UPDATE OF THE NATIONAL PLAN FOR THE IMPLEMENTATION OF THE STOCKHOLM CONVENTION on Persistent Organic Pollutants (POPs) adopted by the Council of Ministers on 28 December 2016

THE REPUBLIC OF POLAND

Warsaw 2016

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

α-HCH	α - hexachlorocyclohexane
β-HCH	β - hexachlorocyclohexane
γ-HCH	γ-hexachlorocyclohexane
AFQI	Agricultural and Food Quality Inspection
B(a)P	Benzo(a)pyrene
BAT	Best Available Techniques
bsw	body of surface water
CAS	identification number of a substance, assigned by the Chemical Abstracts Service
CIEP	Chief Inspectorate of Environmental Protection
CLP	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, changing and repealing Directive 67/548/EEC and 1999/45/EC and amending Regulation (EC) No 1907/2006 (OJ EU L 353 of 31.12.2008, p. 1, as amended)
cmp	control measurement point
CSI	Chief Sanitary Inspector
CWL "Rudna Góra"	"Rudna Góra" Central Waste Landfill
DDD	1,1-dichloro-2,2-di(4-chlorophenyl)ethane - a DDT metabolite
DDE	1,1-dichloro-2,2-di(4-chlorofenylo)ethylene - a DDT metabolite
DDT	1,1,1-trichloro-2,2-di(4-chlorofenyl)ethane
dekaBDE	decabromediphenyl ethyl
dl-PCB	dioxin-like polychlorinated biphenyls (*dioxin-like PCB)*
dm	dry mass
DQMS MTA	Department of Quality and Management Systems of the Military Technical Academy
ECHA	European Chemicals Agency
EEA	European Environment Agency
EMEP	European Monitoring Environmental Program
eni	equivalent number of inhabitants
E-PRTR	The European Pollutant Release and Transfer Register
EU	The European Union
GEF	Global Environmental Facility
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GVI	General Veterinary Inspectorate

HBCDD	hexabromocyclododecane
HCB	hexachlorobenzene
HCH	hexachlorocyclohexane
HELCOM	Baltic Marine Environment Protection Commission - Helsinki Commission
HRGC-HRMS	High Resolution Gas Chromatography-High Resolution Mass Spectrometry
ICES	International Council for the Exploration of the Sea
IEP	Institute of Environmental Protection - National Research Institute
IMWM	Institute of Meteorology and Water Management – National Research Institute
Journal of Laws	Journal of Laws of the Republic of Poland
MIPHSI	Main Inspectorate of Plant Health and Seed Inspection
MRL	maximum residue limit
NCEM	National Centre for Emissions Management
ndl-PCB	non dioxin-like polychlorinated biphenyls (non dioxin-like PCB)
NFEP&WM	National Fund for Environmental Protection and Water Management
NIPH-NIH	National Institute of Public Health - National Institute of Hygiene
NVRI-NRI	National Veterinary Research Institute - National Research Institute
OJ EU	Official Journal of the European Union
PAH	polycyclic aromatic hydrocarbons
PBDE	polibrominated diphenyl ethers
PCA	Polish Centre for Accreditation
PCB	polychlorinated biphenyls
PCDD	polychlorinated dibenzodioxins
PCDD/F	polychlorinated dibenzodioxins and dibenzofurans
PCDF	polychlorinated dibenzofurans
PeCB	pentachlorobenzen
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonate
POPs	persistent organic pollutants
RVL	Regional Veterinary Laboratory
SEM	State Environmental Monitoring
SPHSIS	State Plant Health and Seed Inspection Service
SSI	State Sanitary Inspection
TEQ	toxic equivalent corresponding to 2,3,7,8-TCDD

UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
VI	Veterinary Inspection
VIEP	Voivodship Inspectorate for Environmental Protection
wb	water body
WHO	World Health Organization
WHO-PCB	total PCB

LIST OF LEGAL ACTS AND LIST OF STUDIES

LIST OF LEGAL ACTS

International and the EU legislation

1. Basel Convention on Transboundary Movements of Hazardous Wastes and their Disposal, made in Basel on 22 March 1989 (Journal of Laws of 1995 item 88), hereinafter referred to as “the Basel Convention”.
2. Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, made in Rotterdam on 10 September 1998 (Journal of Laws of 2008 item 990), referred to as “the Rotterdam Convention”.
3. Stockholm Convention on Persistent Organic Pollutants, made in Stockholm on 22 May 2001 (Journal of Laws of 2009 item 76 and of 2016 item 549), hereinafter referred to as “the Stockholm Convention”.
4. Government statement of 2 December 2008 on binding force of the Stockholm Convention on Persistent Organic Pollutants, made in Stockholm on 22 May 2001 (Journal of Laws of 2009 item 77), hereinafter referred to as “the Government statement”.
5. Protocol to the 1979 Convention on Long Range Transboundary Air Pollution on Persistent Organic Pollutants (POPs) (OJ EC L 81 of 19.03.2004, p. 37, as amended), hereinafter referred to as “the POPs Protocol”.
6. Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (OJ EC L 243 of 24.09.1996 p.31, as amended), hereinafter referred to as “the Directive 96/59/EC”.
7. Directive 2000/60/EC of the European Parliament and the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ EC L 327 of 22.12.2000, p. 1, as amended), hereinafter referred to as “the Directive 2000/60/EC (Water Framework Directive)”.
8. Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ EC L 182 of 16.7.1999, p. 1, as amended), referred to as “the Directive 1999/31/EC on the landfill of waste”.
9. Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (OJ EC L 24 of 29.01.2008, p. 8, as amended), hereinafter referred to as “the Directive 2008/1/EC”.
10. Directive of the European Parliament and the European Council 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environment policy (Marine Strategy Framework Directive) (OJ EU L 164 of 25.06.2008, p. 19, as amended), hereinafter referred to as “the Directive 2008/56/EC”.
11. Directive of the European Parliament and the European Council 2008/98/EC of 19 November 2008 on waste and repealing certain directives (OJ EU L 312 of 22.11.2008, p. 3, as amended), hereinafter referred to as “the Waste Directive 2008/98/EC”.
12. Directive of the European Parliament and the European Council 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ EU L 334 of 17.12.2010, p. 17, as amended), hereinafter referred to as “the Industrial Emission Directive 2010/75/EU (IED)”.
13. Directive of the European Parliament and the European Council 2011/65/EU of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ EU 174 of 1.7.2011, p. 88, as amended), hereinafter referred to as “the Directive 2011/65/EU (RoHS)”.
14. Directive of the European Parliament and the European Council 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ EU L 197 of 24.7.2012, p.38, as amended), hereinafter referred to as “the Directive 2012/19/EU on WEEE”.

15. Regulation (EC) No 850/2004 of the European Parliament and the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC (OJ EU L 158 of 30.04.2004, p. 7, as amended), hereinafter referred to as “the Regulation No 850/2004”.
16. Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC (OJ EU L 33 of 04.02.2006, p. 1, as amended), hereinafter referred to as “the Regulation No166/2006”.
17. Regulation (EC) No 1013/2006 of the European Parliament and the Council of 14 June 2006 on shipments of waste (OJ EU L 190 of 12.07.2006, p. 1, as amended), hereinafter referred to as “the Regulation No 1013/2006”.
18. Regulation (EC) No 1907/2006 of the European Parliament and the European Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ EU L 396 of 30.12.2006, p 1, as amended), hereinafter referred to as “the Regulation 1907/2006 (REACH)”.
19. Regulation No 1881/2006 of the European Commission of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs (OJ L 364 of 20.12.2006, p. 5, as amended), hereinafter referred to as “the Regulation No 1881/2006”.
20. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ EU L 353 of 31.12.2008, p. 1, as amended), hereinafter referred to as “the Regulation No 1227/2008 (CLP)”.
21. Regulation of the European Parliament and of the Council (EC) No 1107/2009 of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC (OJ EU L 309 of 24.11.2009, p. 1, as amended), hereinafter referred to as “the Regulation No 1107/2009”.
22. Regulation of the European Parliament and of the Council (EU) No 528/2012 of 22 May 2012 concerning the making available on the market and use of biocidal products (OJ EU L 167 of 22.05.2012, p. 1, as amended), hereinafter referred to as “the Regulation No 528/2012”.
23. Regulation of the European Parliament and of the Council (EU) No 649/2012 of 4 July 2012 concerning the export and import of hazardous chemicals (OJ EU L 201 of 27.7.2012, p. 60), hereinafter referred to as “the Regulation No 649/2012”.
24. Commission Regulation (EU) No 589/2014 of 2 June 2014 laying down methods of sampling and analysis for the control of levels of dioxins, dioxin-like polychlorinated biphenyls and non-dioxin-like polychlorinated biphenyls in certain foodstuffs and repealing the Regulation (EU) No 252/2012 (OJ EU L 164 of 03.06.2014, p. 18, as amended), hereinafter referred to as “the Regulation No 589/2014”.
25. Commission Regulation (EU) 2016/293 of 1 March 2016 amending Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants as regards Annex I (OJ EU L 55 of 2.3.2016, p. 4), referred to as “the Regulation No 2016/293”.

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2. Act of 27 April 2001 - Environmental Protection Law (Journal of Laws of 2016 item 672, 831, 903, 1250,1427, 1933 and 1991), hereinafter referred to as “the Environmental Protection Law Act”.
3. Act of 18 July 2001 - Water Law (Journal of Laws of 2015 item 469, 1590, 1642, 2295 and of 2016 item 352, 1250 and 1948), hereinafter referred to as “the Water Law Act”.
4. Act of 18 December 2003 on protection of plants (Journal of Laws of 2016 item 2041), hereinafter referred to as the “Act on protection of plants”.
5. Act of 29 June 2007 on international shipments of waste (Journal of Laws of 2015 item 1048), referred to as “the Act on international shipments of waste”.
6. Act of 13 June 2008 on Ratification of the Stockholm Convention on Persistent Organic Pollutants (Journal of Laws item 864), hereinafter referred to as “the Act on ratification of the Stockholm Convention”.
7. Act of 17 July 2009 on the system to manage the emissions of greenhouse gases and other substances (Journal of Laws of 2015 item 2273 and 2278 and from 2016 item 266 and 542), hereinafter referred to as the “Act on emission management system”.
8. Act of 25 February 2011 on chemical substances and their mixtures (Journal of Laws of 2015 item 1203 and of 2016 item 2003), referred to as “the Act on chemical substances and their mixtures”.
9. Act of 19 August 2011 on transport of hazardous goods (Journal of Laws of 2016 item 1834), hereinafter referred to as “the Act on transport of hazardous goods”.
10. Act of 14 December 2012 on waste (Journal of Laws of 2016 item 1987), hereinafter referred to as “the Act on Waste”.
11. Act of 8 March 2013 on plant protection products (Journal of Laws of 2015 item 547 and of 2016 item 542), hereinafter referred to as “the Act on plant protection products”.
12. Act of 11 September 2015 on waste electrical and electronic equipment (Journal of Laws item 1688), referred to as “the WEEE Act”.
13. Act of 9 October 2015 on biocidal products (Journal of Laws item 1926 and of 2016 item 2003), referred to as “theAct on biocidal products”.
14. Regulation of the Minister of Economy of 24 June 2002 on the requirements for the use and handling of substances posing a particular threat to the environment and the use and cleaning of the plant or equipment, which have been or are used for substances posing a particular threat to the environment (Journal of Laws item 860), hereinafter referred to as "the Regulation on the requirements for the use and handling of substances posing a particular threat to the environment".
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21. Regulation of the Minister of the Environment of 18 November 2014 on the conditions to be met for introduction of wastewater into the water or soil and on the substances particularly harmful to aquatic environment (Journal of Laws item 1800), hereinafter referred to as the “Regulation on the conditions to be met wastewater to be met for introduction of wastewater into the water or soil”.
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1 INTRODUCTION

POPs are chemical substances of substantial toxicity and persistence in the environment, able to bioaccumulate in living organisms.

POPs exhibit the capacity of long-range transferring in the environment, thus concentrating in the areas in which they have been neither produced nor used, e.g. in arctic areas.

Increase in the concentration of POPs in the environment caused by, e.g. their use in plant protection products and biocidal products resulted in the need for taking the global actions for their withdrawal from production and use.

The Stockholm Convention, adopted on 22 May 2001 in Stockholm[1)], is an international agreement concluded after a three-year period of negotiations conducted under the auspices of UNEP, in order to protect human health and environment against POPs. The Convention entered into force in 90 days upon its ratification by 50 parties – on 17 May 2004. Currently (as at 18 April 2016) the Convention[2)] has 180 parties and 152 signatories, including the EU.

The Act on ratification of the Stockholm Convention was followed by ratification of the Stockholm Convention by the President of the Republic of Poland on 30 September 2008. For the Republic of Poland, the Stockholm Convention entered into force on 21 January 2009 under the Government Statement.

Pursuant to Article 7 of the Stockholm Convention, each of the Parties is obliged to develop and endeavour to implement a plan for the implementation of its obligations under this Convention, review and update its implementation plan on a periodic basis.

The National Plan for the Implementation of the Stockholm Convention in Poland was developed in 2004, under the project GF/POL/01/004 *Umożliwienie działań zmierzających do przyspieszenia prac nad wdrożeniem Konwencji Sztokholmskiej w sprawie trwałych zanieczyszczeń organicznych* (Enabling activities to facilitate early action on the implementation of the Stockholm convention on persistent organic pollutants (POPs)), carried out by the IEP in Warsaw and financed from the UNIDO funds.

The National Plan for the Implementation of the Stockholm Convention in Poland was developed using a financial mechanism provided by the convention – GEF and administered by the World Bank, according to which the developing countries and countries with economic in transition may benefit from the financial support necessary to perform their obligations under the convention. The 2004 Plan was approved by the Minister of the Environment, however it was not transferred to the competent authorities because Poland has not been a party to the Convention yet.

On 20 January 2011, the Secretariat of the Stockholm Convention received an update to the National Plan for the Implementation of the Stockholm Convention as a consequence of the convention being ratified by Poland in 2009.

On 29 April 2013, the Secretariat of the Stockholm Convention received an update to the National Plan for the Implementation of the Stockholm Convention developed with regard to amendments to the convention introduced in effect of the decisions adopted by the Conference of the Parties to the Stockholm Convention in 2009 and 2011 (covering 10 new substances by the provisions of the convention).

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[1] Updated text of the Convention in English languate version is available at the official website of the Stockholm Convention [accessed on: 18 April 2016]
http://chm.pops.int/TheConvention/Overview/TextoftheConvention/tabid/2232/Default.aspx

[2] Data from the official website of the Stockholm Convention [accesssed on: 18 April 2016]
http://chm.pops.int/Countries/StatusofRatifications/PartiesandSignatoires/tabid/4500/Default.aspx

This document is another update to the National Plan for the Implementation of the Stockholm Convention. Its development is required under Article 7 of the Stockholm Convention, due to the need for considering the amendments to the provisions of the convention introduced as a result of the decisions made by the Conference of the Parties to the Stockholm Convention in 2013. This update considers also the amendments introduced by decisions made by the Conference of the Parties to the Stockholm Convention in 2015.

The essential task of the National Plan for the Implementation of the Stockholm Convention is to organise the research and monitoring of the environmental condition with regard to its pollution by POPs and limit the risk posed by POPs for human and environment. Continuous research and monitoring establish the basis for taking the activities aimed at, among others, eliminating the sources of POPs release, reducing the pollution volume and proper management of existing waste. Scope of research and control is subject to changes resulting from the amended scope of the convention as well as from changing economic and social conditions and scientific and research progress.

