of Permits on Integrated Pollution Prevention and Control. To assist in implementation of the IPPC Directive, guidance documents on the best available techniques have been developed for different sectors of industry, also including emissions of unintentional POPs. In future the system of guidance documents will comprise of additional branches of industry. At the end of the transitional period existing and new installations will have to comply with the best available techniques, and thus the emissions from industrial sources of pollution to the environment of dioxins and other unintentional POPs will be reduced.

When receiving the IPPC Permits the enterprises are expected to carry out emission monitoring and submit the monitoring information to the competent institutions every half year. However, the system is still inoperative, and additional efforts and resources are necessary in order to create a workable system. The quality of the monitoring carried out by the enterprises could be improved by the enhancement of capacities of the state institutions in the field of unintentional POPs sampling and analysis.

2.6. Elements of the assessment system of new chemicals

Lithuania as a member of the European Union participates in the system of notification on new chemical substances, as determined in the Community legislation. The system is based on equal treatment of all types of chemicals. Manufacturers/importers submit dossiers where they provide information on the physical and chemical properties of the substance, information on toxicity (on acute and chronic effects), also on ecotoxicity as well as fate and behaviour in the environment.

The legal basis is different for different spheres of use. The three main spheres are: plant protection products, biocides and chemical substances and preparations. A separate directive is applicable for each group of substances (industrial and other chemicals directive is approximated with the laws, regulations and administrative procedures related to the classification, packaging and labelling of dangerous substances).

Plant protection products, i.e. agricultural pesticides, are regarded as new, provided that they were not on the market for two years following the adoption of Directive 91/414/EEC concerning the placing of plant protection products on the market (Directive 91/414/EEC). A complete information dossier must be compiled for new active substances, fulfilling the prescribed safety requirements. According to the Directive, the registration of plant protection products with persistence and bioaccumulation values exceeding those established by the Stockholm Convention shall be prohibited. The similar scheme is created for biocides. Any new biocides supplied to the market from the year 2000 shall be treated as new. Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market (Directive 98/8/EC) determines the limit values of biocide properties.

September 1981 divides chemical substances, including chemicals used in industry, into existing and new substances. The substances that were present in the European Community market by September 1981 are included in EINECS – European Inventory of Existing Commercial Chemical Substances.

Before placing on the market of a new substance, the notification procedure for new chemical substances shall be applied, after which they shall be included in the ELINCS – European List of New Chemical Substances. The legal acts foresee testing requirements for new substances depending on their amount placed on the market. The party notifying the new chemical substances is not obliged to perform a risk assessment of the notified chemical, though the laws encourage this.

The state institutions are responsible for human health and environmental risk assessment of the notified substances. The technical guidance intended for aiding the process of carrying out the risk assessment of new and existing chemicals and biocides anticipates special procedures for the identification of POPs based on their characteristics. The guidance sets limit-values of persistence, bioaccumulation and toxicity inherent in POPs. Regulation 850/2004/EC also contains a provision on the prohibition of use and placing on the market of new chemical substances and pesticides exhibiting POPs characteristics. The relevant implementation of such requirements would render the placing on the market of new chemical substances that exhibit POPs characteristics impossible, and would also help detecting POPs in the substances already available.

Lithuanian legislation is fully harmonized with the scheme of management of chemical substances described above. Thus any local manufacturer or importer is obliged to submit information and the state institutions perform obligatory assessments. Institutional responsibility for chemicals management is showed in table 9.

Table 9. Institutions implementing the requirements of directives on the management of chemical substances

Directive (use of chemical substances)	In charge of human health risk assessment	In charge of environmental risk assessment	In charge of control
Directive 91/414/EEC Plant protection products	Ministry of Agriculture, State plant protection service	Ministry of Agriculture, State Plant Protection Service	Ministry of Agriculture, State Plant Protection Service
Directive 76/769/EEC Industrial chemical substances	Ministry of Health, State environmental health centre	Environmental protection agency	Ministry of Economy, State Non Food Products Inspectorate
Directive 98/8/EC Biocides (non-agricultural pesticides)	Ministry of Health, State Environmental Health Centre	Ministry of Health, State Environmental Health Centre	Ministry of Economy, State Non Food Products Inspectorate
Directive 67/548/EEC Classification and labelling of chemical substances	Ministry of Health, State Environmental Health Centre	Environmental protection agency	Ministry of Environment State Environmental Protection Inspectorate

2.7. Elements of the assessment system of chemicals existing on the market

The system of chemical substances of the European Union also applied to Lithuania describes the substances present in the market of the European Community by September 1981 as existing, i.e. already placed on the market. These substances are included in the EINECS list, which is comprised of 100 106 substances.

The state institutions are responsible for performing risk assessments and control of existing substances. The assessment and risk management of the priority substances must be performed according to the set principles and technical guidance of human and environmental risk assessment of the existing substances. Technical guide provides for the criteria of persistence, toxicity and ability to bioaccumulate. The requirements of the Regulation 850/2004/EC are also applicable to the existing chemical substances. Thus the risk of any existing chemicals exhibiting POPs characteristics must be automatically assessed and they must be eliminated from the market.

The current assessment system of existing substances places an extensive obligation on the state authorities in the European Union, while the responsibility of industry in chemicals management is considered inappropriately low. Therefore, a proposal has been lodged in the European Union for a new chemical substances management policy– REACH, where the obligation to collect and submit information (and perform risk assessments) is attributed to the manufacturers and importers that place chemical substances on the market. The use of chemicals that pose extreme danger and exhibit carcinogenic, mutagenic, toxicity for reproduction properties or, importantly in the POPs context – the use of chemical substances that exhibit the properties of high persistence, bioaccumulation and toxicity, or chemical substances which are characterized by very high persistence and bioaccumulation properties, require authorization. Authorization may be issued in cases where the applicant proves that the exposure and risk is not at an unacceptable level for the intended use scenario. The draft REACH regulation sets out the criteria for the properties of chemical substances like persistence, bioaccumulation and toxicity, that are more stringent than the Convention requirements.

Upon adopting the new chemicals management proposal in the European Union (and Lithuania as well) new and existing chemical substances that exhibit POPs characteristics will be legally prohibited, except in rare cases and uses that are well controlled. It must be noted that no proof of toxicity is required in REACH system for extremely persistent and highly bioaccumulating substances. This reflects the view that the toxicity tests cannot always show the safety of the substance, if the chemical persists and bio-accumulation in living organisms is of a high degree.

2.8. POPs monitoring in Lithuania

Environmental monitoring in Lithuania is carried out at three levels – national environmental monitoring, municipal environmental monitoring and environmental monitoring of economic operators. In the process of environmental monitoring the information on the state and changes in the environment is collected and analyzed at a local, regional and national level. Environmental monitoring is carried out by state, municipal and academic institutions, economic operators affecting the environment and utilizing natural resources, and other legal entities and individuals collecting, accumulating and analyzing information on the state of the environment.

The Government of the Republic of Lithuania has approved the State Environmental Monitoring Programme for 2005-2010. This programme anticipates the monitoring of several groups of POPs pesticides in Kursiu lagoon and the Baltic sea, and monitoring of PCBs in lakes, rivers (in fish every 3 years, but if the concentration exceeds the maximum allowable concentration, the monitoring is carried out once a year). Due to the cost, need of specialized expertise and equipment not available in Lithuania monitoring of dioxins and furans is not performed, apart measurements in fish (the samples are sent abroad for analyses). The Regulations on the Subsidizing in 2005 of the National Environmental Monitoring Programme for 2005-2010 in Fishery and the Monitoring Programme for the Detection of Dioxins in Baltic Sea Fish, from July 2005 will establish a scheme to subsidize the monitoring of dioxins and dioxin-like polychlorinated biphenyls in fish caught in the Baltic sea. According to the plans of National Veterinary Laboratory, the laboratory for the analyses of dioxins and furans in fish and feed will be set-up by 2007.

Table 10. Laboratories performing POPs testing in Lithuania

Laboratory	**Available equipment**	**POPs testing carried out in the laboratory**
Environmental Protection Agency Environmental research department laboratory	GC, LC, HPLC GC/MS	Pesticide analysis in surface waters and soil, PCBs analysis in water and oils
Lithuanian Institute of Agriculture, Agrochemical research centre laboratory	GC, LC, HPLC GC/MS	Pesticide analysis (mostly vegetation), PCBs analysis in water and soil
National Veterinary Laboratory	GC, LC, HPLC GC/MS	Pesticide and PCBs analysis in vegetation, animals and drinking water
National Public Health Research Centre laboratory	HPLC, GC, LC	Pesticide analysis in drinking water, plants and air
Marine Research Centre laboratory	GC	Pesticide analysis in sea water, bottom sludge and biota

The contaminant residue analysis in animals and their meat, milk, poultry, eggs, game, fish and honey is carried out by State Inspection of Veterinary Preparations according to an annual monitoring plan. The investigated substances include some POPs pesticides and PCBs.

One of the problems often encountered in Lithuania relates to laboratory capacities, i. e. obsolete equipment, absence of accreditation to perform certain measurements and alike. Laboratories performing POPs research are described in table 10, and table 11 describes the laboratories possessing the equipment necessary for such research and capable of performing POPs testing.