2 CURRENT LEGAL STATUS AND TASKS OF THE PUBLIC ADMINISTRATION

2.1 Current legal status of POP handling

2.1.1 International agreements on persistent organic pollutants

In addition to the Stockholm Convention, international agreements on POPs include: the POP Protocol and, indirectly, the Basel Convention and the Rotterdam Convention.

2.1.2 Legislation in the European Union and the Republic of Poland

2.1.2.1.1 General requirements for chemicals

The European Union adopted comprehensive legislation on chemicals. The essential legal acts in this field include: Regulation No 1907/2006/EC (REACH) and Regulation No 1272/2008 (CLP).

Regulation No 1907/2006 (REACH) is a legal act aiming at better protection of human health and environment against the hazards that may be potentially posed by chemical substances. The provisions of this regulation introduce four basic processes for managing chemicals: registration of substances manufactured or imported above a total quantity of one tonne per annum, substance evaluation in accordance with the Community rolling action plan, issuing authorisations for manufacture and use of certain substances, as well as application of restrictions on the manufacturing, use and placing on the market of certain substances, mixtures and products. The purpose of this Regulation is also to increase innovation and competitiveness of the EU chemical industry.

Regulation No 1272/2008 (CLP) introduces an obligation to classify and label hazardous chemical substances and their mixtures in order to improve protection of employees, consumers and natural environment by transferring information within the supply chain on the potential effects caused by these substances. The provisions of the regulation implement the criteria of classification and principles of labelling - GHS.

Placing the specific groups of chemicals on the market, such as biocides, plant pesticides, drugs and cosmetics, is covered by separate regulations. Additionally, import and export of certain chemical substances is regulated by a separate Regulation No 649/2012 implementing the Rotterdam Convention into the EU legislation. National legislation applying to chemical substances and mixtures thereof were implemented by the Act on chemical substances and their mixtures.

2.1.2.1.2 Plant protection products

Placing of plant pesticides on the market is governed by the Regulation No 1107/2009. This Regulation lays down the provisions concerning granting authorisations for placing of plant protection products on the market and rules for approval of active substances. The purpose of the Regulation is to ensure high level of protection of human and animal health and of the environment, as well as improvement in functioning of the internal market by means of harmonising the principles for placing of plant pesticides on the market with simultaneous enhancement in agricultural production. The provisions of the Regulation are based on the precautionary principle to ensure that active substances or products placed on the market have no adverse effect on health of humans or animals or on the environment. The other legislation in force in Poland is the Act on protection of plants and the Act on plant protection products. The Act on protection of plants governs the issue of protecting the plants against harmful organisms and the organisation of the SPHSIS. The Act on plant protection products determines, among others, the tasks of public administration bodies and organisational units

under Regulation No 1107/2009 and governs the rules for introducing and using the plant protection products, including approval of active substances used in these products. Pursuant to the provisions of the Act on plant protection products, a business activity involved in placing of plant protection products on the market or packaging thereof, requires an entry into the register of entrepreneurs performing this type of activity, kept by a competent Voivodship Inspector for Plant Health and Seed Inspection.

2.1.2.1.3 Biocides

Making available and use of biocides is regulated by the provisions of the Regulation No 528/2012 that improves the functioning of single market while ensuring high level of protection of human and animal health and of the environment.

Regulation No 528/2012/EU lays down the rules for approval of active substances in biocidal products, making available on the market and use of biocidal products, as well as placing on the market of products exposed to biocidal products. This Regulation introduces the provisions to limit the tests on animals.

Detailed national provisions, among others in the scope of supervision over making available and using the biocidal products are provided by the Act on biocidal products.

2.1.2.1.4 Persistent Organic Pollutants (POPs)

Legal regulations concerning POPs are primarily introduced by the Regulation No 850/2004. This Regulation implements the provisions of the Stockholm Convention and the POP Protocol.

Furthermore, according to the Regulation No 1907/2006/EC (REACH), the substances identified as persistent, bioaccumulating and toxic (PBT) or very persistent and very toxic (vPvB) may be covered by the authorisation procedure.

Detailed national provisions concerning POPs are primarily included in the Environmental Protection Law Act (POPs were classified as substances posing a particular hazard to the environment) and the Water Law Act as certain priority substances specified under the implementing legislation to this Act and in the implementing regulations to the Environmental Protection Law Act.

On 1 March 2016 the Regulation No 2016/293 was published. This regulation is aiming at implementation of the decision of the Sixth Conference of Parties to the Stockholm Convention of 2013 regarding the amendment of Annex A of the Convention and adding HBCDD throughout the EU. Pursuant to the Regulation, manufacture, placing on the market and use of HBCDD is prohibited, excluding the case in which HBCDD concentration in a substance/mixture or product is equal to or below 0.01% by weight or authorisation under the Regulation No 1907/2006 (REACH) was granted. In consideration of the conditions of specific exemption in Annex A to the Stockholm Convention and due to the fact that no application for authorisation for use of HBCDD in the manufacturing process of extruded polystyrene was submitted in the European Union, any and all authorisations granted for the use or placing of HBCDD on the market may apply only to the use of HBCDD solely and exclusively as a component of expanded polystyrene (styrofoam) used in buildings and its manufacture for that purpose exclusively.

2.1.2.1.5 Export and import of hazardous substances

Regulation No 649/2012 governs the import and export of certain hazardous chemical substances and lays down the duties of entrepreneurs willing to export these chemicals to the countries from outside the EU. The purpose of the Regulation is to implement in the EU the

Rotterdam Convention in international trade in the EU, supporting joint responsibility and cooperation in the field of international movement of hazardous chemicals to protect human health and environment against potential harmful influence and contribution to use of hazardous chemicals in a manner safe for the environment. This Regulation establishes also the European Commission as a contact point for cooperation between the EU and the Secretariat of the Stockholm Convention and other parties to the Convention as well as with other countries.

Regulation No 649/2012 introduces the obligation to apply the EU regulations for packaging and labelling as well as other safety information for all chemicals intended for export to the states - parties to the convention as well as to third countries unless these provisions are contradictory to any specific requirements of these countries.

2.1.2.1 General requirements for waste management

The legal act specifying the requirements for waste management in the EU countries is the Waste Directive 2008/98/EC laying down the measures to protect the environment and human health by preventing and reducing the negative impact of generation and management of waste and improving efficiency of resource use. The Directive establishes the waste hierarchy, according to which national legislation should firstly require prevention of waste generation, and if it is not possible, preparation for reuse, recycling and other forms of recovery. Non-reusable wastes should be disposed. In accordance with the "polluter pays" principle, costs of waste management must be covered by the original waste producer or by current or previous holders of the waste. In this respect, Member States may adopt arrangements whereby the cost of waste management will be covered partially or entirely by the manufacturer of the product from which the waste originated from and that distributors of such products may share these costs.

The issues of operating and technical requirements for waste landfilling by providing resources, procedures and rules of conduct designed to prevent, as far as possible, negative effects of waste landfilling on the environment, are regulated by Directive 1999/31/EC on the landfill of waste.

In the transport of waste, including persistent organic pollutants, the provisions of Regulation No 1013/2006 establishing control procedures and systems for shipment of waste, depending on their origin, destination and route of shipment, type of waste shipped and intended mode of waste handling at its destination, shall apply. This Regulation applies to shipment of waste between the Member States, on the territory of the EU as well as to export and import of waste. Implementation of the requirements for international shipments of waste referred to in the Regulation No 1013/2006 into the Polish legislation is laid down in the Act on international shipments of waste.

Specific provisions concerning handling of POPs waste are covered by Regulation No 850/2004. Pursuant to the provisions of Article 7(2) of this Regulation, waste consisting, containing or contaminated by any substance listed in Annex IV shall be disposed of or recovered, without undue delay and in accordance with Annex V, part 1 in such a way as to ensure that the persistent organic pollutant content is destroyed or irreversibly transformed so that the remaining waste and releases do not exhibit the characteristics of persistent organic pollutants. The following disposal and recovery operations, are permitted when applied in such a way as to ensure that the persistent organic pollutant content is destroyed or irreversibly transformed:

- D9 Physico-chemical treatment
- D10 Incineration on land
- R1 Use principally as a fuel or other means to generate energy, excluding waste containing PCB

- R4 Recycling/recovery of metals and metal compounds, however, only under the conditions specified in Annex V.

Operations related to disposal or recovery effecting in recovery, recycling, regeneration or reuse of substance listed in Annex IV are prohibited. POPs contained in waste should be destroyed or irreversibly transformed into substances not exhibiting similar characteristics, unless the other operations are preferred in consideration of environmental protection.

By way of derogation, waste containing any POPs listed in Annex IV or contaminated by them may be removed or recovered in a different way, provided that content of listed POPs in waste is below the acceptable concentration limits establish in Annex IV.

A Member State may, in exceptional cases, approve different method of handling with certain waste containing or contaminated by any POPs listed in Annex IV, provided that POPs content does not exceed the acceptable concentration limits as set forth in Part 2 of the Annex V and in accordance with the method referred to in Annex V, Part 2. Acceptable concentration limits in Annex V, Part 2 are set forth by the European Commission.

In the case of tetrabromodiphenyl ether and pentabromodiphenyl ethers, as well as hexabromodiphenyl and heptabromodiphenyl ethers, by way of derogation, the authorisation is given for manufacture, placing on the market and use of products and preparations of concentration of particular ethers below 0.1% by weight, provided that these products and preparations are manufactured partially or in full from the recycled materials or re-used waste materials.

Directive No 2011/65/EU (RoHS) prohibits the Member States to place the electrical and electronic equipment (EEE) containing PBDE on the market after 1 July 2006 (maximum concentration value in equipment is 0.1% by weight in homogenous materials).

Directive No 2012/19/EU on WEEE in turn imposes the obligation of removing from the selectively collected WEEE of the condensers containing PCB and plastic materials containing bromine compounds reducing flammability. Directive No 2012/19/EU on WEEE is implemented into the Polish law by the Act on WEEE, and a new Directive No 2011/65/EU (RoHS) was implemented by the provisions of the Regulation on the essential requirements concerning the restriction of the use of certain hazardous substances in electrical and electronic equipment.

At the territory of the Republic of Poland, the rules for waste management in a manner protecting human life and health as well as the environment are laid down in the Act on Waste and implementing regulations thereto. Act on Waste establishes detailed requirements for management certain waste, including PCB. The Act prohibits recovery of PCB waste, recommending their disposal through incineration in waste incinerating plants or involving the other processes resulting in their permanent decomposition.

The directions of waste management policy in Poland, including the objectives in the area of development of integrated and sufficient installation and equipment network for waste recovery and disposal, meeting the requirements laid down in the environmental protection regulations on are specifidied in the National waste management plan which is updated every six years. The National waste management plan 2022 establishes the goals for elimination of POPs from the market, including successive removal of equipment containing PCB, disposal of waste containing PCB in the country or abroad and removal of waste repositories that may contain POPs.

Recommended methods of dealing with waste oils, including those that may contain PCB are defined in the Regulation on the detailed methods of dealing with waste oils.

Legal act which supports the process of eliminating persistent organic pollutant waste from the market is the Environmental Protection Law. This Act lays down rules of dealing with POPs-containing products, imposes restrictions and prohibitions on their use. Detailed provisions are included in the aforementioned implementing acts:

- Regulation on substances posing a particular threat to the environment which lists the substances classified as persistent organic pollutants,
- Regulation on identification of equipment in which substances posing a particular threat to the environment could be used, including a list of PCB-containing equipment
- Regulation on the requirements for the use and handling of substances posing a particular threat to the environment, introducing the prohibition of the use of PCB containing equipment after 30 June 2010.

2.1.2.2 Emission requirements

Directive 2010/75/EU on industrial emissions (IED) lays down the requirements for industrial plants, functioning of which is particularly important from the environmental impact perspective. The purpose of this directive is to take comprehensive measures for integrated pollution prevention and reduction of environmental pollution caused by certain activities. The list of operations covered by the directive includes the sources of POPs releases into the environment. The main pollutants include chlorine and its compounds, fluorine and its compounds, PCDD and PCDF. Running of plants listed in the directive requires obtaining permits. Permits to operate a plant may be granted subject to the application of BAT ensuring environmental pollution is eliminated or reduced.

Pursuant to Regulation No 166/2006, the obligation to monitor releases and emissions from the plants which exceeded the threshold values for certain substances was imposed. Operators of these plants are obliged to provide information about the volume of releases to competent administration authorities. On the basis of this information the E-PRTR was established, for which the following threshold values have been adopted (with regard to POPs):

	Into the air [kg/year]	Into water [kg/year]	Into soil [kg/year]
- HCB	10	1	1
- PCDD/F (as TEQ)	0.0001	0.0001	0.0001
- PCB	0.1	0.1	0.1
- PeCB	1	1	1

Execution of the provisions of the Regulation No 166/2006 is provided by the Act on the system to manage the emissions of greenhouse gases and other substances and by the Environmental Protection Law Act.

The Environmental Protection Law Act implements the requirements of the Industrial Emission Directive 2010/75/EU (IED) into the Polish legislation. Regulations included in Title III *Pollution prevention*, section IV *Permits for the emission of substances or energy into the environment* lay down the binding rules for applications for permits for economic activities. Art. 160 of the Environmental Protection Law Act imposes a prohibition on placing on the market and re-use of substances posing a particular threat to the environment (the prohibition applies to PCB, covered by the provisions of the Stockholm Convention, and to asbestos).

The Regulation on substances posing a particular threat to the environment lists the following substances:

- aldrin,
- dieldrin,
- endrin,
- isodrin,

- DDT,
- HCH,
- lindane (γ-HCH).

As at 2 November 2016, these substances (apart from isodrine) are covered by the provisions of the Stockholm Convention.

On the contrary, the Regulation on emission standards for installations the emission standards for introduction of gases or dusts into the atmosphere for the following installations: fuel combustion, processing of asbestos or products containing asbestos, titanium dioxide production, as well as for the installations using volatile organic compounds (VOCs) and for waste incineration and co-combustion installations and equipment. The Regulation establishes the limit of dioxins and furans emission from waste incineration and co-combustion processes at 0.1 TEQ ng/m^3. The provisions of chapter 2 of the Regulation concerning the sources of fuel combustion are not applied, among others, to the sources in which the combustion products are used directly for heating, drying or other processing of items or materials. The Regulation on conditions to be met for the introduction of wastewater into the water or soil defines the requirements for the pollution limit values for treated wastewater. POPs for which limit values in treated industrial wastewater have been established in Annex 4 to the aforementioned Regulation include aldrin, dieldrin, endrin, isodrine, HCH, HCB), DDT, PCDD/F and PCB.

Substances covered by the provisions of the Convention are classified into a group of particularly harmful substances causing water pollution, which should be eliminated, thus the Regulation does not allow for presence in wastewater subject to the treatment, except for:

- HCB in industrial wastewater from the following processes: production and processing of HCB (up to 1 mg/l, monthly average), production of tetrachloroethylene (PER) and tertrachloromethane by overchlorination (up to 1.5 mg/l, monthly average), production of trichloroethylene or tetrachloroethylene using the other processes (up to 1 mg/l, monthly average), as well as other industrial processes (up to 1 mg/l, monthly average),
- PCDD/F in industrial wastewater from treatment of waste gas from waste thermal processing (up to 0.3 ng/l).

2.1.2.3 Requirements concerning the maximum permissible concentrations of persistent organic pollutant substances in the environment and products

Table 1 and Table 2 present the limit values for POPs content for different elements of the environment and products and waste, on the basis of the following legal acts:

- Regulation on the method of classification of the condition of bodies of surface waters and environmental quality standards for priority substances,
- Regulation on the quality of water intended for human consumption,
- Regulation on conditions to be met for the introduction of wastewater into the water or soil wastewater and on substances particularly harmful to the aquatic environment,
- Regulation on the method for assessment of land surface contamination,
- Regulation on the on content of undesired substances in feeds,
- Regulation No 850/2004.

Table 1. The maximum permissible concentrations of POPs in the individual environmental components and in feeds.

SUBSTANCE	WATER			WASTEWATER	SOIL				FEEDS
	Water intended for human consumption[1] [µg/l]	Water bodies such as: waterway, stream, brook, river, canal, lake, including Water bodies designated as artificial or strongly modified, as well as other natural or artificial water reservoirs [µg/l]	Water bodies such as: transitional and coastal water [µg/l]	Treated industrial wastewater r[2] [mg/l]	Residential, developed, urbanised and recreational areas[3] [mg/kg DM]	Agricultural areas[3] [mg/kg DM]	Forest areas, wooded areas, unarranged greenery areas[3] [mg/kg DM]	Industrial, mining and communication areas[3] [mg/kg DM]	Permissible content of hazardous substances in feeds[4] [mg/kg]
Aldrin	0.03	0.01 (with isodrine)	0.005 (with isodrine)	0	0.0025-4	0.025-4	0.025-4	0.25-4	0.01-0.1[5]
Dieldrin	0.03	-	-	-	0.0005-4	0.005-4	0.005-4	0.005-4	0.01-0.1
Endrin	0.1	-	-	-	0.001-2	0.01-2	0.01-2	0.001-4	0.01-0.05
Chlordane	0.1	–	–	–	-	-	–	–	–
Chlordecone	0.1	–	–	–	-	-	–	–	–
Heptachlor	0.03	–	–	–	-	-	–	–	0.01-0.2
Mirex	0.1	–	–	–	-	-	–	–	–
Toxaphene	0.1	–	–	–	-	-	–	–	–
Hexachlorobenzene (HCB))	0.1	0.05	0.05	0.003-3.0[6]	-	-	–	–	0.01-0.2
Hexabromobiphenyl (HxBB)	–	–	–	–	-	-	–	–	–
Lindane, alpha and beta HCH	0.1	0.04 HCH	0.02 HCH	0	alfaHCH: 0.0025-4 betaHCH: 0.001-2 lindane: 0.0001-0.5	alfaHCH: 0.025-4 betaHCH: 0.01-2 lindane: 0.01-0.5	alfaHCH: 0.025-4 betaHCH: 0.01-2 lindane: 0.001-0.5	alfaHCH: 1-4 betaHCH: 0.5-2 lindane: 0.001-0.5	depending on an isomer: 0.01-2
Polychlorinated biphenyls (PCBs)	–	–	–	0	0.02 – 2	0.02 - 2	0.02-2	0.5-5	10-175[7]
DDT	0.1	0.025	0.025	–	0.0025-4	0.12-4	0.025-4	0.025-4	0.05-0,5
PCDD/PCDF	–	–	–	0.3[8]	-	-	–	–	0.75-5[9]

SUBSTANCE	WATER			WASTEWATER	SOIL				FEEDS
	Water intended for human consumption[1] [µg/l]	Water bodies such as: waterway, stream, brook, river, canal, lake, including Water bodies designated as artificial or strongly modified, as well as other natural or artificial water reservoirs [µg/l]	Water bodies such as: transitional and coastal water [µg/l]	Treated industrial wastewater r[2] [mg/l]	Residential, developed, urbanised and recreational areas[3] [mg/kg DM]	Agricultural areas[3] [mg/kg DM]	Forest areas, wooded areas, unarranged greenery areas[3] [mg/kg DM]	Industrial, mining and communication areas[3] [mg/kg DM]	Permissible content of hazardous substances in feeds[4] [mg/kg]
Tetrabromodiphenyl ether (tetraBDE)	–	–	–	–	-	-	–	–	–
Pentabromodiphenyl ether (pentaBDE)	–	0.0005	0.0002	–	-	-	–	–	–
Hexabromodiphenyl ether (hexaBDE)	–	–	–	–	-	-	–	–	–
Heptabromodiphenyl ether (heptaBDE)	–	–	–	–	-	-	–	–	–
PFOS (acid) and PFOSF	–	–	–	–	–	–	–	–	–
Endosulfan	0.1	0.01	0.004	–			–	–	0.005-0.5
Pentachlorobenzene (PeCB)	0.1	0.007	0.0007	–	0.01 2	0.01-2	0.01-2	0.5-15	–
Hexabromocyclododecane (HBCDD)	–	–	–	–	-	-	–	–	–

[1] maximum permissible concentration of pesticide (except for aldrin, dieldrin, heptachlor) is – 0.1 µg/l, maximum permissibleconcentration (pesticides detected and quantified as part of the monitoring – 0.5 µg/l
[2] the maximum permissible average daily value
[3] depending on the depth in m below ground level
[4] depending on the type of feeds
[5] if aldrin is present individually or together with dieldrin, it is converted into dieldrin
[6] maximum permissible average daily value depending on the type of production
[7] in µg/kg
[8] the highest acceptable value for wastewater from purification of waste gas from the thermal waste conversion process; in ng/l
[9] in ng WHO-PCDD/F-TEQ/kg

Waste in which the concentration of substances included in the list of POPs is equal to or greater than the values presented in Table 2 are defined as containing POPs (hazardous waste).

Table 2. Concentration limits of POPs in waste.

Substance	Concentration limits [mg/kg]	Maximum permissible concentrations applying to hazardous waste landfills [mg/kg]
Aldrin	50	5000
Chlordane	50	5000
Chlordecone	50	5000
Dieldrin	50	5000
Endrin	50	5000
Endosulfan	50	50 000
Polybrominated diphenyl ethers	1000	10 000
Heptachlor	50	5000
Hexabromobiphenyl	50	5000
Hexachlorobenzene	50	5000
Hexachlorobutadiene	100	1000
Hexachlorocyclohexane, including lindane	50	5000
Mirex	50	5000
Toxaphene	50	5000
Pentachlorobenzene	50	5000
PFOS and its derivatives	50	50
Polychlorinated biphenyls (PCBs)	50*	50*
Polychlorinated naphthalenes	10	1000
DDT	50	5000
PCDD/F	15 (µg/kg) **	5**
Hexabromobiphenyl	50	5000
* Concentration calculated according to EN 12766-1 and EN-12766-2 ** Concentration calculated taking account of toxic equivalency factors (TEQ) of the compounds included in the substance		

2.2 Tasks of public administration and public bodies

The Minister of Economic Development is responsible for creating increasingly improved conditions and legal bases for economic development, including elimination of adverse effects of hazardous substances, including POPs. The Minister of Economic Development is entitled to lay down the requirements for the use and handling of substances posing a particular threat to the environment and determining equipment, in which substances posing a particular threat to the environment could be used.

The controlling authorities with for use of equipment containing POPs and timing of their withdrawal from operation are the **technical inspection services**, acting pursuant to the Act on technical inspection.

The Minister of Health coordinates the matters related to ensuring protection of human health, including the issues of POPs' impact on human health.

The Chief Sanitary Inspector, the Inspector for Chemical Substances and NIPH-NIH are subordinated to the Minister of Health.

The Inspector for Chemical Substances, supervised by the Minister of Health, i.a. collects data concerning hazardous mixtures or mixtures posing a threat, as well as information on substances delivered by the ECHA, provides data on hazardous substances and mixtures or substances posing a threat and mixtures posing a threat to the medical and rescue services, cooperates with the international and EU organisations in the scope of chemical substances and mixtures thereof, acts as a body responsible for cooperation with the Member States, the European Commission and ECHA, as well as runs the National Information Centre for REACH and CLP Helpdesk. The Inspector is also responsible for the Good Laboratory Practice (DPL) system in Poland and serves as a contact point for the Rotterdam Convention and the Stockholm Convention.

Chief Sanitary Inspector, subordinated to the Minister of Health, supposed to exercise general control over the sanitary condition of the state, supervises among others retail trading in food in the scope of compliance with the provisions concerning production, transport, storage and retail sale of food and supervises health quality of products imported from the abroad (excluding food of animal origin), as well as controls the compliance with the rules by the manufacturers, importers, entities placing on the market, using or exporting chemical substances, their mixtures or products, as well as supervises the compliance with regulations concerning placing on the market of biocidal products and active substances and their use in professional activities.

CSI develops the annual food monitoring and official control plans including, among others, control of pesticide residues in food. The plan is provided to the regional sanitary inspectors who are obliged to control the process of planning and implementation of tasks specified in the annual food sampling and testing plan in the voivodship and drawing-up relevant reports from the implementation of the plan to the CSI.

A national programme for testing food for pesticide residues includes the integrated the EU monitoring, national monitoring and planned official food control.

Coordination of the majority of tasks related to environmental protection rests upon **the Minister of the Environment** and comprises the following tasks:

- preservation and management of the environment and reasonable use of its resources,
- nature protection, including in the national and landscape parks, nature reserves and protection of plant and animal species, the issues applying to forests, animals and other natural features protected by law,
- geology and natural resources management;
- control of compliance with the environmental protection requirements and environmental condition analysis;
- forestry and protection of forests and forest areas and hunting,
- genetically modified microorganisms and genetically modified organisms, except for the matters related to issuing authorisations for placing on the market of food and pharmaceutical products and the issues related to genetically modified organisms intended for use as feeds and genetically modified feeds in the scope of certain tasks or activities set forth by relevant regulations.

The Minister of the Environment (in cooperation with the other ministers) initiates and conducts legislative activity and supervises the implementation of law in the area of environmental protection, including in the scope of waste management. In addition, the Minister of the Environment supervises the Chief Inspectorate of Environmental Protection. The Minister of the Environment, in consultation with the Bureau for Chemical Substances, executes the tasks

under the Stockholm Convention and acts as the official contact point for the Stockholm Convention.

Chief Inspector of Environmental Protection, supervised by the Minister of the Environment and the combined services of the voivods – VIEP, are mainly responsible under the joint territorial government administration, for controlling the compliance with law and administrative decisions on the use of the environment (including inspection of industrial plants), controlling the operation of installations and equipment protecting the environment against pollution, controlling the compliance with regulations on packaging and packaging waste, controlling the compliance with regulations on recycling of end-of-life vehicles and used electrical and electronic equipment, on disassembly of end-of-life vehicles, implementing the tasks related to transboundary shipments of waste in the area of their competences, as well as monitoring and evaluating the environment condition (under the SEM) and improving the related procedures and methods, including those pertaining to POPs. In addition, the Chief Inspector of Environmental Protection acts as the contact point for the Basel Convention. Financial support for ecological activities is provided by **the NFEP&WM** and the voivodship funds for environmental protection and water management financing also the research and development activities, expert's reports and investment undertakings associated with reduction of POPs releases to the environment and POPs disposal, as required by the environmental protection regulations. The opinion-making and advisory role is played by **the State Council for Environmental Protection**.

The Minister of Agriculture and Rural Development is responsible for implementation the government policy for agriculture (including in the scope of plant protection products), keeping the register of plant protection products and issuing the authorisations for their placing on the market in Poland. The Minister of Agriculture and Rural Development is superior to: Chief Veterinary Officer, Main Inspector of the Plant Health and Seed Inspection, Chief Inspector of Agricultural and Food Quality; moreover, the Minister of Agriculture and Rural Development controls the NVRI-NRI.

The scope of activities of the **Veterinary Inspection,** subordinated to the Minister of Agriculture and Rural Development, includes among others control of safety of products of animal origin, in particular: examination of slaughter animals and their meat, supervision over placing the animals and animal by-products on the market, monitoring of prohibited substances, residues of chemical, biological, medicinal products and radioactive contaminations in animals, their secretions and excretions, in animal tissues or organs, in products of animal origin, in water intended for watering of animals as well as in feeds.

The VI authorities control the following:

- slaughterhouses and cutting plants (of meat of domesticated ungulates, poultry, hares and rabbits, farmed game animals),
- meat processing plants,
- game purchase centres and game processing plants,
- plants producing minced meat, raw meat products and mechanically separated meat (MSM),
- fish processing plants,
- milk collection points and daily plants,
- egg plants,
- plants manufacturing, trading and using feeds,
- plants processing animal by-products animal by-products and derivative products and derivative products incineration plants.

The VI authorities include::

- Chief Veterinary Officer,
- Regional Veterinary Officer as a head of regional VI forming a part of combined government administration in the voivodship (region),
- district veterinary officer as a head of regional VI forming a part of non-combined government administration,
- border veterinary officer.

Tasks of the VI bodies are performed by the veterinary officers and other persons employed in the Inspection, as well as by the veterinary officers assigned to perform certain activities as well as individuals being not veterinary officers and assigned to perform certain activities of auxiliary nature.

A body competent for preparation of and supervision over the implementation of the control plan for residues of plant protection products in the products of animal origin at the stage of their production and in feeds is the Chief Veterinary Officer. The plan is developed in cooperation with NVRI-NRI.

NVRI-NRI exercises the official control of food of animal origin, as well as feeds and feed materials in cooperation with the CVI. Continuous obligatory tests of food chain form the basis for protection of health of inhabitants, since more than 90% of exposure to PCDD derives from food of animal origin.

Testing under the “National control programme for prohibited substances and residues of chemical, biological and medicinal products in animals and food of animal origin", covers organochlorine pesticides (DDT and metabolites, α, β, γ - HCH, HCB), aldrin, dieldrin, chlordan, endrin, endosulfan, heptachlor) and PCB congeners (PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180).

Testing under the “National control programme for dioxins, furans, dioxin-like polychlorinated biphenyls (dl-PCBs) and non dioxin-like PCB (ndl-PCB) in animals and products of animal origin" covers PCDD, PCDF, dl-PCB and ndl-PCB.

These tests are carried out in the NVRI-NRI in Puławy and in eight RVLs (in Bialystok, Gdansk, Katowice, Lodz, Olsztyn, Poznan, Warsaw and Wroclaw) and the results are transferred to the Chief Veterinary Officer and to the European Commission.

Testing under the “Official Feeds Control Plan" covers organochlorine pesticides, PCB (PCB 28, PCB 52, PCB 101, PCB 138, PCB 153, PCB 180 congeners) and PCDD, PCDF and dl-PCB).

Tests for determination of residues of organochlorine pesticides in feeds are carried out in eight RVL, while the Plant Protection Institute – State Research Institute in Poznan acts as the Reference Laboratory. Tests for determination of PCB content are performed in six RVL and in the Reference Laboratory in the NVRI-NRI. Content of PCDD, PCDF and dl-PCB in feeds is determined in NVRI-NRI.

Chief Veterinary Officer establishes the general lines of activities taken by the VI and issues the instructions specifying the mode of proceeding, including the instructions concerning application of the EU regulations by the VI bodies as well as performs analyses and assessments of epizootic situation, safety of products of animal origin and of veterinary requirements at their production.

Chief Inspector of the Plant Health and Seed Inspection, reporting to the Minister of Agriculture and Rural Development, exercises supervision and control over, among others, the correctness of sales and use of plant protection products and carries out testing for plant protection products residues in agricultural crops at the production stage.