Table 11. Laboratories capable of performing POPs testing in Lithuania

Laboratory	Available equipment
Kaunas university of technology, Faculty of Chemical technology	GC, GC/MS, HPLC
Vytautas Magnus university, Faculty of Natural science	GC, LC, GC/MS (inoperative), capillary electrophoresis
Vilnius university, Faculty of chemistry	GC, LC, capillary electrophoresis
Institute of physics	GC

2.8.1. Pesticides

EPA has performed a pesticide monitoring in soil at sites of complex and integrated sites as well as in the surroundings of the pollution sources, including those in which fires have occured and their surrounding area. Monitoring at the integrated sites has been carried out since 1995. Sampling stations were mounted in four national parks and in one geological reservation. 54 soil sample and 9 water sample tests were performed in 2000. Pesticides were detected in 6 soil samples.

Monitoring at complex sites was carried out in five agricultural sites. 82 soil samples and 10 surface water samples were analysed in 2000. Pesticides were detected in 15 soil samples, and one of the samples exceeded the limit concentration. DDT and DDE were detected in one place in 1999. These figures show that pesticides are rarely found in the process of monitoring and that their detected concentrations is low.

Analyses of samples collected at 22 pesticide storage depots and 9 pesticide storage sites where accidental fires had occurred were performed in 2002-2003. The samples included:

- soil from the storage-depot territory;
- soil samples of 20 cm depth at a distance of 50-150 meters from the storage-depot;
- water (if possible) from wells, small rivers, canals.

43 types of pesticides were screened for. The detected pesticides included the following persistent organic pesticides: DDT, DDE, DDD and HCB. The highest concentration of these pesticides was detected at the storage-depots sites of Siaudiniskes (505,2 mg/kg), Zibavyciai (423,2 mg/kg), Laibiskes (406,2 mg/kg), Paberze (98,9 mg/kg) and Senoji piltis.

EPA carries out national river and lake monitoring. According to the national monitoring programme the quality of water in Lithuania is tested in 50 rivers and in 103 areas (3 small rivers where the water is not affected by human activity). EPA carries out the river monitoring together with eight regional environmental protection departments. National lake monitoring is carried out in thirteen major Lithuanian lakes. The specific pollutants are tested on a rotational basis in several lakes per year. DDT is analysed as a part of the state monitoring in river and lake waters and sediment. DDT was detected barely in November 2000 in the Dubysa river (DDE 0,01-0,09 µg/l and DDT 0,03-0,11 µg/l detected).

In order to detect POPs pesticides in the Baltic Sea and Kursiu lagoon the sampling in littoral and open waters of water, bottom sediment and biota is carried out each season of the year according to the monitoring programmes of the National Baltic sea environmental monitoring and of Helsinki Commission for Baltic Marine Environment Protection (HELCOM). Sampling and analysis is performed according to methodologies recommended by HELCOM COMBINE and normative documents applicable in Lithuania on marine environment research.

The testing of DDT and its metabolites DDE and DDD takes places in the Baltic sea and Kursiu lagoon. The concentration of currently detected pesticides in the water of the Baltic sea and Kursiu lagoon is very low, not exceeding 1 ng/l. All metabolites of DDT group were detected in the waters of Kursiu lagoon in winter and autumn seasons. Their concentration varied from 0,203 to 0,772 ng/l. In spring and summer DDT metabolites were detected incidentally, their concentration varied from those under the detection limit (0,019-0,031 ng/l) to 0.532 ng/l. The results of the last six years of testing by the Marine Research Centre (MRC) laboratory of ecotoxicology show a decreasing tendency of DDT and metabolic concentrations in the ecosystem (water, bottom sediment, biota) of the Baltic sea and Kursiu lagoon.

The bottom sediments of Malku bay and Nida region are characterized by the largest quantities of persistent organic pollutants. The accumulation of the pollutants is determined by lithologic characteristics of the sediment. As in the previous years, the largest concentration of DDT in the sea sediment was detected during the warm season as a result of activation of sea bottom fauna, which lift the polluted bottom sediment to the surface of the sea bed.

The most stabile DDE containing compound, having the longest half-life, was detected in the soft tissues of zebra mussels (lat. Dreissena polymorpha). The amount of persistent pesticides detected in fish does not exceed the hygiene standards applicable in Lithuania and does not endanger the consumers.

Lithuanian hygiene standard regulating the safety and quality of drinking water determines the safety and quality requirements of drinking water and domestic heated water. The hygiene standard lists the parameters to be examined in drinking water, including persistent organic pollutants: aldrin, dieldrin, heptachlor, and indicates their limit values. Suppliers of drinking water are obliged to check the safety and quality according to the hygiene standard, including the listed persistent organic pesticides, and submit reports to the controlling institution. However, most suppliers of drinking water do not possess the equipment necessary for the analysis and the financial resources for acquiring such equipment.

Enforcement related control of drinking water quality is carried out by the State Food and Veterinary Service. POPs have not been reported in concentration exceeding the limit-values in these controls nor in reports submitted by suppliers of drinking water.

Quality requirements are also placed on foodstuffs supplied to the market in Lithuania. National Veterinary Laboratory carries out the hazardous pollutants and pesticide residues monitoring programme in animals and their meat, milk, poultry, eggs, game, fish, honey. According to the monitoring programme the following persistent organic pesticides: aldrin, dieldrin, heptachlor, HCB, DDT are under research. In 2003 traces of DDT and HCB were detected in frozen fish, eggs, but the amount detected did not exceed the maximum allowable concentration. In 2002 pesticide residues were detected in chicken carcass and fish, however, they also did not exceed the maximum allowable concentration.

2.8.2. PCBs

As stated in the previous part, EPA monitors the quality of river and lake waters and sediments in accordance with the State Environmental Monitoring Programme. PCBs were also included in the list of the monitored substances. The obtained results show no traces of PCBs in Lithuanian water reservoirs (monitored areas). Therefore, the number of PCBs measurements in water reservoirs is reduced in the new National Environmental Monitoring Programme for 2005-2010 (only measurements in fish are left).

National Veterinary Laboratory analyses PCBs residues as a part of the hazardous residues monitoring programme in animals and their meat, milk, poultry, eggs, game, fish and honey. About 30 samples from different areas of Lithuania are taken each year. PCBs were detected in frozen and live fish, eggs, but compared the detected concentration with the results received from scientific research in 1995 it may be stated that PCBs concentration has decreased. The concentration detected by the National Veterinary Laboratory does not exceed the determined maximum allowable and recommended concentrations of dioxins and furans (also dioxin-like congenerous toxic PCBs) expressed in toxic equivalents (TEQ) of the World Health Organization, by applying the toxic equivalence factors (TEF).

2.9. POPs scientific research in Lithuania

Lithuanian scientific institutions are at the very outset of performing POPs scientific research. Institutions carrying out scientific research in this sphere are Institute of Physics and Kaunas university of Technology. POPs toxicity research in Lithuania is carried out in Vilnius university, Vytautas Magnus university, Kaunas university of Medicine. The pursued research includes PCBs research in urban air and landfills, research of organo-chlorine compounds in surface waters. Research is often performed jointly with foreign experts and academic institutions with experience and access to sophisticated laboratory infrastructure (.e.g, the scientists of Kaunas university of Technology have been cooperating with the specialists of Umeå university of Sweden since many years).

2.10. Collection of information on POPs in Lithuania

Information on POPs in Lithuania is collected and stored in a fragmentary manner, by different institutions within the area of their competence. There is no uniform data collection and storage system, no institution coordinating the information on POPs sources and their distribution in the environment. Often information on POPs compiled in one institution is not available to other institutions.

Regional environmental protection departments collect information on pesticides, their storage-depots in different municipalities, types of stored pesticides, management of obsolete pesticides and state of storage-depots. This information is periodically updated and communicated to the Ministry of Environment. The data is stored in “Excel” and “Word” formats. Ministry of Environment also compiles information on incidents of fires at pesticide storage sites and inventories of pesticide storage-depots carried out in different years.

EPA stores separately all the information of POPs investigations in the environment. The river and lake monitoring data is collected, compiled, administered and summarized in “Excel” format and in EPA VANMON database. Marine Research Centre compiles and stores POPs pesticide monitoring data from the Kursiu lagoon and the Baltic Sea.

LGS collects and compiles information on the potential sources of pollution of geologic environment – soil, subsoil and groundwater. From 1999 a computer informational system in ORACLE environment "Geologic environment pollution sources" has been created in LGS. The information on pesticides stored in the database of LGS is of a general nature – they describe approximate amounts of pesticides (pesticides were not inventoried during field sampling), specified pesticide coordinates, state of storage depots. The information stored in GIS format may be easily converted into "Excel" format.

LGS approves the groundwater monitoring programmes of economic operators in coordination with the regional environmental protection departments. Economic operators are obliged to monitor their emissions and their impact on the environment. Groundwater quality data from such monitoring is communicated to LGS and regional environmental protection departments, and to municipal institutions, if necessary. Generally, each enterprise has an individual groundwater monitoring programme and the water pollutants to be monitored are chosen in view of the type of activity and generated pollutants, thus it is hard to predict whether any economic operator will carry out POPs monitoring in underwater and whether such information will reach LGS. By now no POPs monitoring data from groundwater samples has been submitted.