The official testing for plant protection product residues includes:

- planned inspection - testing of crop samples according to the schedule prepared by the MIPHSI,
- intervention inspection - testing of plant protection product residues in crops in the cases of suspected use of plant protection product in contrary to the legislation in force.

Testing for plant protection product residues is performed in the Central Laboratory of the MIPHSI in Toruń, Plant Protection Institute – National Research Institute in Poznan and the Research Institute of Horticulture in Skierniewice.

Chief Inspector of Agricultural and Food Quality supervises the commercial quality of agri-food products, controls the conditions of storage and transportation of agri-food products, as well as cooperates with the other bodies in the aforementioned scope, including at the international level.

Food safety in Poland is controlled among others, by:

- SSI with regard to supervision over health quality of foodstuffs of plant origin in production and supervision over health quality of foodstuffs of plant origin and animal origin in trading,
- VI with regard to supervision over health quality of food of animal origin,
- AFQI with regard to supervision over commercial quality of agri-food products in production and trading, including products exported abroad,
- SPHSIS in the scope of the correct use of plant protection products; under the supervision exercised by the Inspection sampling is performed for presence of plant protection product residues.

The Minister of Foreign Affairs coordinates the foreign cooperation, including negotiating the multilateral agreements, and is responsible for ratification procedures thereof. In addition, the Minister acts as the political coordinator of GEF operations in Poland.

The Minister of Finance is responsible for the state budget and controls public finance and financial institutions.

The essential tasks of **the Customs Services** include, apart from fiscal tasks, exercising customs control over trading with foreign countries, combating smuggling and prevent customs frauds. The customs service fulfils also the control functions in the scope of compliance with national and international legislation related to restrictions and prohibitions in trading with foreign countries and in the scope of state customs policy instruments governing the directions and volume of trading with foreign countries (e.g. monitoring the implementation of tariff quotas).

The Minister of the Interior and Administration coordinates the actions taken by subordinated units to improve safety. **Commander-in-Chief of the State Fire Service** supervises the actions of the State Fire Service in the scope of control and identification and rescue operations carried out under the national rescue and fire fighting system (including in the case of fire, accident and failures involving hazardous substances or waste).

Minister of Infrastructure and Construction is responsible for construction, spatial planning and housing, communications and transportation, in consideration of principles of the state environmental policy as well as takes the legislative initiatives focused, among others, on safe transport of hazardous materials.

Minister of Infrastructure and Construction controls transportation of hazardous materials and the units executing transport-related activities, subject to Article 98 of the Act on transport of hazardous goods. The units performing transport-related tasks include, among others: **Road Transport Inspection** and the **Railway Transport Office**. Transport of hazardous waste is carried out in consideration of the regulations in force for transport of hazardous goods, provided that hazardous waste is a hazardous good as defined by the regulations of the Act on transport of hazardous goods.

National Labour Inspectorate was established to exercise supervision and control over the compliance with the Labour Law, in particular occupational health and safety regulations. The controls cover all plants, including the plants using the hazardous substances. The National Labour Inspectorate reports directly to the Sejm.

Supervision in the scope of commercial quality of products is exercised by **the Trade Inspection** governed by the President of the Office of Competition and Consumer Protection.

Results of statistical tests conducted and collected under the public statistics are made available by **the Central Statistical Office.** Data related to environment protection have been published since 1972 in the form of annual publications under the CSO series *Environmental protection* (these data do not include all POPs covered by the Convention).

3 TO-DATE ACTIVITIES IMPLEMENTING THE STOCKHOLM CONVENTION

3.1 Substances covered by the Stockholm Convention

Article 3 of the Stockholm Convention defines the following requirements for the Parties:

- to eliminate from production, use, import and export of substances listed in Annex A *Elimination* (except for import and export for environmentally sound disposal),
- to restrict production and use of substances listed in Annex B *Restriction*.

Annexes A *Elimination* and B *Restriction* to the Stockholm Convention lay down detailed exemptions from the production or use prohibition for substances listed therein. Responsibilities of the Parties to the Convention using these exemptions are defined in Article 3(2) and (6) and Article 4 of the Convention.

Annex C *Unintentional production* to the Stockholm Convention lists the POPs generated as by-products of specific processes. Responsibilities of the Parties to the Convention for "unintentional production" are specified in Article 5 of the Stockholm Convention.

Article 6 of the Convention sets forth the measures to reduce or eliminate of the releases from POPs-containing stockpiles, including recommendations for waste management.

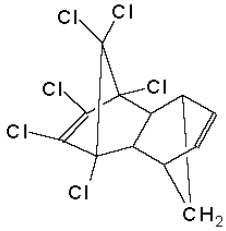
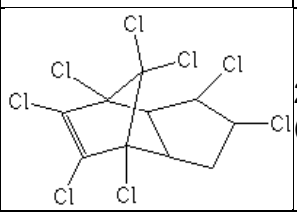
3.1.1 Releases from intentional production

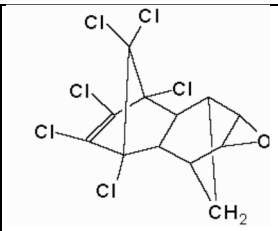
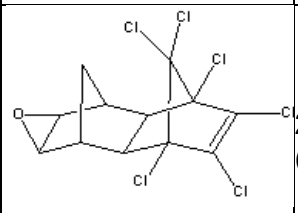
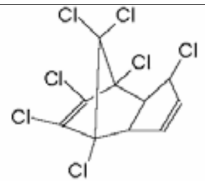
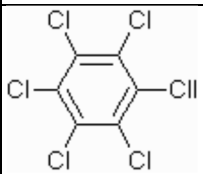
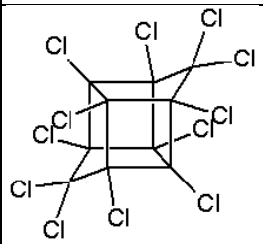
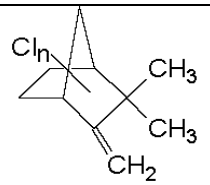
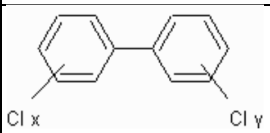
3.1.2 Substances listed in Annex A

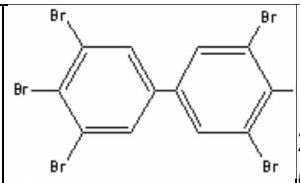
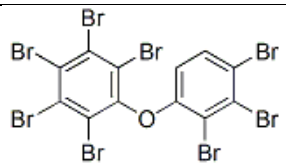
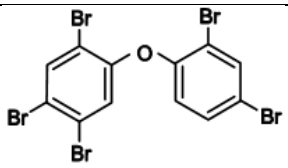
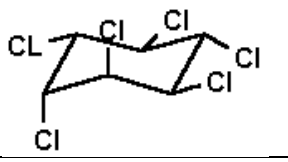
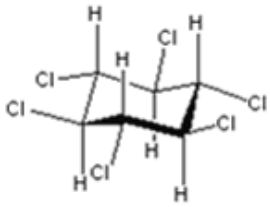
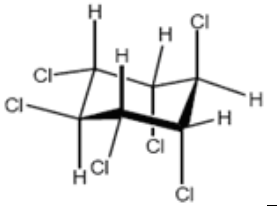
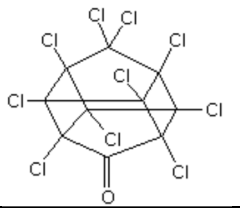
Annex A to the Stockholm Convention contains a list of substances, production and use as well as export and import of which are prohibited. Amendments to the Annex are made in accordance with the procedure laid down in Article 22 of the Stockholm Convention.

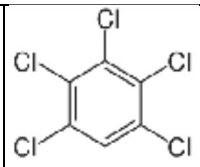
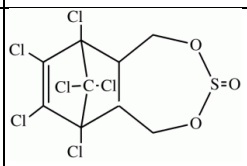
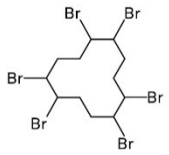
List of substances covered by Annex A is presented in Table 3.

Table 3. List of substances covered by Annex A to the Stockholm Convention.

Name of chemical	CAS No.	Structural formula	Date of listing (entry into force)	Use
Aldrin 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4-endo-5,8-ekso-dimethano-naphthalene	309-00-2		2001 (2004)	Pesticide: - local ectoparasiticide, - insecticide.
Chlordane 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	57-74-9		2001 (2004)	Pesticide: - termiticide (ants, termites, cockroaches), - local ectoparasiticide.

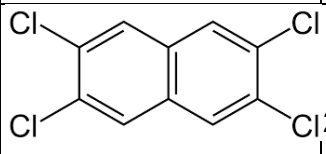
Dieldrin 1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo-5, 8-exo-dimethanonaphtalene	60-57-1		2001 (2004)	Pesticide: - in agricultural operations. Also degradation product of aldrin.
Endrin 1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo-5, 8-endo-dimethanonaphtalene	72-20-8		2001 (2004)	Pesticide: - insecticide, rodenticide.
Heptachlor 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene	72-44-8		2001 (2004)	Pesticide: - soil pest control, termicide, - malaria preventing agent.
Hexachlorobenzene (HCB)) 1,2,3,4,5,6-hexachlorobenzene	118-74-1		2001 (2004)	Pesticide: - fungicide, By-product in production of certain chemicals, combustion processes, pollution in certain pesticides.
Mirex	2385-85-5		2001 (2004)	Pesticide: - termicide, Industrial substance: - flame retardant for plastics, rubber and electric products.
Toxaphene	8001-35-2		2001 (2004)	Pesticide: - insecticide, - agent for control of collar ties and mites in animals.
Polychlorinated biphenyls (PCBs)	more than 200 chemical compounds		2001 (2004)	In heat exchangers, hydraulic fluids, electroinsulation oils in transformers, dielectric liquids in condensers, paint, varnish and adhesive additives. Substances reducing product flammability. By-products in thermal processes, chemical processes using chlorine and organic carbon.

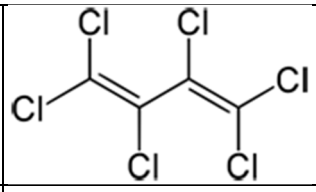
Hexabromobiphenyl (HBB)	36355-01-8		2009 (2010)	Flame retardant in: - plastics used in the construction sector, - coatings of cables and varnishes used in electronic industry, - polyurethane foams used in production of furniture and car upholstery.
Hexabromodiphenyl ether Heptabromodiphenyl ether (C-okta BDE)	68631-49-2 207122-15-4 446255-22-7 207122-16-5		2009 (2010)	Flame retardant (components of commercial octabromodiphenyl ether) used in: - synthetic textiles, - packaging (containers, canisters, casks, etc.), - in office equipment, - furniture.
Tetrabromodiphenyl ether Pentabromodiphenyl ether (C-penta BDE)	5436-43-1 60348-60-9		2009 (2010)	Flame retardant (components of commercial pentabromodiphenyl ether) used in: - electric and electronic equipment, - textiles, - polyurethane foams.
α-hexachlorocyclohexane	319-84-6		2009 (2010)	By-product in production of lindane, pesticide.
β-hexachlorocyclohexane	319-85-7		2009 (2010)	By-product in production of lindane, pesticide
γ-hexachlorocyclohexane (lindane)	58-89-9		2009 (2010)	Pesticide: - insecticide, used in the second stage of scabies and head lice treatment.
Chlordecone	145-50-0		2009 (2010)	Pesticide: - miticide, - fungicide.

Pentachlorobenzene (PeCB)	608-93-5		2009 (2010)	Pesticide: - fungicide. Intermediate in pentachloronitrobenzene (quintozene) production process. By-product in the incomplete combustion processes.
Endosulfan and its isomers	115–29–7 959-98-8 33213-65-9		2011 (2012)	Pesticide: - insecticide in forest and decorative plant cultivations, in agricultural and horticultural cultivations. Veterinary product controlling cattle parasites. Wood impregnate.
Hexabromocyclododecane (HBCD or HBCDD) and 1,2,5,6,9,10-hexabromocyclododecane and its isomers: alpha-hexabromocyclododecane beta-hexabromocyclododecane gamma-hexabromocyclododecane	25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8		2013 (2014)	Flame retardant in expanded polystyrenes (EPS), extruded polystyrenes (XPS) and high impact polystyrene (HIPS) used in: - insulation slabs in construction industry, - in packaging, - in transport vehicles, - in electrical and electronic equipment, - in products for textile product coating (mattresses, car seats, roller blinds, draperies).

The Conference of the Parties to the Stockholm Convention held in May 2015 decided on including the substances listed in Table 4 to Annex A substances:

Table 4 List of substances included in Annex A to the Stockholm Convention in May 2015.

Name of chemical	CAS no.	Structural formula	Date of listing (entry into form)	Use
Polychlorinated naphthalenes			2015	Wood, paper and textile impregnates, impregnates used in power electrics industry – for transformers, condensers and cables, also as dye carriers.

Hexachlorobutadiene	87-68-3		2015	Solvent for other compounds containing chlorine.
Pentachlorophenol, its salts and esters	608-93-5		2015	Herbicide, fungicide, algicide, disinfectant and wood preservative.

These amendments were effective as of the date referred to in Article 22 of the Convention, within one year upon submission of depositary's notice on the amendments, i.e. on 16 December 2016.

Production, placing on the market and use of substances listed in Annex A in Poland is regulated by the Regulation No 850/2004. This Regulation introduces an absolute prohibition of production, placing on the market and use of chlordane, hexachlorocyclohexane, dieldrin, endrin, heptachlor, hexachlorobenzene, chlordecone, aldrin, pentachlorobenzene, mirex, toxaphene and hexabromobiphenyl. Specific exemptions from the prohibition were provided for other substances that remain within the scope of the derogations adopted in the Convention.

Specific exemptions adopted in the Regulation No 850/2004 have been presented in Table 5.

Table 5. Substances for which the specific exemptions from the prohibition are provided in the Regulation No 850/2004.

Substance	Specific exemption for intermediate use or other specification
Tetrabromodiphenyl ether $C_{12}H_6Br_4O$	- Trace contamination with the concentration of tetrabromodiphenyl ether equal to or below 10 mg/kg (0.001% by weight), when it occurs in the substances, preparations, articles or as a constituent of the flame-reatrded parts of particles. - By way of derogation, the production, placing on the market and use of the following shall be allowed: a) articles and preparations containing concentrations below 0.1% of tetrabromodiphenyl ether by weight, when produced partially or fully from recycled materials or materials from waste prepared for re-use; b) electrical and electronic equipment within the scope of Directive 2011/65/EU (RoHS).
Pentabromodiphenyl ether $C_{12}H_5Br_5O$	- Trace contamination with the pentabromodiphenyl ether concentration equal to or below 10 mg/kg (0.001% by weight), when it occurs in the substances, preparations, articles or as a constituent of the flame-retarded parts of articles. - By way of derogation, the production, placing on the market and use of the following shall be allowed: a) articles and preparations containing concentrations below 0.1% of pentabromodiphenyl ether, when produced partially or fully from recycled materials or materials from waste prepared for re-use; b) electrical and electronic equipment within the scope of Directive 2011/65/EU (RoHS).

Hexabromodiphenyl ether $C_{12}H_4Br_6O$	- Trace contamination with the concentration of hexabromodiphenyl ether equal or below 10 mg/kg (0.001% by weight), when it occurs in the substances, preparations, articles or as a constituent of the flame-retarded parts of articles. - By way of derogation, the production, placing on the market and use of the following shall be allowed: a) articles and preparations containing concentrations below 0.1% of hexabromodiphenyl ether by weight, when produced partially or fully from recycled materials or materials from waste prepared for re-usel b) electrical and electronic equipment within the scope of Directive 2011/65/EU (RoHS).
Heptabromodiphenyl ether $C_{12}H_3Br_7O$	- Trace contamination with the heptabromodiphenyl ether concentration equal or below 10 mg/kg (0.001% by weight), when it occurs in the substances, preparations, articles or as a constituent of the flame-retarded parts of articles. - By way of derogation, the production, placing on the market and use of the following shall be allowed: a) articles and preparations containing concentrations below 0.1% of heptabromodiphenyl ether by weight, when produced partially or fully from recycled materials or materials from waste prepared for re-use; b) electrical and electronic equipment within the scope of Directive 2011/65/EU (RoHS).
PCB	Without prejudice to the provisions of Directive 96/59/EC, articles already in use on 26 August 2010 are allowed to be used.
Endosulfan	- Placing on the market and use of articles produced before or on 10 July 2012 containing endosulfan as a constituent of such articles was allowed until 10 January 2013. - Placing on the market and use of articles already in use before or on 10 July 2012 containing endosulfan as a constituent of such articles shall be allowed.
HBCDD*	- Use of HBCDD with the concentrationa equal to or below 100 mg/kg (0,01 % by weight) when it occurs in substances, preparations, articles or as constituents of the flame-retarded parts of articles, subject to review by the Commission by 22 March 2019. - The use of HBCDD – whether on its own or in preparations, in the production of expanded polystyrene articles, and the production and placing on the market of hexabromocyclododecane for such use, shall be allowed provided that such use has been authorised in accordance with Title VII of Regulation No 1907/2006 REACH or is the subject of an application for authorisation submitted by 21 February 2014 where a decision on that application has yet to be taken. The placing on the market and use of hexabromocyclododecane, whether on its own or in preparations, in accordance with this paragraph shall only be allowed until 26 November 2019 or, if earlier, the date of expiry of the review period specified in an

	authorisation decision or the date of withdrawal of that authorisation pursuant to Title VII of Regulation No 1907/2006 (REACH). - The placing on the market and use in buildings of expanded polystyrene articles, that contain HBCDD as a constituent of such articles and are produced in accordance with the exemption in this paragraph, shall be allowed until 6 months after the date of expiry of that exemption. Such articles already in use by that date may continue to be used. - Placing on the market and use in buildings of expanded polystyrene articles and extruded polystyrene articles that contain HBCDD as as a constituent of such articles and are produced before or on 22 March 2016 was allowed until 22 June 2016. Placing on the market and use in buildings of expanded polystyrene articles, which contain HBCDD as a constituent of such articles shall be allowed until the date of expiry of the exemption. Such articles already in use by that date may continue to be used. Without prejudice to the application of the other EU provisions on the classification, packaging and labelling of substances and mixtures, expanded polystyrene in which HBCDD is used pursuant to the exemption, must be identifiable by labelling or other means throughout its life cycle.

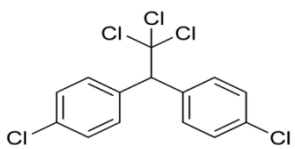
*HBCDD was covered by the authorisation procedure pursuant to Regulation No 1907/2006 (REACH). Pursuant to the provisions of Article 56 of this Regulation, a manufacturer, importer or downstream user shall not place a substance on the market for a use or use it himself, unless: the use(s) of that substance on its own or in a mixture or the incorporation of the substance into an article for which the substance is placed on the market or for which he uses the substance himself has been authorised. An authorisation procedure does not cover placing on the market and use of HBCDD, if it is used in a mixture and its content is below 0.1% by weight/weight (w/w).

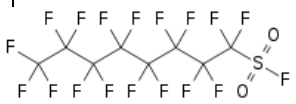
3.1.2.1 Substances listed in Annex B

Annex B contains a list of substances, production and use of which are restricted.

The list of substances covered by Annex B is presented in Table 6.

Table 6. List of substances covered by Annex B to the Stockholm Convention.

Name of chemical	CAS No.	Structural formula	Date of listing (entry into force)	Use
DDT (1,1,1-trichloro-2,2-bis (chlorophenyl) ethane	50-29-3		2001 (2004)	In the past the agent controlling malaria, typhus fever, encephalomyelitis and other diseases transmitted by mosquitoes.

Name of chemical	CAS No.	Structural formula	Date of listing (entry into force)	Use
				Current intermediate in production of dicofol, agent controlling malaria.
Perfluorooctanesulfonic acid (PFOS) and its salts	1763-23-1		2009 (2010)	Perfluorooctanesulfonyl fluoride (PFOSF) is a intermediate in synthesis of perfluorooctanesulfonic acid (PFOS). Broad scope of application in: - extinguishing foams, - clothing, leather, textile, upholstery, paper, packaging, plastics industry, - plating, - in insecticides for ants and termites control.
Perfluorooctanesulfonyl fluoride (PFOSF)	307-35-7		2009 (2010)	

Production, placing on the market and use of substances listed in Annex B in Poland is governed by the Regulation No 850/2004. The Regulation introduces an absolute prohibition of production, placing on the market and use of DDT.

Specific derogations laid down in the Regulation No 850/2004 are presented in Table 7.

Table 7 Specific derogations laid down in the Regulation No 850/2004.

Chemical substance	A specific exemption on intermediate use or other specification
Perfluorooctanesulfonyl acid and its derivatives (PFOS) $C_8F_{17}SO_2X$ (X=OH, metal salts (O-M+), halide, amide and other derivatives including polymers)	- Trace contaminant with the concentration of PFOS equal to or below 10 mg/kg (0.001% by weight), when it occurs in substances or preparations. - Trace contaminant in intermediates or articles, or parts thereof, if the PFOS concentration is lower than 0.1% by weight calculated with reference to the mass of structurally or microstructurally distinct parts containing PFOS, or for textiles or other coated materials, if the PFOS density is below 1 µg/m^2 of coated material. - If the quantity released into the environment is minimised, production and placing on the market is allowed for the following specific uses provided that Member States report to the European Commission every four years on progress made to eliminate PFOS: a) photolithographic or anti-reflective coatings used in photolithographic processes; b) photographic coatings used for films, paper or printing plates; c) mist suppressants used in non-decorative hard chrome (VI) galvanic plating in closed loop systems; d) hydraulic fluids for aviation.

	Where derogations in points (a) to (d) apply to production or use in the installations covered by the scope of Directive 2008/1/EC of the European Parliament and the Council, the relevant best available techniques for the prevention and minimisation of PFOS emission described in the information published by the Commission under Article 17(2), second subparagraph of Directive 2008/1/EC of the European Parliament and the Council shall apply. As soon as new detailed information on applications and safer alternative substances or technologies for uses in points (a) to (e) becomes available, the Commission shall review each derogation listed in the second subparagraph so that: (i) the uses of PFOS will be phased out as soon as the use of safer alternatives is technically and economically feasible; (ii) a derogation can only be continued for essential uses for which safer alternatives do not exist and where the efforts undertaken to find safer alternatives have been reported on; (iii) releases of PFOS into the environment have been minimised by applying best available techniques.

3.1.3 Releases from unintentional production

Annex C to the Stockholm Convention lists the following unintentional products covered by the Convention requirements:

- PCDD/F,
- HCB,
- PCB,
- PeCB, added in 2010.

POPs are produced as by-products in numerous anthropogenic processes – primarily in the industrial or household combustion processes, in metallurgy (ore roasting and secondary metal production), chemical industry (halogen compounds chemistry) or during waste incineration. POPs may occur as pollutants in waste gases from technical processes used in the industry, in wastewater, as well as in the main product – wherever the halogen compounds and organic compounds occur in raw materials and a process takes place in higher temperature.

Article 5 of the Stockholm Convention obliges the Parties to take measures to reduce or eliminate releases of chemical substances listed in Annex C from anthropogenic sources. Action plan in this area is incorporated into the National Plan for the Implementation of the Stockholm Convention (Article 7).

For the purpose of identification of sources of POPs generated as a result of unintentional production, the *Inventory of Dioxin and Furans Releases in Poland* [1] was delivered in Poland in 2002, under which:

- location of installations covered by the guidelines of *Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases* was defined,
- levels of emission factors typical of Polish production facilities were defined,
- emission from these plants were estimated,
- operation of individual plants was defined.

The obtained results were used to estimate releases and emissions of PCDD/F, HCB and PCB into the environment for the purposes of the *National Programme Implementation Plan for the Stockholm Convention*.

In 2002, the *National environmental strategy for POPs* was developed and adopted by the Council of Ministers, discussing the key lines of actions reducing the emissions of POPs. In 2006 it was updated in the context of approach presented in *Community strategy for dioxins, furans and polychlorinated biphenyls* of 2001.

Actions have been also taken to determine the nature of sources of POPs being the products of unintentional production: NCEM performs the inventory of emissions of POPs (the inventory covers PCDD/F, HCB, PCB) into the air on annual basis.

In the scope of reduction of the POPs emissions being the unintentional products, the *Inventory of Dioxin and Furans Releases in Poland* [1] defined the emission reduction measures divided into measures reducing the formation of dioxins and furans and the measures determining the reduction of their releases to the environment.

Recent years have also brought the following measures to reduce POPs emissions:

- legal regulations have been introduced for the integrated pollution prevention and control (IPPC), emission standards for dioxins and furans for waste incineration and co-incineration plants have been adopted and the use of BAT has been recommended, in particular for plants in which processes leading to POPs releases are conducted,
- increasingly effective systems for reducing emissions of air pollutants are implemented, (increasingly effective sorption systems of exhaust gas treatment),
- gradual modernisation of combustion processes has been conducted, in particular in individual furnaces, along with an improved treatment of exhaust gas from coal-fired boiler houses and in construction of small, high-efficiency oil- or gas-firedboiler plants houses,
- programmes for reduction of low emissions are implemented in the communes and districts, consisting in reducing the emissions of harmful substances into the atmosphere, by comprehensive elimination of the existing, inefficient heat sources and introducing the environment-friendly, energy-saving heating devices.

Pursuant to the Environmental Protection Law Act, the government and local governmental authorities should incorporate the principles of environment protection and sustainable development into their strategies, plans, policies and programmes developed (Article 8). Therefore, the implementing body of a voivodship, district and commune, in order to implement the environmental protection policy, draws-up the regional, district and communal environmental programmes, respectively (Article 17). Furthermore, the local government of voivodship draws-up the air protection programmes (Article 91), having legal effect of local law, providing for a manner of ensuring the best possible air quality (Article 85) by:

- maintaining all pollutant levels below the permissible as a minimum,
- reducing the air pollutant levels to at least the permissible levels, if they are not complied with,
- reducing and maintaining the air pollutant levels below the target levels or long-term objective levels or at least at these levels.

According to the information provided by the Ministry of the Environment on the integrated permissions held by establishments running the plants covered by this obligation, as at 26 April 2016 there were 3 541 IPPC plants identified on the territory of the country, of which 3405 held the integrated permission required by the law. The list of plants covered by the Regulation No 166/2006 includes all the plants requiring the integrated permission and additionally the following types of operations:

- coal pulverisers of capacity above 1 tonne/hour,

- plants manufacturing coal products and solid smokeless soli fuel,
- underground mining and related activities,
- surface mining and quarries with area of actual excavation activity exceeding 25 hectares,
- municipal wastewater treatment plants treating more than 100,000 ENI,
- independently operated industrial wastewater treatment plants that provide one or more types of activities referred to in Annex I to the Regulation 166/2006 of capacity exceeding 10 000 m^3 per day.

Inventory of pollutant emissions into the air is performed in NCEM on annual basis for the purposes of national statistics, EU requirements and obligations towards the international organisations. Inventory of emissions at the national level covers, e.g. the selected POPs covered by Annex C to the Stockholm Convention: PCCD/F, PCB and HCB.

Industrial sites, equipped with plants releasing POPs to the environment, are obliged to control the volume of these releases and transfer this information to the National Pollutant Release and Transfer Register kept by the CIEP. These data are available at the Community website dedicated to E-PRTR[3)]. Data on the PCDD/PCDF emissions (Figure 1, 2), PCB (Figure 3, 4) and HCB (Figure 5, 6) into the air in the period 1990-2014 are presented below.

Polychlorinated dibenzo-p-dioxin and dibenzofurans (PCDD/PCDF)

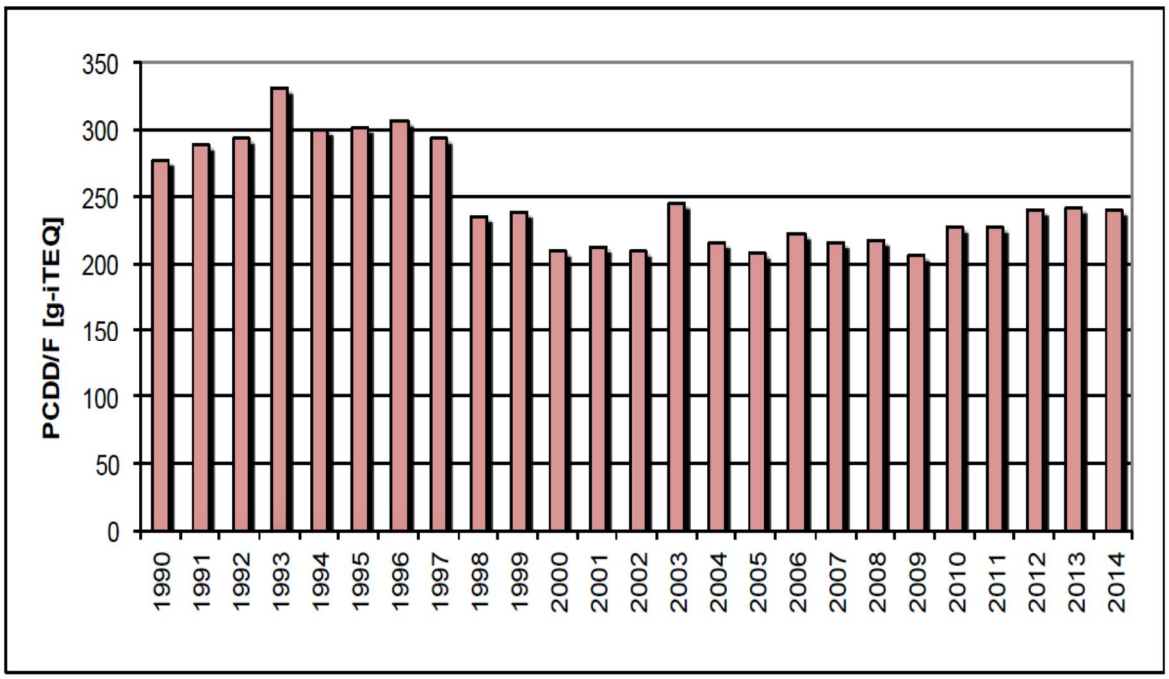


Figure 1. Changes in the volume of PCDD/PCDF emissions into the air in the period 1990 – 2014 [NCEM data].

A 25% decrease in PCDD/PCDF emissions in the years 1995 – 2014 was influenced by the actions consisting in reducing the emissions from small combustion sources from the municipal (low emission) sector and thermal waste processing.

The greatest share in PCDD/PCDF emissions into the air in 2014 was recorded however for the emissions from combustion processes outside the industry, including combustion in domestic furnaces (59%), as well as from industrial combustion (this category was dominated

[3] http://prtr.ec.europa.eu/

by metallurgic processes and lime production), from the industrial processes as well as from combustion processes in the energy production and transformation sector (Figure 2).