In-line with the legal requirements, regional environmental protection departments began collecting information on PCB containing equipment from the potential possessors of such equipment in spring of 2004. The findings were communicated to EPA in PITON software format while EPA PCBs information were transferred into "Excel" format. EPA develops a new PCBs database. The information and database on PCB containing equipment will be updated annually.

All reports concerning identification of equipment contaminated with PCBs, as in case of pesticide waste, are stored at the Ministry of Environment.

As mentioned above, the information on environmental emissions of dioxins and furans in Lithuania may be obtained from three reports based on theoretical assessments of emissions. These reports are stored at the Ministry of Environment. The regional environmental protection departments do not receive results of measurements of dioxins and furans from stationary sources as no such measurements are carried out in Lithuania. This is despite the fact that for activities, which fall under annex 1 to the Regulations Concerning the Issuance, Renewal and Repeal of Permits of Integrated Pollution Prevention and Control, enterprises are under an obligation to submit reports on the pollutants released to air and water including HCB, dioxins and furans in cases when the permit limit-values are exceeded.

National Veterinary Laboratory has been coordinating and carrying out the research of the annual monitoring plan of substance residues since 1995. Since 1995 the National Veterinary Laboratory stores the reporting data in the form of computer file (in "Word" format) and in paper reports (from the very beginning of the research). Annual research reports are communicated to the State Food and Veterinary Service. Suppliers of drinking water must submit the annual statistical reports of their monitoring of drinking water carried out, including information on POPs. The statistical annual reports provide the individual results of water quality research of each drinking water supply object (each watering-place). The reports are submitted in paper form (in "Word" format).

2.11. Provision of information on POPs to public in Lithuania

State institutions do not carry out information campaigns or disseminate information on POPs apart from information related to some events (usually accidents). The only POPs information state institutions provide is purely legal. . 5 reports on pesticides were found at the website of the Ministry of Environment (1 on the shipping out of pesticides, 1 on the accident), 2 announcements

on PCBs (concerning the upcoming events). 1 announcement on pesticides was found on the website of the Ministry of Health (accident investigation results), and no information on POPs pesticides, PCBs, dioxins and furans was found at the State Non Food Products Inspectorate, State Plant Protection Service and Ministry of Social Security and Labour. Information on POPs is also provided in some extent in ”Environmental status” published by the Ministry of Environment.

The most extensive sources of information in Lithuania like information services (ELTA, BNS) usually submit information on particular events or accidents. This information is more of informational type, but not of a preventive or educational nature. Thus prevention information on POPs is lacking. Notifications on accidents contain no information on the method of action in order to prevent the occurrence of such accidents in the future.

A number of academic and non-governmental organizations (NGOs) operate in Lithuania in the field of environmental protection, education, dissemination of information. These organizations have carried out and carry out different projects related to the provision of information to different interested groups (state institutions, scientific organizations, enterprises and society) on chemical substances, waste, including hazardous waste, their management and control. Information is usually disseminated in seminars, through training, by way of developing and disseminating publications.

A publication on chemical substances intended for the NGOs of Baltic states was published in order to enhance their institutional capacities. It briefly introduced to the Stockholm Convention and chemical substances that are covered by it. Lithuanian movement of the Greens has organized several actions against waste incineration. One action against incineration of tyres in the tyre factory of Naujoji Akmene and one against the planned incineration of tyres at Kaisiadoriai glue factory was organized in 2000. The actions were intended for the public and not much communication took place with the enterprises. One action against illegal incineration of medical waste in one hospital of Siauliai was also organized several years ago.

A survey was conducted during the process of development of NIP on the public opinion and knowledge level concerning POPs. The aim of the survey was to gauge the views and knowledge level by different groups in the society concerning POPs, on the Stockholm Convention, the gaps and needs of information as well as methods for disseminating such information. The following target groups were questioned: farmers, heads of rural communities, representatives of academic institutions, representatives of enterprises possessing PCB containing equipment or potentially emitting dioxins and furans, representatives of healthcare establishments, women’s and children’s organizations and NGOs. The survey results indicate that only people who have come to direct contact with POPs information through their work are aware of the Stockholm Convention or substances regulated under the Convention. Due to the different level of awareness and interest among the stakeholder groups it seems recommendable to organize individual seminars for each target group, which could be teachers, medical practioners and officials.

In the process of development of NIP the POPs information campaign directed towards the society and the interested groups was conducted, during which the seminars on POPs were organized to the public, on PCBs – to the enterprises and publications were prepared (brochures for enterprises, academic institutions, healthcare establishments, society, posters, flyers, stickers), TV and radio programs on the impact of POPs on health and environment took place, the cycle of articles in the newspapers appeared. The low awareness of POPs sources and their impact on health was noticed in the course of the information campaign. Therefore further education of the general public is recommended, with particular attention given to prevention of incineration of domestic waste and grass.

The implementation of the Convention obligations (in the sphere of reduction of environmental pollution with POPs) requires cooperation between subdistricts, municipalities and other institutions. The results of the awareness polls showed that most inhabitants incinerated waste in fireplaces as they did not have any possibilities to sort them and transport them to appropriate points of collection, or they were not familiar with the possibilities. Thus the education of the general public must take place by providing not only information about POPs and its environmental and health impact, but also on the ways and means of contributing to POPs pollution reduction.

3. NIP implementation strategy

3.1. Tasks and objectives of NIP

The principal objective of the NIP, as well as of the Convention is, having regard to the 15th principle of Rio declaration on environment and development, to safeguard human health and environment against POPs. NIP action plans detail the strategy of POPs management in Lithuania as well as of sites polluted with POPs, the reduction of emissions of unintentional POPs, and monitoring of POPs.

The NIP also seeks to create a system of collection of information on POPs and of its communication to the general public in Lithuania, including all parties interested of solving the POPs issues (including industry, NGOs, academic organizations, society). The NIP further seeks to raise international support to implement specific action on POPs and to provide technical assistance to other countries implementing the provisions of the Convention, when possible.

Objectives of the NIP implementation programme:

- to reduce the hazard posed to environment and human health by the used POPs and POPs waste;
- to identify sites polluted with POPs, assess their level of pollution and handle them;
- to reduce the emission of POPs from unintentional production into the environment;
- to receive comprehensive information on the distribution of POPs in the environment and flora and fauna, foodstuffs;
- to disseminate knowledge on POPs and prevention of their generation to interested parties and to the society;
- to strengthen enforcement of POPs management.

By the implementation of measures included in the NIP:

- information material for ensuring the environment and human health protection against negative impact of POPs will be prepared;
- safe and legally consistent management of POPs, POPs waste and POPs containing waste will be ensured;
- reduction of unintentional POPs releases to the environment will be ensured;
- identification and management of sites polluted with POPs will be performed;
- dissemination of POPs information to the general public and the interested parties will be performed;
- assessment of levels and trends of POPs in the environment, biota and foodstuffs will be performed.

3.2. Political commitment

Lithuania has signed two international agreements on POPs:

- Protocol of 1998 to 1979 Convention on the Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Aarhus Protocol), signed on June 24, 1998;
- Stockholm Convention on Persistent Organic Pollutants, signed on 17 May, 2002.

The basic legal act regulating POPs in Lithuania is *Regulation 850/2004/EC.* This *Regulation 850/2004/EC* transposes most provisions of the Convention and of the Aarhus protocol on POPs.

Lithuania intends to implement a part of the Stockholm Convention provisions and NIP measures anticipated in the framework of the following strategic documents:

- Implementation measures of the Government programme of the Republic of Lithuania for 2004-2008: for ex., disposal of pesticides in the storage depots, development of the management programme of storage places of pesticide waste and sites polluted with such waste, and disposal of medical waste;
- Lithuanian Single Programming Document for 2004-2006;
- Cohesion Fund Strategy for 2004-2006;
- National Strategic Waste Management Plan;
- National Environmental Health Promotion Action Programme for 2003-2006;
- Plan for the Reduction and/or Disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls (PCBs/PCTs) and PCB Containing Equipment;
- Pesticide Waste Management Programme in the Republic of Lithuania for 2002-2005;
- National Environmental Monitoring Progamme for 2005-2010;
- Provision of information on environment and Lithuanian inhabitants' environmental education motivation programme.

3.3. Need for financing

The implementation of the POPs NIP will be mainly financed from Lithuanian state allocations intended for implementing institutions according to the approved programmes. Financial assistance is expected also from the European Union Structural funds, Cohesion fund, Global Environment Facility and other national and international funds or programmes as well as private sector funds.

In total about 43 mln. litas will be needed for the implementation of the NIP. According to the *Single Programming Document of the Republic of Lithuania for 2004-2006*, the support of structural funds will be provided for strengthening of environmental monitoring and prevention, treatment of polluted sites, information and education of the society. According to the *Cohesion Fund Strategy for 2004-2006*, the support will be provided for the development of regional municipal waste management systems, management of hazardous waste, handling of historic pollution, including management of obsolete pesticides, treatment of polluted sites and storage depots. In the framework of these strategic programmes about 35 mln litas could be allocated for the implementation of the measures of the NIP. Upon ratification by Lithuania of the Stockholm Convention about 5 mln litas of support could be expected from the Global Environment Facility for management of polluted sites and of equipment polluted with PCBs. Management and disposal expenses of equipment and oil polluted with PCBs to the tune of 5,5 mln litas will be paid by the possessors of such equipment and oils based on the "the polluter pays" principle. The development of the public municipal waste handling system will take place using the charges paid by the possessors of waste.