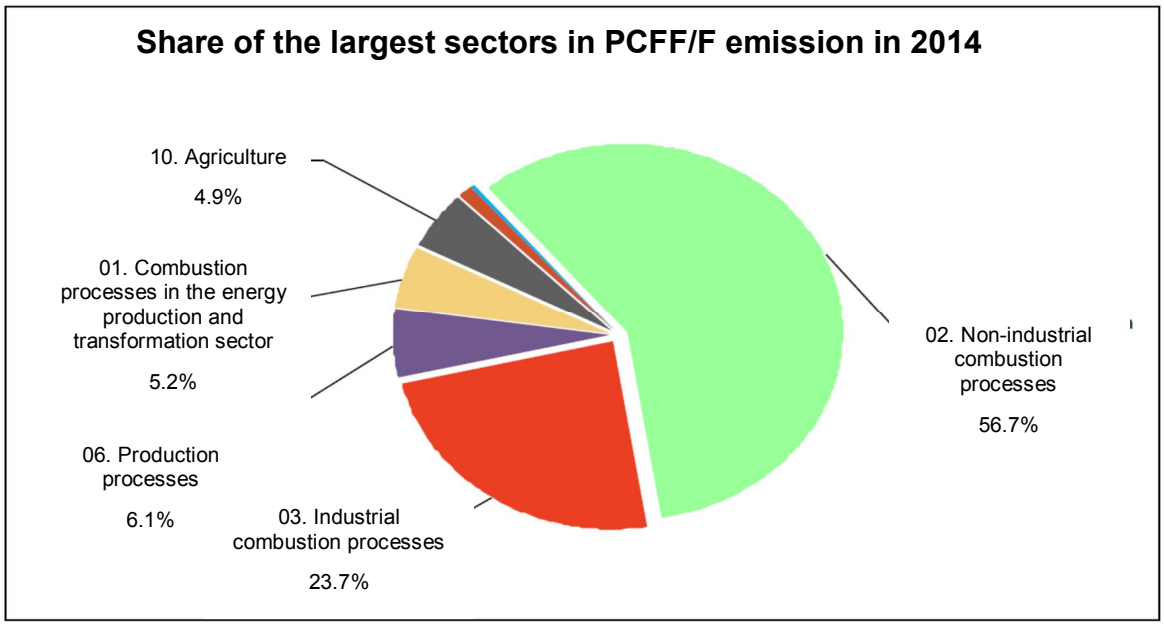


Figure 2. Share of particular sectors in PCDD/PCDF emissions in 2014.

In the period of 2007 – 2010 the E-PRTR recorded the PCDD/PCDF emissions into the water from three plants:

- in 2007 – 0.543 g
- in 2008 – 0.150 g
- in 2009 – 0.108 g
- in 2010 – 0.450 g

In the period 2011 – 2014, the emissions did not exceed PCDD/PCDF limit values for any of the plant operators recorded in the E-PRTP.

Polychlorinated biphenyls (PCB)

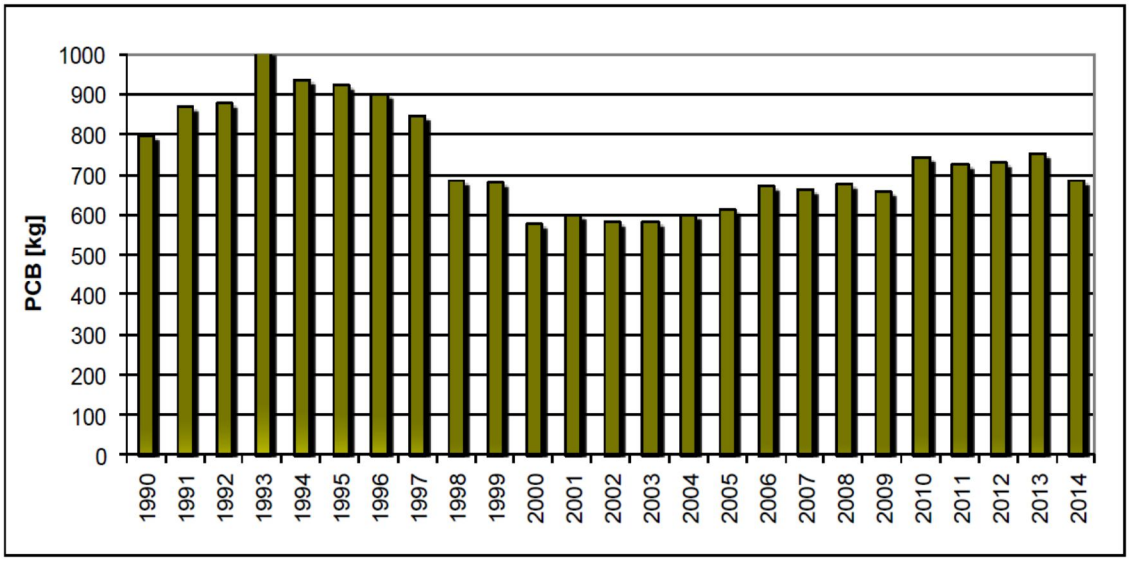


Figure 3. Changes in the volume of PCB emissions into the air in the period 1990 – 2014 [NCEM data].

The volume of PCB emissions is primarily influenced by the type of fuel used. Change in emissions in 1990 – 2014 resulted primarily from reduction of emissions from small combustion sources in the municipal (low emission) sector. At the same time, growth in emissions from road transport resulted in an overall increase in PCB emissions in the period 2003 – 2013.

The greatest share in PCB emissions into the air in 2014 was recorded for the emissions from small combustion sources in the municipal sector – more than 60%. Along with emissions from the commercial power industry and road transport these corresponded to more than 90% of the total emission value (Figure 4).

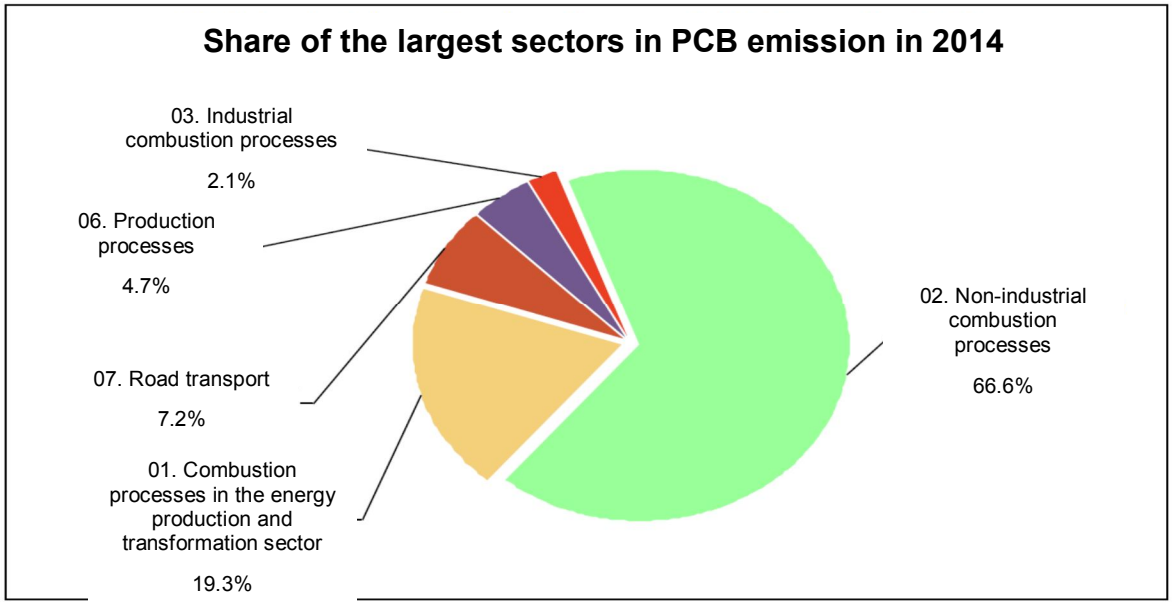


Figure 4. Share of individual sectors in PCB emissions in 2014.

In 2008, the E-PRTR recorded the emission of 1.37 kg of PCB into the water from one plant. In the period 2010 – 2014, the emissions did not exceed HCB limit values for any plant operator recorded in the above register.

Hexachlorobenzene (HCB)

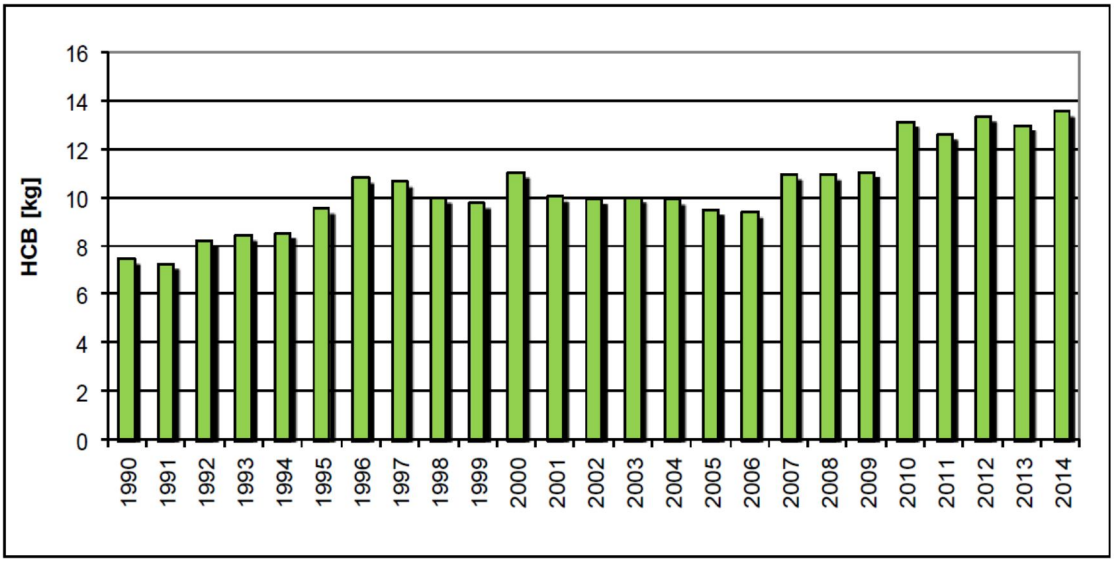


Figure 5. Changes in the volume of HCB emissions into the air in the period 1990 – 2014 [NCEM data].

Changes in HCB emissions in the period 1990 – 2014 are caused, on the one hand, by the reduction of emissions from thermal waste processing and small combustion sources in the municipal (low emission) sector, whereas on the other hand by increased emissions from fuel combustion in power plants and industrial processes (in majority from production of secondary copper) and from road transport.

The greatest share in HCB emissions into the air in 2014 was recorded for the emissions from industrial combustion – almost 60%. Along with emission from small combustion sources (combustion processes outside the industry) and from road transport these account for almost 90% of the total emission value (Figure 6).

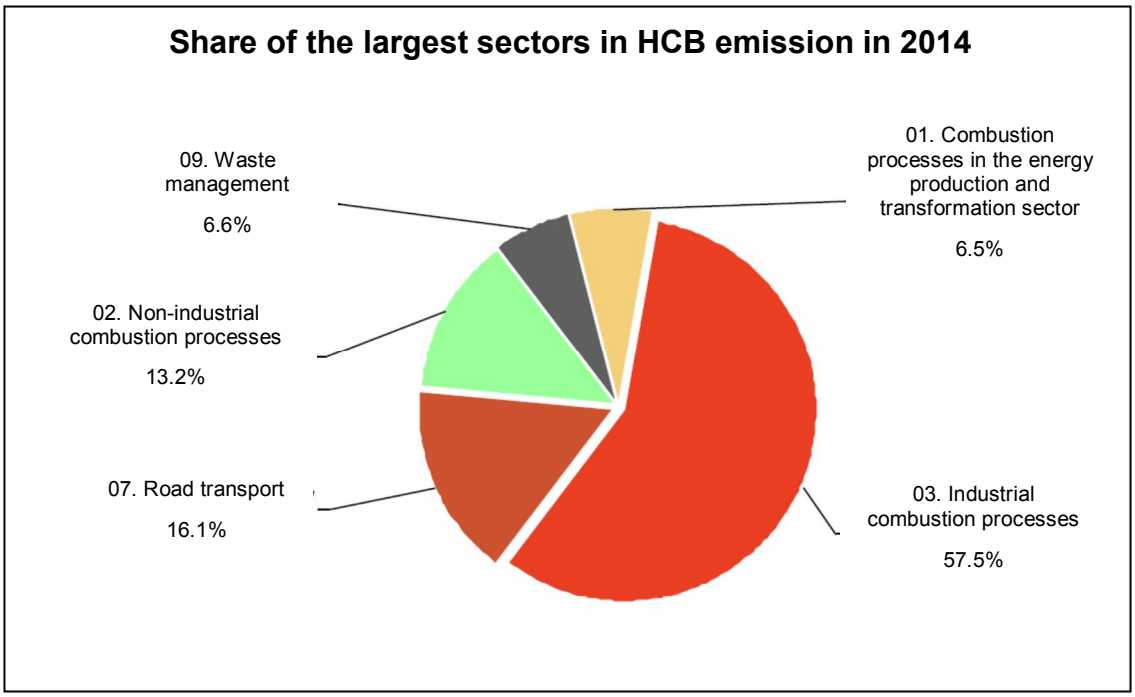


Figure 6. Share of particular sectors in HCB emission in 2014.

In the period 2007–2009, the E-PRTR recorded the HCB emissions into the water from four plants:

- in 2007 – 9.92 kg
- in 2008 – 1.60 kg
- in 2009 – 3.18 kg

In the period 2010 – 2014, the emissions did not exceed HCB limit values for any plant operator recorded in the E-PRTR.

Pentachlorobenzene (PeCB)

PeCB is emitted as by-product of incomplete combustion. Formation of PeCB as by-product in combustion processes is associated with formation of HCB and PCDD/F, therefore the actions taken to reduce the emissions of these substances will contribute to considerable reduction in released PeCB.

Inventory of PeCB emissions has been currently carried out in Poland.

In the period of 2007 – 2014, no PeCB emissions exceeded the limit value (1 kg/year) for any plant operator recorded in the E-PRTR.

The volume of emissions from individual sources was evaluated using the emission factors, values of which require continuous updating in effect of changes in technologies and improvement in fuel quality. Inventories of emissions dating back to 1995 were calculated in

the period 2013 – 2014, thus allowing the changes in emission of different pollutants to be presented for the entire period of 1995 – 2012.

The dominant share in PCB and PCDD/PCDF emissions was recorded for the emissions from small combustion sources: in small heat and power plants not equipped in dedusting devices and catalytic afterburners, in the individual households (low emission) and uncontrolled open-air combustion of various types of waste as well as burning of grass which, in spite of being illegal, is still practiced. PCDD/F, emitted from low emission sources are deposited at a small distances from their sources and constitute a local hazard for the environment and human health. The highest concentration of dioxins and furans in exhaust gases was identified in small combustion plants, waste incineration plants, waste processing and recycling plants, e.g. for copper recovery. Dl-PCB are also released to the environment [1] due to inadequate waste handling or leakage from large condensers and hydraulic systems.