Upon ratification of the Stockholm Convention, Lithuania is obliged to pay an annual contribution for running the Convention secretariat. This contribution is based on UN "scale of assessment" which allocates 0,02 % of the total amount. This share might slightly increase in case parties having the larger share do not become parties to the Convention. The current annual budget of the Convention secretariat is about 4,5 mln US dollars. With such a budget, Lithuania would have to contribute with about 1000 US dollars annually. On the other hand, Lithuania can apply for funding from the Global Environment Facility only following the ratification of the Convention.

3.4. Technical and financial support

The Stockholm Convention on Persistent Organic Pollutants recognizes the different capabilities and possibilities of the Parties of the Convention to fulfill the obligations under the Convention. Therefore articles 12 through 14 establish responsibility and mechanisms for Parties to assist each other to fulfill the Convention obligations, both in form of technical assistance as well as by providing financial resources. Article 14 finally establishes the Global Environment Facility as the financial mechanism on an interim basis.

Article 12 of the Convention sets out precisely the provisions on technical assistance:

1. The Parties shall cooperate to provide timely and appropriate technical assistance to developing country parties and Parties with economies in transition, to assist them, taking into account their particular needs, to develop and strengthen their capacity to implement their obligations under this Convention.
2. In this regard, technical assistance to be provided by developed country Parties, and other Parties in accordance with their capabilities, shall include, as appropriate and as mutually agreed, technical assistance for capacity-building relating to implementation of the obligations under this Convention.
3. The Parties shall establish, as appropriate, arrangements for the purpose of providing technical

assistance and promoting the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of this Convention. These arrangements shall include regional and subregional centres for capacity-building and transfer of technology to assist developing country Parties and Parties with economies in transition to fulfil their obligations under this Convention. Further guidance in this regard shall be provided by the Conference of the Parties.
4. The Parties shall, in the context of this Article, take full account of the specific needs and special situation of least developed countries and small island developing states in their actions with regard to technical assistance.

Article 13 of the Convention states that:
1. Each Party undertakes to provide, within its capabilities, financial support and incentives in respect of those national activities that are intended to achieve the objective of this Convention in accordance with its national plans, priorities and programmes.
2. The developed country Parties shall provide new and additional financial resources to enable

developing country Parties and Parties with economies in transition to meet the agreed full incremental costs of implementing measures which fulfil their obligations under this Convention as agreed between a recipient Party and an entity participating in the mechanism described in paragraph 6. Other Parties may also on a voluntary basis and in accordance with their capabilities provide such financial resources.
3. Developed country Parties, and other Parties in accordance with their capabilities and in accordance with their national plans, priorities and programmes, may also provide and developing country Parties and Parties with economies in transition avail themselves of financial resources to assist in their implementation of this Convention through other bilateral, regional and multilateral sources or channels.

The above obligations require a special discussion and interpretation for some countries including Lithuania. First and foremost, Lithuania belongs clearly to the group of countries with their economies in transition, acknowledged by the Article 12, as a group of Parties to receive technical and financial assistance. On the other hand, Lithuania has made substantial economic progress

during the last decade and particularly during the years after signing the Convention. Furthermore, Lithuania has entered the European Union which has traditionally been a significant donor in issues covering global environmental concerns and threats. The full EU membership further implies that the economic transition is progressing rapidly, and that it may be completed in a medium- to long-term time span. It can, however, not be expected that the income and GDP levels per capita will reach the levels of the "traditional" donor countries in the nearest future. In the framework of the Convention this will mean that Lithuania will move from being a Party receiving technical and financial assistance to a Party giving such assistance. This change will, however, not be taking place during the timeframe covered by this NIP, i.e. before 2015.

Bearing the above in mind, the short-term obligations and activities in the NIP in regard to technical and financial assistance will be mainly involving development of suitable and well-targeted projects to be co-financed and implemented in collaboration with the interim financial mechanism of the Convention, the Global Environment Facility. Furthermore, Lithuania will actively participate in the work of the Conference of the Parties to promote and enhance the provisions pertaining to technical and financial assistance. Lithuania will further extend its professional support to any initiatives of the planned regional or sub-regional centres to be established under the Convention.

In addition Lithuanian experts are already now able to contribute with technical assistance projects supporting the Convention objectives that are financed by international organizations or are mutually supportive, especially in programmes implemented or supported by the European Union. Obsolete POPs pesticides management may be one of the fields in which experts from Lithuania share their knowledge and experience to third countries, particularly in Central Asia and in the Commonwealth of Independent States. After Lithuania becomes a full Party to the Convention, it will also support the activities of the Convention secretariat, as per approved working plan by the Conference of the Parties.

3.5. Period of implementation of the NIP

The period covered by the NIP is from 2006 to 2015. Most of the proposed measures may be implemented within the said period. However, the implementation of some measures may remain uncompleted by the end of 2015, as comprehensive and time consuming planning and preparatory actions are needed for their successful implementation. Furthermore, POPs monitoring and education activities will also be extended beyond 2015.

On the other hand, the 10-year period seems optimal as it may not be advisable to plan actions too far ahead for a number of reasons. Firstly, the POPs science and sources where these are formed and accumulated are still evolving rapidly, particularly when it comes to unintentional POPs. Secondly, the Convention and its guidance are still being developed. The changes, especially when it comes to BAT and BEP, can require further additional actions to be taken in the medium to long-term in 2010-2015. Thirdly, it looks more than likely that a number of new chemicals will be included in the Stockholm Convention. Additional action may be required to limit the use or emissions of these added POPs.

Finally, the proposed action of the NIP is believed to reduce the risk from POPs to the population and environment considerably. However, only the effectiveness evaluation discussed in subsequent sections can verify if this risk reduction has indeed taken place. If the levels of POPs do not show a stabile or decreasing trend in key matrices there may be a need to add further action in a medium-term future.

The guiding principles for the time lines set for the POPs NIP are the requirements of the Stockholm Convention and even more importantly the European Union legislation. The EU legislation requires action in a swifter timetable than the Convention itself, particularly when it comes to action on PCBs.

The NIP implementation is divided into 3 time-periods or phases, corresponding to short-, medium- and long-term NIP actions. The reasoning behind this division is to show the priority or urgency of the action, the inter-linkages or preparatory nature of the action to a larger intervention, and most importantly, to divide the NIP into stages so that the success of its implementation and effectiveness can be periodically reviewed.

The short-term period is 1-3 years (2006-2008), the average term – 4-6 years (2009-2011) and the long-term period – 7-10 years (2012-2015) from the adoption of the NIP. The review mechanism, both when it comes to the evaluation of the completion of planned action, their cost-effectiveness and effectiveness to reduce the risk and decrease the levels of POPs in food and the environment has been developed along these timelines.

3.6. Evaluation of the effectiveness of the NIP

The POPs NIP, like all action plans, should be accompanied by a proper follow-up in order to gauge the effectiveness of the measures. The institutions in charge of the implementation of measures will prepare the review reports on the measures undertaken, which will include the description and the results of the NIP measures. The Ministry of Environment will oversee the implementation of the NIP actions and will assess the review reports prepared by the responsible institutions.

Table 12. Scheme for the submission of effectiveness reports

Year	National stage	Report	Convention stage
2006	Approval of the POPs NIP		COP-2
2007	Determination of initial POPs levels	NIP submitted to the Conference of the Parties	COP-3
2008	Evaluation of short-term action plans. Effectiveness reports	Short-term plan evaluation report	
2009			COP-4
2010			
2011	Medium-term action plan evaluation.	The progress is compared with the targets in the NIP action plans. A particular attention is paid to PCDD/PCDF.	COP-5
2012		Review of PCBs situation	
2013			COP-6
2014			
2015	Evaluation of long-term action		COP-7

In parallel with the implementation of the measures laid down in the NIP the changes of POPs concentration in the environment will be determined. This comparison will be undertaken by the institutions carrying out POPs monitoring in the environment, foodstuffs and other mediums, and

the results will be presented in their effectiveness evaluation reports. A trend between the baseline (first measurements following the approval of the NIP) and periodical follow-up measurements will be established from the available monitoring data. A decreasing trend in POPs levels will show that NIP had a positive impact on environmental and food pollution. The effectiveness evaluation would also cover issues relating to the cost effectiveness of the NIP. This would include an assessment of whether the selected approach and action is decreasing the risks from POPs in an economical way.

In the event that the effectiveness evaluation shows that POPs risk has not been sufficiently reduced, further POPs action or refinement of existing action and approaches may be introduced. It is foreseen that an effectiveness evaluation would take place after short- and medium-term phases before moving to medium and long-term NIP action respectively.

In view of the NIP structure, action plans and Convention reporting requirements a scheme for the submission of effectiveness reports presented in table 12 will be applied in Lithuania.

3.7. Submission of reports

Lithuania is required to submit national and topical reports in specified format to the Conferences of the Parties covering the implementation of Convention provisions. The reporting requirements and reporting periods are presented in table 13.

Table 13. Obligatory reporting requirements under the Convention

Obligatory Convention requirement	**Description of the requirement**	**Periodicity**
Article 5, paragraph (a): Measures intended to reduce or eliminate pollutants from their unintentional production	Each Party shall develop an action plan, or, where appropriate, a regional or subregional action plan and subsequently implement it as part of its implementation plan specified in Article 7, designed to identify, characterize and address the release of chemicals listed in Annex C.	In two years from the day when the Convention comes into force for the Party concerned
Article 5, part (v) of paragraph (a): measures intended to reduce or eliminate the pollutants from their intentional production	In meeting the requirements of article 5 (v), the Parties shall review the strategies intended to reduce or eliminate the pollutants from unintentional production and the results of those strategies. The material of such reviews shall be included in reports submitted pursuant to Article 15.	Every 5 years
Article 7: implementation plans	Each party shall develop and endeavour to implement a plan for the implementation of its obligations, transmit its implementation plan to the Conference of the Parties, review and update, as appropriate, its implementation plan on a periodic basis and in a manner to be specified by a decision of the Conference of the Parties.	To communicate to the Conference of the Parties in two years following the day of coming into force of the Convention for a party concerned
Article 15: reporting	Each Party shall report to the	To be decided by the

	Conference of the Parties on the measures it has taken to implement the provisions of this Convention and on the effectiveness of such measures in meeting the objectives of the Convention. In addition, each Party shall provide to the Secretariat: statistical data on its total quantities of production, import and export of each of the chemicals listed in Annex A and Annex B or a reasonable estimate of such data; and to the extent practicable, a list of the States from which it has imported each such substance and the States to which it has exported each such substance.	Conference of the Parties
Article 16: effectiveness evaluation	The requirement to evaluate effectiveness for the first time in four years after the date of entry into force of this Convention, and periodically thereafter at intervals to be decided by the Conference of the Parties. The requirement to submit reports and information, including reports and other monitoring information submitted pursuant to Article 16 (2), national reports submitted pursuant to Article 15 and non-compliance information provided pursuant to the procedures established under Article 17.	Starting in four years following the date of coming into force of the Convention, and subsequently – within the time limits to be determined by the Conference of the Parties
Annex A, part II, paragraph (g):PCBs	Every five years each Party shall provide a report on the progress in elimination of polychlorinated biphenyls and submit it to the Conference of the Parties pursuant to Article 15.	Every 5 years
Annex B, Part II, paragraph 4: DDT	Every three years, each Party that uses DDT shall provide to the Secretariat and the World Health Organization information on the amount used, the conditions of such use and its relevance to that Party's disease management strategy, in a format to be decided by the Conference of the Parties in consultation with the World Health Organization.	Every 3 years

Table 14 presents the time-schedule for submission of reports by the parties of the Convention. The first national report[2] which the Parties will present at the third Conference of the Parties in 2007, shall be submitted to the secretariat by 31 of December 2006. Further national

[2] The form of the national report was determined in the course of the first Conference of the Parties that took place on the 2-6 of May 2005 in Uruguay. The form of PCB elimination progress report will be approved at a later date, as it was not approved during the first Conference of the Parties.

reports shall be submitted every four years. All reports to the Conference of the Parties shall be submitted through the secretariat.

According to the *Regulation 850/2004/EC,* the periodicity of submission of POPs management reports to be submitted to the European Commission by the Ministry of Environment does not coincide with the periodicity of submission of national reports under the Convention. Furthermore, European Commission has not yet approved the format of submission of information and data concerning the implementation of *Regulation 850/2004/EC.*

Table 14. Schedule for the submission of reports under the Convention requirements for the parties that ratified the Convention

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		COP*1	COP2	COP3		COP4		COP5		COP6		COP7		COP8		COP9
Stage	Coming into force [1] of the Stockholm Convention		NIP[2]	DDT report[3] I national report[4]	I effectiveness evaluation[5]	PCBs elimination progress report[6]	DDT report[3]	II National report[7] Review of the strategies on the reduction of pollutants from unintentional production[8]		DDT report[3]	PCBs elimination progress report[6]	III National report[7]	Review of the strategies on the reduction of pollutants from un intentional production[8]			* IV National report[7] PCB elimination progress report[6]

According to the resolution of the Government of the Republic of Lithuania *On the Approval of Submission Procedure to the European Commission of the Reports Related to the Implementation of European Union Environmental Sector Legislation and on the Provision of Information Necessary for the Development of Reports to the European Environment Protection Agency,* the Ministry of Environment submits POPs management reports to the European Commission according to the *Regulation 850/2004/EC.* State plant protection service, State non-food products

[1] According to Article 26 the Convention came into force on 17 of May 2004, i.e. on the ninetieth day after the date of deposit of the fiftieth instrument of ratification, acceptance, approval or accession.
[2] The nearest delivery of NIP to the Conference of the Parties according to the requirements of article 7 of the Convention.
[3] DDT report; the Parties that do not use DDT must submit the DDT report according to the requirement of paragraph 4 of part II contained in the annex B of the Convention.
[4] Preliminary date for the submission of the first National report to the Conference of the Parties according to the requirement contained in paragraph 4 of part II of annex B.

inspectorate, Customs department under the Ministry of Finance within the limits of their competence must submit information on POPs to the Ministry of Environment. The Ministry of Environment, which develops national reports under the Convention, will need the following additional information on POPs:

- state rivers and lakes (water and sediments) monitoring data and data on PCB containing transformers and capacitors and their waste management, which shall be generated and compiled by the EPA;
- groundwater monitoring data and information on the potential sources of pollution, generated and compiled by LGS;
- data on POPs residues in foodstuffs (animals and their meat, milk, poultry, eggs, game, fish and honey), tested and recorded by the State food and veterinary service/National veterinary laboratory;
- data on the POPs measurements in the Baltic Sea and Kursiu lagoon waters, bottom sediment and biota, performed by the Marine research centre.

3.8. Inclusion of chemical substances in the lists of the annexes to the Convention and registration of specific exemptions in the register of specific exemptions

Article 4 of the Convention (register of specific exemptions) sets-up a register of specific exemptions. Any country prior to becoming a Party to the Convention may by a written notice to the Convention secretariat register for one or several types of specific exemptions listed under annex A or B. If the specific exemption for Lithuania will be registered or its time limit extended, an appropriate action plan will have to be developed, by including it in the NIP. The procedure for the review of register entries will have to be followed, and, if necessary, the time-limit for the specific exemption extended for Lithuania. At present Lithuania does not need any specific exemptions.

According to article 8 of the Convention (inclusion of chemical substances in annexes A, B and (or) C) and in line with the procedures listed therein, each Party may submit a proposal to the Convention secretariat on the inclusion of a particular chemical substance in annex A, B and (or) C. Lithuanian legal basis and institutional capacities ensure the system of control, so that the industrial chemical substances, plant protection products and biocides newly manufactured or placed on the market are assessed against the criteria listed in point 1 of annex D to the Convention. Whenever it is established that a particular substances fulfills the POPs criteria listed in point 1 of annex D to the Convention, a decision including the substance in annex A, B and (or) C of the Convention shall be taken. Following the inclusion of new substances in the annexes A, B and (or) C of the Convention the NIP will accordingly be reviewed and the new action plans on new substances included.

[5] According to the requirements of article 16 of the Convention: first effectiveness report.
[6] PCB elimination progress report shall be submitted according to paragraph (g) of part II of annex A to the Convention.
[7] Preliminary date for the submission of the National report to the conference of the Parties according to the requirements of article 15 of the Convention.
[8] Review of strategies intended for the identification, description and taking up measures on the emission of chemical substances listed in annex C according to the requirements of article 5 (a) (v) of the Convention. The reports of such reviews should be included in the reports submitted according to the requirements of article 15 of the Convention.

3.9. Release reduction strategy of unintentional POPs

As discussed earlier and notwithstanding high level of uncertainty, the activity categories "Energy production and heating" and "Uncontrolled combustion processes" are the most important categories of pollution sources of unintentional POPs emissions in Lithuania. Upon implementation of the action plans, i.e. development of a public municipal waste management system, covering all legal and natural persons in Lithuanian, and informing the general public on the harm of incineration of waste, grass; the release from those categories should decrease significantly.

Other important sources of unintentional POPs emissions in Lithuania are incineration of PCBs and medical waste. Following the finalization of the inventory covering all equipment polluted with PCBs and managing such equipment in an environmentally safe manner, a considerable amount of release from this source will be avoided in Lithuania. To reduce emissions of unintentionally produced POPs from inceniration of medical waste the *Medical waste management in health service organisations programme for 2006-2008* was developed. The measures identified in programme will lead to the reduction of risks from improper management of medical waste.

In the process of issuing IPPC permits for enterprises carrying out one of the types of activities listed in annex 1 to the IPPC regulations, the limit-values of the pollutants are determined according to the information document of "best available techniques" developed by the European Union for a certain type of activity. Annex 1 of the regulations includes the principal stationary sources of POPs pollution, thus the emissions from the enterprises should not presently or in future constitute a major pollution source of unintentional POPs.