The issue of PCDD/F emission from these sources is of importance not only owing to their share in the general dioxin and furan emission level in Poland (almost 50%), but also due to generally inappropriate waste combustion and co-combustion conditions in furnaces and kitchens. Industrial and commercial power industry remain under particular control of the environmental protection regulations implying the use of protective equipment, for the most in the dust removal and desulphurisation of combustion gases processes, which reduce the release of PCDD/F into the air.

Releases to residues (fly ashes) have not been recorded so far. However, no protective equipment can be used, nor these releases can be reduced in this case, since the combustion processes are operated under optimal conditions.

3.1.4 Releases from stockpiles and waste

In Poland, there are no stockpiles of products containing POPs.

Industrial waste containing POPs are deposited in the CWL "Rudna Góra" owned by Zakłady Chemiczne "Organika-Azot" S.A. in Jaworzno (Śląskie Voivodship), at the area owned by the Jaworzno District, the State Treasury and Południowy Koncern Węglowy company. In the past, these plants produced DDTs and plant protection products containing the imported POPs.

In the years years 1947-1980, 78,950 Mg of DDT were produced in Zakłady Chemiczne "Organika-Azot" in, whereas in years 1965-1982 - ca. 4,450 Mg of Lindan-Gamatox (containing minimum 98% of γ-HCH isomer). There are no data on the quantity of plant protection products manufactured with the use of the other POPs. It is estimated that the quantities deposited on the landfill and in the ground within the area and in the vicinity of the POP plant (based on maximum permissible losses in the process – 2%) could reach 78,950 x 0.02 = 1,600 Mg of DDT metabolites and 20 Mg of HCB) [2]. According to archive data available in the plants, for each tonne of Lindan produced between 8.2 and 15 Mg of waste isomers of inactive HCH was generated (mainly – α- HCH and β-HCH isomers doped with γ-HCH and other isomers) in the form of solid and semi-fluid waste, some part of which (30%, ca. 300 Mg/year) was processed into TCB and the remaining part was utilised with no consideration to their adverse environmental impact. Volume of approx. 10 Mg of HCH waste per tonne of produced Lindan is more approximated to the actual value, since the recorded quantity of HCH waste deposited in Jaworzno amounts to 42,200 Mg. It is assumed that ca. 23,400 Mg of HCH was deposited on the landfill of the CWL "Rudna Góra", though all stored waste (162,202 Mg) should be considered as containing POPs. Ca. 18,800 Mg of inactive HCH isomers was deposited at the other areas owned by the city of Jaworzno.

According to the performed analyses, untreated eluates contain p,p'-DDT (7-12 µg/l), o,p'-DDT (0.95-9.2 µg/l), DDD (4-11 µg/l) and, additionally, HCH isomers (570-821 µg/l), tetradifon (5.6-9.0 µg/l) and free cyanides (0.1-0.55 µg/l). The company's mechanical and chemical

wastewater treatment plant was modernised in the period 2003-2004. Currently, the treatment technology is complemented with the process of coagulation with flocculation, filtration with gravel filters and coal adsorbers. Wastewater sludge is dewatered in the filtration press.

FOKS studies results [3] are to be used to develop the most favourable technology of removal and conducting reclamation works of the "Rudna Góra" CWL area and of the other areas located in Jaworzno polluted with pesticides. On request of CIEP, the undertaking consisting in elimination of the discussed hazard was incorporated into the "Programme for elimination of ecological bombs" carried out jointly by the Chief Inspector of Environmental Protection and the President of the National Fund for Environmental Protection and Water Management. This allowed financial support to be obtained from the NFEP&WM for disposal of the above waste and remediation of land. The beneficiaries indicated by the CIEP in the programme included both Zakłady Chemiczne "Organika-Azot" S.A. and the President of the City of Jaworzno.

On 16 July 2013, the NFEP&WM in Warsaw signed a contract (annexed on 31.12.2015) with the Jaworzno Commune concerning a subsidy in the amount of PLN 1,599,200 to be allocated for:

- execution of the project and conducting subsequent supplementary tests to the previously conducted FOKS programme (geophysical and field studies),
- execution of technical and environmental analysis of the planned corrective actions,
- selection by the expert team of the technology for elimination of the existing hazards optimal from the environmental and economic perspective,
- feasibility study and report on the environmental impact of the investment project,
- preparation of complete technical documentation of the project and reclamation of land located within the area of Zakłady Chemiczne Organika-Azot S.A., including primarily the "Rudna Góra" excavation, and other polluted sites within the City of Jaworzno.

A task related to execution of supplementary tests has already been accomplished.

Waste landfill owned by the Organika-Azot plants remains under continuous supervision of the environmental protection authorities and control bodies, whereas the tasks in the scope of improving the situation concerned are set forth in the Environmental Protection Programme for the Silesian Voivodship by 2013 with a view to 2018 perspective.

3.2 Information exchange

Poland (including, among others the Ministry of the Environment as a contact point and the Bureau for Chemical Substances as a focal point) exchanges information with the Secretariat of the Stockholm Convention and the EU, which consists in providing opinions to the documents, positions of Poland and any data and information necessary for standard operations of the bodies competent for the Stockholm Convention. Whenever possible, Poland provides also information to the non-EU countries.

In addition, Poland participates in the discussion meetings of the European Council, European Commission and working groups in the scope covered by the Stockholm Convention issues.

3.3 Public information, awareness and education

Public information on the POPs plays an essential educational role for the public.

At presence, increasing social awareness is facilitated by, among others:

- Running information sections on the official websites of the Ministry of the Environment (www.mos.gov.pl). Specialist websites are intended to inform the employees of local and governmental administration about the legislation in force and practice in assessing

hazards resulting from POPs releases to the environment. There are also websites informing about waste handling (i.a., odpady.net.pl) and dioxins (i.a., www.dioksyny.eu/) available. Information for entrepreneurs on management of chemicals is available on the websites of the National Information Centre for REACH and CLP (reach.gov.pl/home), Consultation Point for REACH and CLP of the Ministry of Economic Development (www.reach-info.pl), Bureau for Chemical Substances (www.chemikalia.gov.pl) and the Ministry of Economic Development (www.mr.gov.pl - REACH system),

- Materials on the inventory of POPs emissions into the air are available on the website http://www.kobize.pl/; selected data concerning POPs are disseminated by the "Ochrona Środowiska" (Environmental Protection) publication, available on the websites of the Central Statistical Office (http://www.stat.gov.pl),
- Organisation of conferences, including among others the annual international Conference *Dioxins in the industry and the environment* organized by EMIPRO Sp. z o.o. and the Laboratory of Trace Analysis of the Cracow University of Technology,
- Participation of the employees of the ministries, inspectorates, local administration and institutes in the meetings and conferences dedicated to the issues of waste and POPs,
- Training of employees of the ministries and institutes in POPs-related issues,
- Distribution of informational leaflets and folders (e.g. concerning proper management of PCB) by the non-governmental ecological organisations,
- Involving the representatives of industry in the discussions on preparation of Poland's positions for the meetings of the European Council and the European Commission bodies and working groups.

3.4 Research, development and monitoring

3.4.1 Research and development

Between 2003 and 2010 and in 2014, IEP delivered the tasks under the Stockholm Convention. NCEM, also operating under the Institute, performs among others the inventory of emission of air pollutants, including POPs.

Polish Geological Institute – National Research Institute in Warsaw performed the under the inventory of POPs in soil and ground waters and the works under the inventory of POPs-containing waste plant protection products (so-called pesciside burial sites) withdrawn from use.

Institute for Ecology of Industrialised Areas in Katowice conducts the research works on the release of POPs to the environment. In the years 2009 – 2012 it participated in the COHIBA project: "Priority Baltic hazardous substances", co-financed by the EU[4]. The project covered, among others PCDD/PCDF, dl-PCB, PBDE, HBCDD, PFOS and PFOA and endosulfan.

Maritime Department of IMWM tests the concentration of POPs in river waters, bottom sediments and aquatic organisms.

NIPH-NIH in Warsaw, subordinated to the Minister of Health, conducts research on biological monitoring of POPs in human samples to estimate the related health risk. In addition, the Institute conducts consultative activity for the Ministry of Health in the scope of impact of POPs on human health, evaluates the risks connected with exposing the consumers to dioxins and PCB contained in food. The Institute, as the first one in Poland, obtained in 2014 the certificate

[4] http://www.cohiba-project.net/

of compliance with ISO 9001:2008 for among others performing risk assessment for presence of pesticide and POPs residues in food (Certificate No 1053/S/2014 issued by DQMS MTA).

Central Institute for Labour Protection is responsible for conducting research on the impact of harmful factors, including POPs, on people at their workplace.

Industrial Chemistry Research Institute conducts research and development works on the operational safety in chemical industry, POPs emission as well as the POPs content in products.

The Institute of Industrial Organic Chemistry conducts research and development works on the synthesis of plant protection products, chemical safety, transport of hazardous materials and chemical plant protection products.

NVRI-NRI in Puławy conducts scientific research on health protection and preventing infectious animal diseases, including zoonoses, as well as hygiene and toxicology of food of animal origin and feeds. With regard to the latter, it conducts, by means of monitoring and analytical research, analysis of the presence of POPs and performs risk assessment, consultative and expert activities for the Ministry of Agriculture and Rural Development. The Radiobiology Department of the NVRI-NRI is the only national laboratory analysing food and feeds using the methods in force in the EU Member States and having the relevant research equipment (HRGC-HRMS).

Institute of Plant Protection conducts research and development works on application of plant protection products. The Sośnicowice Branch of the Institute performs research and development works on elimination of plant protection product residues (including pesciside burial sites).

Institute of Ferrous Metallurgy deals with the methodology of research and waste elimination technologies developed in metallurgic industry and researches the emissions of hazardous substances generated during processing and combustion processes in ferrous metallurgy.

Institute of Non-Ferrous Metals deals with research on emissions of hazardous substances, including POPs, from non-ferrous metals manufacturing and processing.

Maritime Institute in Gdansk has been conducting scientific and research works on POPs (PCB, PAH analyses) in bottom sediments of the Baltic Sea, port sediments and waste for many years.

Laboratory of Trace Organic Analyses of the Cracow University of Technology determines, pursuant to accreditation granted by the PCA, the levels of the following: PCDD/F, PCB, including 12 so-called dl-PCB (WHO-PCB), PBDE and other brominated flame retardants (HBCDD), organochlorine pesticides, PAHs in food and feeds, environment and technical products, as well as dioxins and PCBs in foodstuffs, preparations, feeds and technical products.

3.4.2 Monitoring results

Data relating to the levels of POPs covered by the Convention, in particular the components of the environment, selected products and living organisms, are collected by various institutions, e.g.:

- CIEP,
- VIEP,
- NCEM,
- The Polish Geological Institute – NRI (PGI – NRI),

- IMWM,
- VI,
- NVRI-NRI,
- SSI,
- AFQI,
- SPHSIS.

The CELAB database (cbd.piwet.pulawy.pl) – the national system enabling the collection and management of data on laboratory test results conducted under the tasks performed by the VI bodies, contains data covering information on samples, sampling methods and sites of collection as well as the conducted laboratory tests. Data are recorded in the Central Database in the NVRI-NRI. The system stores data from sixteen RVL, RVL branches, independent laboratories, collected from private laboratories approved by the Chief Veterinary Officer and from the laboratories of the NVI-NVRI in Puławy administering the system. The system has been operating since 1 January 2007. Access to data collected in the Central Database through a web application is limited only to the registered users from the laboratories of RVL and NVRI-NRI, authorised employees of the VI bodies and authorised employees of the Ministry of Agriculture and Rural Development.

Data on the POPs levels covered by the Stockholm Convention in the individual components of the environment, are collected by the Environmental Protection Inspection under its technical competences.

The POPs measurement results in the air, obtained under the SEM and also by the other participants of the air quality assessment system, are collected on the on-going basis in the regional databases kept by the VIEP, as well as by the CIEP in the JPOAT 2.0 database operating under the Ekoinfonet Information System.

In the scope of monitoring of the Polish waters, data will be collected in a newly developed JWODA database.

The OSADY webs service, supervised by the Chief Inspector of Environmental Protection, available through the CIEP websites, contains data obtained under the *Monitoring of bottom deposits of rivers and lakes*, carried out under the SEM.

All results of determinations performed under the SEM task entitled *Monitoring of chemism of arable soils of Poland*, are collected in the IT System for Soil Chemism Monitoring.

3.4.2.1 Air

Monitoring and assessment of air quality are conducted under the SEM in the Air Quality Monitoring subsystem. Testing and assessment of the level of substances in the air are the responsibilities of the voivodship inspectors of environmental protection. These tasks are implemented primarily on the voivodship level covering the number of zones specified by law. The list of measurement stations participating in the system, scope of measurements for individual station and the scope of other complementary tests are defined by the voivodship inspector of environmental protection in consultation with the units operating the measurement stations – in the form of voivodship environmental monitoring programmes based on the results of preliminary assessment of air quality in the zones. Apart from an obligatory measurement programme covering the substances for which the permissible levels, target levels and long-term target levels have been defined, as well as the substances covered by special programmes, the voivodship inspector of environmental protection may incorporate the other substances into the regional environmental monitoring programme, considering a specific

source of pollutants, located within the area of a voivodship. In such cases, the studies are performed locally and their results are not used for zone classification. Furthermore, specialist measurement programmes involving the VIEP are implemented at the national level, with the aim to obtain comprehensive information on air quality. Based on test results, the VIEP carries out annual air quality assessment in the voivodships. After submitting the assessment results to the CIEP, a comprehensive assessment of air quality monitoring in Poland is developed. Furthermore, the CIEP prepares an annual thematic report concerning, among others, air pollution with PAH in Poland.

With regard to POPs, for the purpose of assessment of air quality in zones, the monitoring is conducted only for (B(a)P), since it is treated as the representative of the group of PAH for which the Regulation on levels of certain substances in air lays down the target level in the air, for the protection of human health, of 1 ng/m^3 (total content in PM10 particulate matter). Annual assessment of air quality for B(a)P in PM10 has been conducted since 2008. Monitoring of B(a)P in PM10 matter being the basis for this assessment commenced in 2007. In addition, under SEM on selected municipal stations and regional background the monitoring of number of PAH is carried out for: benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd) pyrene and dibenzo(a,h)anthracene in PM10 dust. Additionally, three stations in Poland perform the studies on the above PAH concentrations in total deposition.

In 2015, there were 137 B(a)P measuring stations and 27 B(a)P measuring stations of the above PAHs operating in Poland. Total PAH content in PM10 particulate matter was determined in weekly samples. In the vast number of stations (128 of 137), the average annual concentration of B(a)P exceeded the target value of 1 ng/m^3. B(a)P demonstrates clear seasonal variability of concentrations – daily values of B(a)P concentrations in the heating season have been frequently higher than in the remaining period of the year. The reason for exceeding the permissible average annual concentration (target level) was the increased concentrations in the winter period. The most frequently quoted cause of the exceeded target concentrations were impacts of emissions related to individual heating of the buildings, while the other causes of a significantly lower percentage share include: impact of emissions related to intensive vehicle traffic in the city centres, impact of industry and unfavourable meteorological conditions. At the same time, target level specified for B(a)P concentrations in the air is an extremely stringent value, difficult to achieve not only in the Polish conditions.