4. Action programme of the National Implementation Plan on persistent organic pollutants under Stockholm Convention

Action plan No. 1. Legal measures and enhancement of institutional capacities

Aim of the action plan:

to improve Lithuanian legal basis and institutional capacities, by ensuring the implementation of the provision of the Stockholm Convention on persistent organic pollutants (POPs).

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. Litas)	Source of financing	Time limit
1. To improve enforcement of the implementation of the Regulation requirements in Lithuania	1.1. To include training material on PCBs management and unintentional POPs in the in-service training courses of the employees of regional environmental protection departments	-Development of appropriate PCB and unintentional POPs training material in Lithuanian language.	In-service training programmes for the employees of regional environmental protection departments supplemented with the training material on PCBs management and unintentional POPs	State environmental protection inspectorate, Ministry of Environment	-	-	2006–2007
A total of					**-**		

Action plan No. 2. POPs pesticide waste management

Aim of the action plan:
to ensure the POPs pesticide management by minimizing the negative impact on the environment and human health

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. Litas)	Source of financing	Time limit
2. To reduce the risk of POPs use and POPs waste to the environment and human health	2.1. To manage obsolete pesticides (including POPs pesticides)	-	Obsolete pesticides (including POPs pesticides) stockpiles handled	Ministry of Environment, municipalities	13 120	EU Cohesion fund, state budget	2006–2009
		2.1.1. To manage the inventoried obsolete pesticides (including POPs pesticides) waste that was not included in the pesticide management programme for 2002-2005	The known obsolete pesticides (including POPs pesticides) waste stockpiles are safely managed	Ministry of Environment, municipalities	13 120	EU Cohesion fund, state budget	2006–2009
		2.1.2. To manage the newly identified obsolete pesticides (including POPs pesticides)	The recently identified obsolete pesticides (including POPs pesticides) stockpiles are safely managed	Ministry of Environment, municipalities	-	**-**	When necessary
A total of:					**13 120**		

Action plan No. 3. Management of PCB containing oil and equipment

Aim of the action plan:
to decontaminate and/or dispose of the PCB containing equipment and oil in an environmentally safe manner.

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation costs (thous. Litas)	Source of financing	Effective implementation criteria	Time limit
2. To reduce the risk of POPs use and POPs waste to the environment and human health	2.2. To collect, store, decontaminate and/or dispose of PCB containing oil and equipment	-	Safe and timely decontamination and/or disposal of PCB containing oil and equipment is ensured	Possessors of equipment and oil	5 440	Resources of possessors of equipment and oil	PCB containing oil and equipment is collected, stored, decontaminated and/or disposed	2006–2010
A total of:					**5 440**			

Action plan No. 4. Reduction of release of unintentional POPs

Aim of the action plan:
to reduce the emission to the environment of unintentional POPs.

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. Litas)	Source of financing	Time limit
3. To reduce the emission to the environment of persistent organic pollutants	3.1. To develop the public municipal waste management system in order for it to covering all legal and natural persons in Lithuania.	-	An operating public municipal waste management system covering the entire Lithuanian territory is developed, which allows the collection and handling of more waste and thus the amount of waste incinerated in households is reduced.	Ministry of Environment, municipalities	-	Funds of the possessors of waste	2006–2007
A total of:					-		

Action plan No. 5. Assessment and management of sites polluted with POPs

Aim of the action plan:

to identify the sites polluted with POPs, assess their level of pollution, plan further actions for the management of such sites and carry out the planned management.

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. Litas)	Source of financing	Time limit
4. To identify the sites polluted with POPs, assess their level of pollution and manage them adequately	4.1. To develop, to present for the approval of the Government of Republic of Lithuania and to implement the management programme of pesticide waste storage sites and sites polluted with pesticide waste	-	A management programme of pesticide waste storage sites and sites polluted with pesticide waste, posing the highest risk to environment and human health, is prepared	Ministry of Environment, Lithuanian Geological Survey, Environmental Protection Agency	21 275	EU Cohesion fund, Global Environment Facility, state budget	Programme development – 2006; Programme implementation 2006 –2012
		4.1.1. To further inventory the existing and former pesticide storage sites and prepare the data base of pesticide waste storage sites	Inventory and primary assessment forms completed and data base of pesticide waste storage sites is developed	Lithuanian Geological Survey	-	-	2006–2010

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. Litas)	Source of financing	Time limit
		4.1.2. To prepare the management programmes of pesticide waste storage sites and sites polluted with pesticides waste.	The management programme of pesticide waste storage sites and sites polluted with pesticide waste is prepared	Ministry of Environment, Lithuanian Geological Survey, Environmental Protection Agency	35	State budget	2006
		4.1.3. To draw the list of priority sites polluted with POPs pesticides	A list of priority sites potentially polluted with POPs pesticides is prepared	Lithuanian Geological Survey, Environmental Protection Agency	20	Global Environment Facility, other international funding	2007
		4.1.4. To perform assessment of sites potentially polluted with POPs pesticides	The sites polluted with POPs pesticides are identified	Lithuanian Geological Survey, Environmental Protection Agency	1 100	Global Environment Facility	2007–2010
		4.1.5. To manage the sites polluted with POPs pesticides	The sites polluted with POPs pesticides are managed	Ministry of Environment, owners	20 120	EU Cohesion fund, Global Environment Facility, state budget, private funds, municipal funds	2007–2012
A total of:					**21 275**		

Action plan No. 6. Monitoring

Aim of the action plan:

to improve the structure of POPs monitoring carried out in Lithuania, in order to receive full information on the distribution of these substances in the environment, flora and fauna, foodstuffs in all levels (state, regional, economic operator's).

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. litas)	Source of financing	Time limit
5. To assess the levels and trends of POPs in the environment, biota and foodstuffs	5.1. To prepare and approve a new sampling plan for POPs monitoring	-	The new sampling plan for POPs monitoring prepared	Ministry of Environment, State Food and Veterinary Service	-	-	2006–2007
		5.1.1. To determine clear responsibility for POPs monitoring in each ministry/agency in the sphere regulated by that ministry/agency	Clarity to the institutional responsibilities and funding of POPs measurements agreed	Ministry of Environment, State Food and Veterinary Service	-	-	2006
		5.1.2. To appoint an employee at each institution in charge of the POPs monitoring undertaken by that institution	The number of responsible persons reduced resulting in better coordination and more relevant and accurate reports	Ministry of Environment, State Food and Veterinary Service	-	-	2006
		5.1.3. To prepare a sampling plan for the new POPs monitoring	Sampling plan for the new POPs monitoring prepared	Ministry of Environment, State Food and Veterinary Service	-	-	2007

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. litas)	Source of financing	Time limit
	5.2. To perform POPs monitoring according to the new sampling plan	-	The POPs monitoring that assists in the assessment of differences in regional pollution, pollution sensitive or highly polluted regions, state of the local territory environment and the short-term increase/decrease of POPs pollution level in the regions and in the country is in the process of implementation	Environmental Protection Agency, Marine Research Centre, Lithuanian Geological Survey, regional environmental protection departments, State Food and Veterinary Service	2 910	EU structural funds, state budget	2008–2015
A total of:					**2 910**		

Action plan No. 7. Public awareness and education on the adverse effect of POPs on health and environment and on the opportunities of reduction of their release

Aim of the action plan:

to provide information on POPs, their negative impact on health and environment, their formation and accumulation in the environment, to the Lithuanian society and to interested groups and organizations. To ensure the active participation of the public in the process of developing of environmental policy . To inform general public about POPs with the help of all efficient ways of information dissemination and education, and in close cooperation between state, municipality institutions and non-governmental organizations.

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. litas)	Source of financing	Time limit
6. To disseminate knowledge on POPs and prevention of their formation to the society and other interested parties	6.1. To prepare and disseminate information material on the environmental and human health impact of POPs and regularly organize targeted environmental actions intended for the prevention of POPs formation	-	Information material on POPs is prepared and targeted environmental actions against incineration of old grass and household waste and intended for the prevention of POPs formation are organized	Ministry of Environment, Ministry of Health, Ministry of Agriculture, State fire service, regional environmental protection departments, municipalities	560	EU structural funds, state budget	2006–2015

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. litas)	Source of financing	Time limit
		6.1.1. Regularly organize targeted environmental actions intended for the prevention of POPs formation.	Targeted environmental actions against incineration of old grass and household waste and intended for the prevention of POPs formation are organized	Ministry of Environment, Ministry of Health, State fire service, municipalities	560	EU structural funds, municipal environment support programme, state budget	2007–2015
		6.1.2. To prepare informational material on the effect of POPs to human health and environment and on the prevention of POPs formation	Information material on the effect of POPs to human health and environment and on the prevention of POPs formation is prepared	Ministry of Environment, Ministry of Health	-	-	2006
		6.1.3. To disseminate informational material on the effect of POPs to human health and environment to the employees of the enterprises potentially in possession of PCB containing equipment and enterprises handling PCB containing waste	Information material is disseminated to the employees of the enterprises potentially in possession of PCB containing equipment and enterprises handling PCB containing waste	Ministry of Environment, Ministry of Health, regional environmental protection departments	-	-	2006–2007

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. litas)	Source of financing	Time limit
		6.1.4. To disseminate informational material on the effect of POPs to human health and environment and prevention of POPs formation to pregnant and nursing women, doctors of general practice and gynaecologists in healthcare establishments and women and children healthcare centres	Pregnant and nursing women and doctors informed on the negative impact of POPs and methods of preventing exposure to POPs.	Ministry of Health	-	-	2006–2015
		6.1.5. To disseminate informational material to farmers and rural communities on the effect of POPs to human health and environment and on the necessity to identify and handle the stockpiles of obsolete pesticides	Information material disseminated to farmers and rural communities	Ministry of Agriculture	-	-	2006–2015

Objectives	Measures	Steps for measure implementation	Expected results	Responsible institutions	Implementation resources (thous. litas)	Source of financing	Time limit
		6.1.6. To disseminate information material on the effect of POPs to human health and environment to enterprises that release unintentional POPs.	Information material disseminated to enterprises that release unintentional POPs	Ministry of Environment, Ministry of Health, regional environmental protection departments	-	-	2006–2015
A total of:					**560**		

ANNEXES

Annex No. 1. Abbreviations used in the text

EPA – Environmental Protection Agency under the Ministry of Environment of the Republic of Lithuania

ME – Ministry of Environment

GDP – gross domestic product

COP – Conference of the Parties

Directive 67/548/EEC – Council directive on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548/EEC)

Directive 76/769/EEC – Council directive on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (76/769/EEC)

Directive 91/414/EEC – Council directive concerning the placing of plant products on the market (91/414/EEC)

Directive 98/8/EC – European Parliament and Council directive concerning the placing of biocidal products on the market

EFTA – European Free Trade Association

EINECS - European Inventory of Existing Commercial Chemical Substances; Inventory of chemical substances, which were on the market before 18 September 1981, compiled by the European Commission

ELINCS – European List of New Chemical Substances; the European Commission Inventory of chemical substances, which were on the market before 18 September 1981

GC – gas chromatograph

GC/MS – gas chromatograph/mass spectrometer

BAT – Best Available Techniques

HELCOM –Helsinki Commission on the Protection of the Baltic Marine Environment

HPLC – high-performance liquid chromatograph

MRC – Marine Research Centre under the Ministry of Environment of the Republic of Lithuania

Convention – Stockholm Convention on persistent organic pollutants of 2001

LC – liquid chromatograph

LGS – Lithuanian Geological Survey under the Ministry of Environment of the Republic of Lithuania

NIP – National implementation plan on persistent organic pollutants under Stockholm Convention

NVL – National veterinary laboratory of the Republic of Lithuania

NGOs – Non-governmental organizations

OECD – Organization for Economic Co-operation and Development

Furans – polychlorinated dibenzofurans

Dioxins – polychlorinated dibenzo-p-dioxins

POPs – persistent organic pollutants

Protocol - Protocol of 1998 to the 1979 Convention on the Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (Geneva Convention)

PO pesticides – persistent organic pesticides

REPD – regional environmental protection departments

Regulation 850/2004/EC – European Parliament and Council regulation on persistent organic pollutants and amending directive 79/117/EEC

MSSL – Ministry of Social Security and Labour

MH – Ministry of Health

Party – state or regional economic integration organization that agreed to bind itself with the Stockholm Convention and for which that Convention has come into force

TEF – toxicity equivalence factor applied for toxicity assessment of various dioxins

TEQ - toxic equivalence quotient – a unit by which the concentration of congenerous dioxins and dioxin-like congenerous PCBs, received by applying the TEF, is expressed

IPPC directive – Council directive of 24 September 1996 concerning integrated pollution prevention and control

ME – Ministry of Economy of the Republic of Lithuania

SEPI – State Environmental Protection Inspectorate under the Ministry of Environment of the Republic of Lithuania

SPPS – State Plant Protection Service under the Ministry of Agriculture

LSSSF – Lithuanian State Science and Studies Foundation

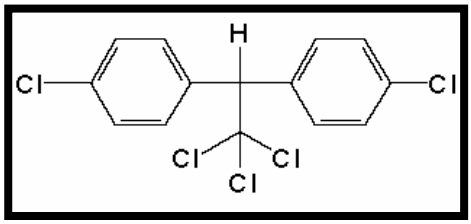
SFVS – State Food and Veterinary Service of the Republic of Lithuania

SNFPI – State Non Food Products Inspectorate

MA – Ministry of Agriculture of the Republic of Lithuania

Annex No. 2. Substances regulated under the Stockholm Convention

DDT



CAS No. 50-29-3

Chemical and physical properties

Odourless achromatic crystals or white powder.
Molecular formula: $C_{14}H_9Cl_5$
Molecular mass: 354,49
log K_{oc}: 5,146–6,26
log K_{ow}: 4,89–6/914
Water solubility: 1/2–5/5 μg/l, at 25°C
Vapour pressure: 2,5 x 10^{-8} kPa (1,9 x 10^{-7} mm Hg), at 20°C.

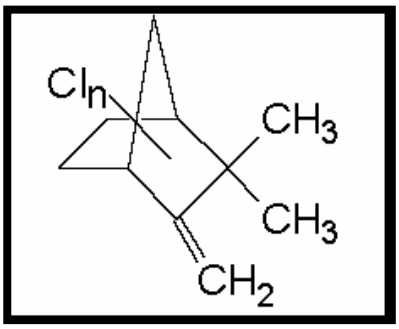
Use

DDT is the first synthetic insecticide. This substance was often used in fighting mosquitoes and other insects – carriers of malaria (still used at present in order to protect the inhabitants of tropic regions against malaria, typhus and other diseases).

Health impact

DDT may negatively affect the human nervous system. The increased mortality of individuals from cardiac and vascular diseases and from liver cancer that worked in the sphere of DDT production was also established. It has been proved that DDT weakens the immune system and it is considered that this substance may increase the risk of breast cancer. DDT also poses risk to fish and birds (their reproduction features).

TOXAFENE



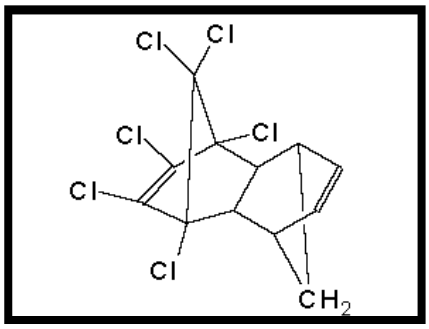
CAS No. 8001-35-2

Chemical and physical properties
yellow substance with the smell characteristic to chlorine/terpene.
Molecular formula: $C_{10}H_{10}Cl_8$
Molecular mass: 413,82
log K_{OC}: 3,18 (calculated)
log K_{OW}: 3,23–5,50
Water solubility: 550 µg/l at the temperature of 20°C
Vapour pressure: 0,2–0,4 mm Hg at the temperature 25°C.

Use
Toxafene is an insecticide used for the protection of cultivated plants against locusts, grubs and for the protection of domestic animals against small parasites.

Health impact
Is characterized with teratogenic impact on mammals and, as considered, with carcinogenic impact on individuals.

ALDRIN



CAS No. 309-00-2

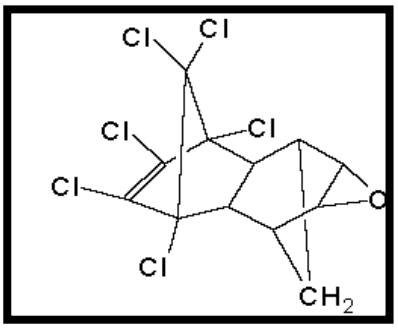
Chemical and physical properties
Odourless white crystals (when pure substance).
Substance for technical use is usually of yellow-brown to dark brown colour with a slight smell.

Molecular formula: $C_{12}H_8Cl_6$
Molecular mass: 364,92
log K_{OC}: 2,61–4,69
log K_{OW}: 5,17–7,4
Water solubility: 17-180 µg/l, at 25°C
Vapour pressure: 2,31 x 10^{-5} mm Hg, at 20°C.

Use
Aldrin is an insecticide of a wide spectrum of action and it was used to fight vermins of cereal crops.

Health impact
In plant and animal organisms aldrin forms into dieldrin, therefore aldrin is rarely detected in animals and plants. The Aldrin human health impact symptoms are theses: headache, dizziness, nausea, sickness, muscle cramps and convulsions.

DIELDRIN



CAS No. 60-57-1

Chemical and physical properties
Endrin stereoisomer. Odourless or slight smell white crystals or palish yellow-brown flakes.

Molecular formula: $C_{12}H_8Cl_6O$
Molecular mass: 380,90

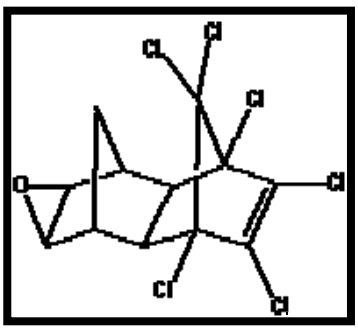
log K_{OC}: 4,08–4,55

log K_{OW}: 3,692–6,2
Water solubility: 140 µg/l, at 20°C
Vapour pressure: 1,78 x 10^{-7} mm Hg, at 20°C.

Use
Dieldrin was used for fighting vermins of cereal crops.

Health impact
As dieldrin soon forms from aldrin, the environmental concentration of the former also depends on the amount of aldrin and dieldrin used. The long term absorption of small amounts of those substances reduces human disease resistance. Employees affected by aldrin or dieldrin suffer from headaches, dizziness, sickness, muscle cramps. The tests with animals showed that these substances negatively affect the nervous system, eliminate spermatozoids and mice get sick with liver cancer.

ENDRIN



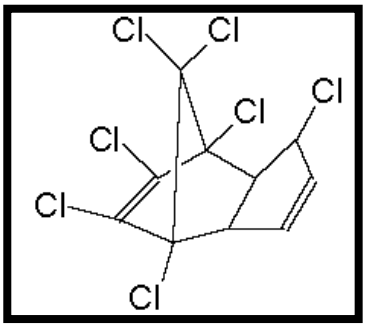
Chemical and physical properties
Odourless white crystal substance (when pure substance).
Substance for technical use is usually of yellow-brown colour with slight smell.

Molecular formula: $C_{12}H_8Cl_6O$
Molecular mass: 380,92
log K_{OW}: 3,209–5,339
Water solubility: 220 - 260 µg/l, at 25°C
Vapour pressure: 7 x 10^{-7} mm Hg, at 25°C.

Use
Endrin was used to fight vermins of cereal crops and cotton.

Health impact
Tests with animals showed that endrin negatively affects the central nervous system, causes congenital malformations. The impact of the high dose of this substance may cause convulsions and death in few minutes or hours. Symptoms of endrin intoxication are these: headaches, dizziness, nausea, sickness and convulsions. Endrin is extremely toxic for fish.

HEPTACHLOR



CAS No. 76-44-8

Chemical and physical properties

Crystals of white or light yellow-brown colour with the smell similar to that of camphor.

Molecular formula: $C_{10}H_5Cl_7$
Molecular mass: 373,32

log K_{OC}: 4,38

log K_{OW}: 4,40–5,5
Water solubility: 180 ppb, at 25°C
Vapour pressure: 3 x 10^{-4} mm Hg, at 20°C.

Use

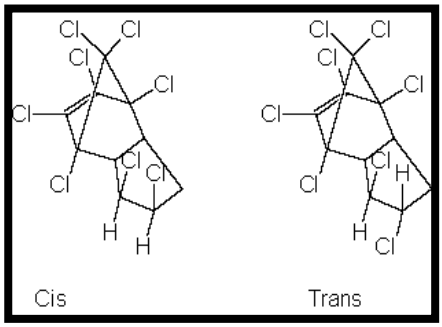
Heptachlor is an insecticide used for fighting termites and other vermits.

Health impact

Heptachlor causes hyper-activeness of central nervous system and damages the liver. Heptachlor is characterized by teratogenic impact on mammals. It is important to note that heptachlor metabolite forming in the process of impact of ultraviolet rays is much more toxic than heptachlor itself.

CHLORDANE

CAS No. 57-74-9



Chemical and physical properties

Achromatic or amber colour tenacious fluid with aromatic, sharp smell similar to that of chlorine.

Molecular formula: $C_{10}H_6Cl_8$
Molecular mass: 409,78

log K_{OC}: 4,58–5,57

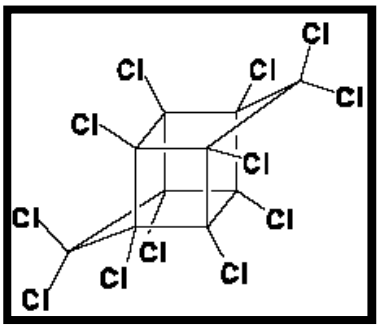
log K_{OW}: 6,00
Water solubility: 56 ppb, at 25°C
Vapour pressure: 10^{-6} mm Hg, at 20°C.

Use
Chlordane is an insecticide used to fight ants, termites in construction, road building. It is characterized with teratogenic impact on mammals and carcinogenic impact on humans.

Health impact
Chlordane is regarded as pathogen of bronchitis and migraine. Individuals that live in the houses built close to chlordane production areas suffer from cerebration disorders. The symptoms of chlordane impact are dizziness, headaches and total weakness.

MIREX

CAS No. 2385-85-5



Chemical and physical properties

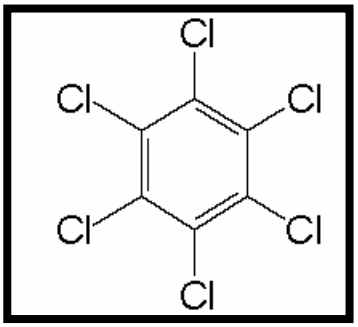
White crystalline odourless substance.
Molecular formula: $C_{10}Cl_{12}$
Molecular mass: 545,5
Water solubility: insoluble
Vapour pressure: 3 x 10^{-7} mm Hg, at 25°C.

Use
Mirex is an insecticide used to fight ants and other vermits.

Health impact
Animal tests showed that mirex may negatively affect the development of the foetus in the organism, also the liver and the immune system.

HEXACHLOROBENZENE

CAS No. 118-74-1



Chemical and physical properties

White crystals.
Molecular formula: C_6Cl_6
Molecular mass: 284,78
log K_{OC}: 2,56–4,54
log K_{OW}: 3,03–6,42
Water solubility: 40 µg/l, at 20°C
Vapour pressure: 1,089 x 10^{-5} mm Hg, at 20°C.

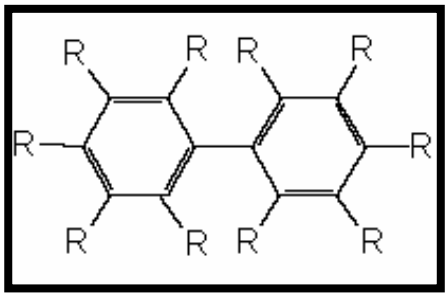
Use

Hexachlorobenzene was often used as the intermediate product in the processes of industrial production. Nonetheless Hexachlorobenzene was most used in agriculture as fungicide, therefore it can be included in the group of persistent organic pesticides. This substance was also used as an additive in the manufacture of different pesticides.

Health impact

It has been proved that the impact of this substance to humans is evidenced by pigmentation, increase of hairiness, sharp pain in the bowel and failure or even lapse of sense of self-balance.

POLYCHLORINATED BIPHENYLS



CAS No. 1336-36-3

Molecular formula: $C_{12}H_{(10-n)}Cl_n$

Chemical and physical properties

Theoretically the number of polychlorinated biphenyl isomers amounts to 209, of them about 130 were detected in production. Polychlorinated biphenyls are synthetic chlorinated carbohydrates of a light yellow or brown shade, odourless and tasteless, they do not crystallize in low temperatures, in different conditions they are characterized by chemical inertness and stability, non-flammable, thermally non-fragmenting, poorly conductive for electricity, good heat conductors, very poorly water soluble, but volatile.

Water solubility: 7×10^{-6} – 5.9×10^{-3} g/l.

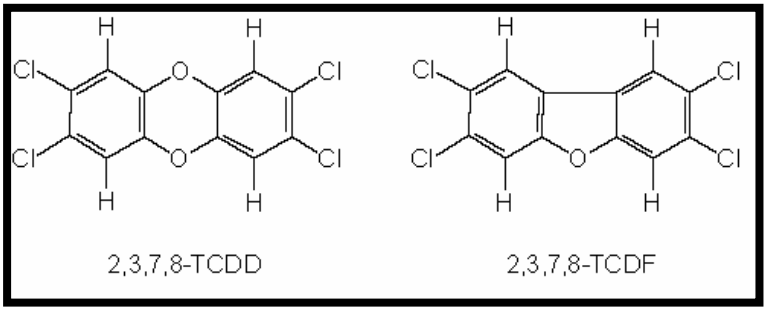
Use

Polychlorinated biphenyls were used in closed (transformers, capacitors, electric engines, electromagnets), semi-closed (heat transporting fluids, hydraulic fluids, vacuum pumps and etc) and open (lubricating oils, surface protective coatings and etc) applications.

Health impact

May be characterized with carcinogenic effect. PCBs impact is related with weight decline, nausea, sickness, icterus, stomach ache, headache, dizziness and oedema. Individuals with higher doses of polychlorinated biphenyls detected in their organisms often ailed with liver cirrhosis.

DIOXINS AND FURANS



CAS No.: neither dioxins nor furans do not have CAS numbers, though some chlorinated dioxins have CAS numbers (for ex. CAS No. 2,3,7,8-TCDD is 17646-01-6, and 2,3,7,8-TCDF is 51207-31-9).

Chemical and physical properties
The most hazardous of the 12 POPs are by-products of thermal industrial or combustion processes – dioxins and furans, which are commonly called as "dioxins". The term "dioxins" encompasses isomers of 75 dioxins and 135 furans. Different from other POPs, dioxins and furans were never produced intentionally, as they did not exhibit any useful properties, but they are found in almost all ecosystem objects in measurable dimensions.

Dioxins and furans are usually insoluble in water and very stabile. The properties of these substances depend on the amount of chlorine atoms in the molecule.

Use
No intentional use

Health impact
Mutagenic and carcinogenic substances. Disorders of endocrine and nervous systems are identified in the result of impact of those substances, also hepatitis, changes in the proportion of the sex of nascent children (more girls than boys are born), increase of diabetic diseases.