2.4.2.2 Waters

2.4.2.2.1 River and lake waters

Quality of river waters, dammed reservoirs and lakes is tested under the SEM. Monitoring of waters is planned and implemented in accordance with Directive 2000/60/EC (Water Framework Directive) and based on the assessment of the water condition status of water in its basic units –wbs. These units are the selected lakes or separated water courses of the river system or parts thereof, of significance for water management due to their nature or size. Water quality tests are implemented in the six-year cycles. Selection of wbs for monitoring and frequency of tests depends on the type of monitoring.

Diagnostic monitoring envisages one-year tests at six-year intervals. The analysis covers all indicators from the list of water quality elements tested on obligatory basis, including the compounds recognised also as the POPs. The purpose of this type of monitoring is to provide a general assessment of the condition of surface waters of each watershed.

Operational monitoring focuses on testing the wb failing to achieve a good status or at risk of failure to reach it. Tests are implemented every three years. The scope of tested indicators depends on the nature of hazards affecting the wbs or the results of the previous tests performed for a given wbs. Priority substances are researched in wbs, if discharged to the watershed or if the results of monitoring obtained in the previous years demonstrated the exceeded values of environmental quality standards.

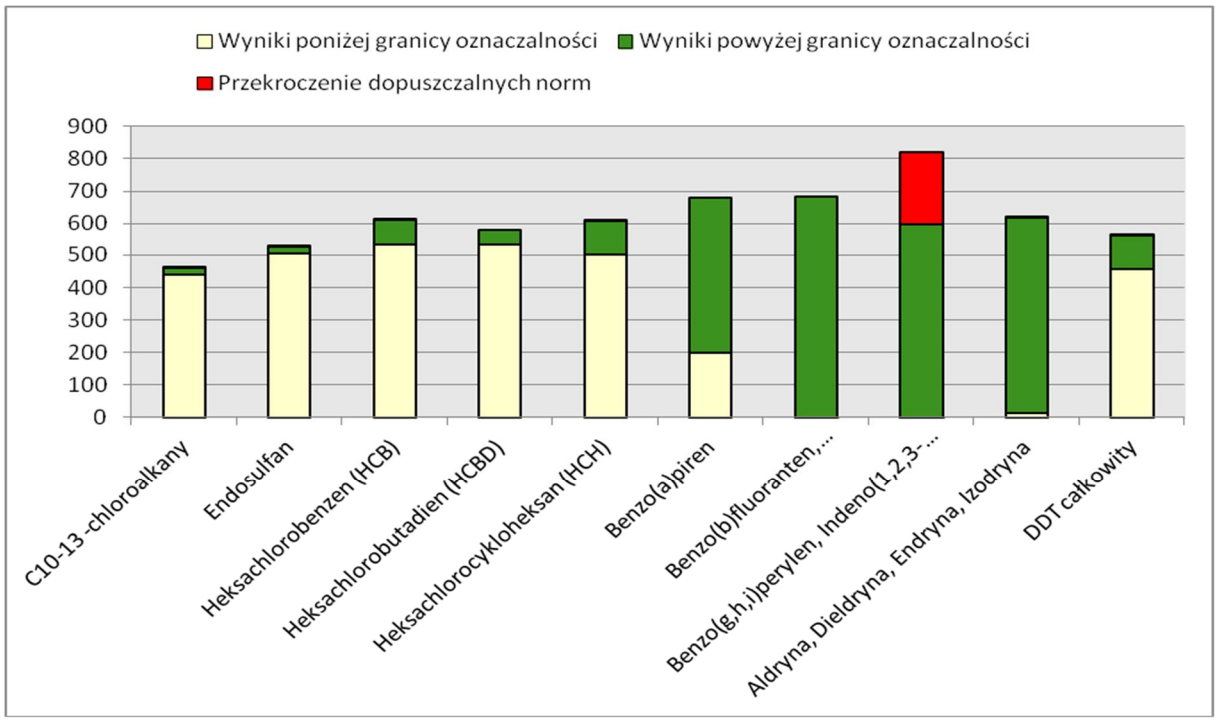
Monitoring of the protected areas is implemented with the frequency and scope of testing as determined by the type of protected area in which the waters are tested.

In the years 2010-2014, 15 substances listed in the Regulation No 850/2004, defined in the Directive 2000/60/EC (Water Framework Directive) as the priority substances, were tested in 700 wb of river and dammed reservoir waters.

The largest number of exceeded values of permissible environmental standards was observed for jointly classified benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene. Concentrations of the remaining substances reached, in the vast majority, the values below the limit value and frequently also below the limit of quantification of the analytical equipment. Table 8 and Figure 7 present data on the number of wbs of rivers and dammed reservoirs tested for POPs, with specification of the number of results below and above the limit of quantification and the cases in which the permissible environmental standards were exceeded.

Table 8. Number of wbs of rivers and dammed reservoirs tested for POPs with specification of the number of results below and above the limit of quantification and exceeded values of the permissible environmental standards.

	Number of tested wbs	Measurements below the limit of quantification	Measurements above the limit of quantification	Number of exceeded values
C10-13-chloroalkanes	459	439	20	3
Endosulfan	527	504	23	1
HCB	613	532	81	1
HCBD	579	532	47	0
HCH	608	501	107	2
B(a)P	681	199	482	0
Benzo(b)fluoranthene, Benzo(k)fluoranthene	682	3	679	0
Benzo(g,h,i)perylene, Indeno(1,2,3-cd)pyrene	596	3	593	226
Aldrin, Dieldrin, Endrin, Isodrin	617	13	604	3
Total DDT	563	456	107	2



C10-13-chloroalkany	C10-13-chloroalkanes
Endosulfan	Endosulfan
HCB	Hexachlorobenzene (HCB))
HCBD	Hexachlorobutadiene (HCBD)
HCH	Hexachlorocyclohexane (HCH)
B(a)P	Benzo(a)pyrene
Benzo(b)fluoranten…	Benzo(b)fluoranthene…
Benzo(g,h,i)perylen, Indeno(1,2,3-cd)…	Benzo(g,h,i)perylene, Indeno(1,2,3-cd)…
Aldryna, Dieldryna, Endryna, Izodryna	Aldrin, Dieldrin, Endrin, Isodrin
DTT całkowity	Total DDT
Wyniki poniżej granicy oznaczalności	Results below the limit of quantification
Wyniki powyżej granicy oznaczalności	Results above the limit of quantification
Przekroczenie dopuszczalnych norm	Exceeding the acceptable standards

Figure 7. Number of wbs of rivers and dammed reservoirs, tested for POPs with specification of the number of results below and above the limit of quantification and exceeded values of the permissible environmental standards.

As regards the monitoring of lakes, the VIEP carried out the testing of chemical substances, including POPs. The chemical status of waters was assessed for the years 2012-2014. In 2014, the samples were collected and laboratory analyses were carried out for organic compounds in 100 wb. The chemical status of five wbs was assessed as poor. In 2013, samples were collected and laboratory analyses were carried out for organic compounds in 97 water bodies. The chemical status of 19 wbs was assessed as poor. In 2012, samples were collected and laboratory analyses were carried out for organic compounds in 59 wbs. The chemical status of 15 wbs was assessed as poor.

The reason for failing to achieve a good chemical status included, for all wbs tested in 2012, high concentrations of indeno(1,2,3,-c,d)pyrene and benzo(g,h,i)perylene. An identical situation was observed in the lake wbs tested in 2013 and 2014.

2.4.2.2.2 The Baltic Sea waters

Regular testing of the Baltic marine environment has been performed since 1979, and, since 1991, under the SEM. Since 1998 the measurement programme has been implemented in accordance with HELCOM recommendations as the COMBINE Baltic Sea Monitoring Programme. Since 2014, the monitoring programme considering the requirements of Directive 2008/56/EC has been implemented. The monitoring programme is also consistent with the HELCOM recommendations under which the initiatives for harmonisation of the Baltic monitoring programme with the requirements of Directive 2008/56/EC by the States Parties to the Convention are taken. The results obtained during the marine environment research are collected in the oceanographic database and transferred to the HELCOM data bank in ICES on regular basis.

The monitoring programme covers the tests in the deep water zone (7 research stations in the area of the Gotland Basin, Bornholm Basin, the Gdansk Deep, Slupsk Furrow) as well as complementary tests in the shallow water zone (17 research stations in the the coastal zone, the Pomeranian and Gdansk Bays as well as in the Szczecin and Vistula lagoons). The SEM programme implements also determination of POPs for sea waters, including: aldrin, dieldrin, DDT, PCB and HCH.

Apart from a deep water monitoring, VIEP (Western Pomeranian, Pomeranian and Warmian-Masurian) monitor the waters in transitional and coastal waters – in accordance with the provisions of Directive 2000/60/EC. In 2012 (within the 2010-2012 cycle) and in the period 2013-2015 the tests in transitional waters were performed in 31 cmp and measuring stations and in 17 cmp and measuring stations for coastal waters.

In the period 2012-2015, the samples for determination of POPs were collected in the cmp no 2, 6, 8 in the Vistula Lagoon (in 2012 and 2014). In transitional and coastal waters of the Western Pomeranian VIEP, the samples were collected in 9 cmp (cmp 2 – Dziwna-Świna, cmp 3, 4, 5 – Sarbinowo-Dziwna, cmp 6, 7 – Jarosławiec-Sarbinowo, DZ, SW – the Świna estuary, WL – Kamieński Lake). In transitional and coastal waters of the Pomeranian VIEP, the samples were collected in 5 cmp (C12, C13 – Jastrzębia Góra-Rowy, C15 – Władysławowo-Jastrzębia Góra, C17, C18 – Hel Peninsula). In transitional and coastal waters concentrations were determined, among others for: aldrin, HCH isomers, B(a)P, DDT isomers and its derivatives, PCB and dieldrin.

Tests conducted in 2012 in the Vistula Lagoon indicated that the average concentration of p,p'-DDT amounted to 0.002 µg/l, while the average concentration of total DDTs was 0.0041 µg/l. Aldrin, dieldrin and endrin was found in the few samples – of 0.002 µg/l. In all samples, concentration of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthane and indeno(1,2,3-cd)pyrene was below the limit of quantification, while concentration of benzo(g,h,i)perylene showed the value above the limit of quantification only in one sample and reached 0.0012 µg/l. In 2012, in coastal waters of the Pomeranian Voivodship, concentration of p,p'-DDT and total DDTs were below the limit of quantification. Similarly, the concentration of aldrin, dieldrin and endrin, as well as B(a)P, benzo(b)fluoranthene, benzo(k)fluoranthane and indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene reached the values below the limit of quantification.

In 2012, in transitional and coastal waters of the Western Pomerania Voivodship, concentration of p,p'-DDT was below the limit of quantification. Concentrations of aldrin, dieldrin and endrin reached the values below the limit of quantification, while the B(a)P concentration exceeded the limit of quantification in one sample. Content of indeno(1,2,3-cd)pyrene was determined in two samples with the concentration values 0.0007 µg/l (Wrzosowskie Lake) and 0.0011 µg/l (Dziwna-Świna). Presence of benzo(g,h,i)perylene was recorded in the Wrzosowskie Lake (average 0.00075 µg/l), the Świna estuary (0.0006 µg/l), Dziwna-Świna (0.0005 µg/l) and Jarosławiec-Sarbinowo (average 0.0006 µg/l). Concentration of B(A)P and

benzo(b)fluoranthene and benzo(k)fluoranthene in tested samples was below the limit of quantification.

In 2014, the POPs content was tested in waters of the Vistula Lagoon. The conducted tests indicated that concentrations of p,p'-DDT as well as of aldrin, dieldrin and endrin were below the limit of quantification. The B(a)P and benzo(b)fluoranthene concentration at the level of 0,00012 µg/l was identified in only one sample. Concentration of benzo(g,h,i)perylene was between 0.0005 and 0.0019 µg/l, while concentration of indeno(1,2,3-cd)pyrene value ranged between 0.0002 and 0.0012 µg/l. Benzo(k)fluoranthene was present in quantities below the limit of quantification.

Under the European Territorial Cooperation – Baltic Sea Region (BSR) in the period 2009 – 2012, the IETU implemented the "Control of hazardous substances in the Baltic Sea region" (COHIBA[5]) project [1]. The project covered 11 substances/groups of hazardous substances, identified as of special importance for the Baltic Sea due to hazard potential implied by environmental nature of these substances. The substances and groups of substances include also the following selected substances incorporated into the Stockholm Convention:

- PCDD, PCDF and dl-PCB,
- PBDE, OBDE and DBDE,
- PFOS,
- PFOA,
- HBCDD,
- endosulfan.

Within the project the following samples of discharged wastewater collected in the period from September 2009 to August 2010, samples of sludge from one of the municipal wastewater treatment plants taken once in two months and eluates from a landfill and surface runoffs were tested:

- wastewater from three wastewater treatment plants (6 samplings),
- wastewater from one IWWTP industrial wastewater treatment plant (6 samplings),
- sludge (2 samplings),
- storm waters (2 samplings),
- leachate from closed municipal waste landfill (2 samplings),
- surface runoffs from an industrial hardened area of 6 ha.

Table 9 presents the frequency of presence of the tested substances in samples [4].

Table 9. Frequency of presence of the tested substances in samples [%] Source: [4]

Chemical substance	Municipal wastewater treatment plants	Industrial wastewater treatment plant	Surface runoffs	Leachate from landfill	Sludge
PCDD, PCDF, dl-PCB	-	-	-	100	100
pentaBDEs	44.4	16.7	-	-	50
octaBDEs	-	-	50	50	100
decaPBEs	100	100	100	100	100
PFOS	100	66.7	50	100	100
PFOA	100	100	50	100	100
HBCDD	50	27.8	50	50	100
Endosulfan	44.4	50	-	-	100

[5] www.cohiba-project.net

In the analysed samples of all wastewater discharged from municipal wastewater treatment plants only the concentrations of dekaBDE, PFOS and PFOA exceeded, in all cases, the limit of quantification set forth for a given method. In discharged industrial wastewater, concentrations of, among others decaBDE and PFOA exceeded the limit of quantification. Nearly all tested substances were present in the tested sludge. Both surface runoffs and sludge constitute a dispersed source of emission and may, in some cases, significantly contribute to water pollution. Concentration levels of tested substances in wastewater discharged from wastewater treatment plants located in the Western Pomeranian and Pomeranian voivodships and in surface runoffs and sludge were of the same level as in the similar samples collected in Denmark, Estonia, Finland, Lithuania, Latvia, Germany and Sweden.

The screening results for the selected hazardous substances within the Baltic Sea region indicated that the sources of surface water pollutants included both point sources (municipal and industrial wastewater treatment plants) and dispersed sources (surface runoffs and use of sludge). Dispersed sources of emissions may have a significant impact on concentrations of priority substances in waters [4].

2.4.2.3 Bottom sediments

Testing of bottom sediments of rivers and lakes has been carried out in Poland within the SEM since 1990, aiming among others at monitoring the content of POPs from PAH and PCB groups as well as organochlorine pesticides in sediments formed currently in the rivers and lakes, as well as at monitoring their variability over time. Testing of bottom sediments of rivers and lakes are carried out under the Monitoring of surface water quality subsystem, whereas supervision over the execution lays upon the Chief Inspector of Environmental Protection.

Scope of determinations of chemical substances, as at 2015, covers POPs, including:

- 19 PAH, i.e. naphthalene, acenaphthylen, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(e)pyrene, perylene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene) (determinations made since 1998, except for naphthalene and benzo(a)fluoranthene);
- 7 congeners of PCB, i.e. PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180 (determinations made since 2004);
- HCB (determinations made since 2012);
- PBDE (determinations made since 2013 in the selected samples); 21 organochlorine pesticides - (α-HCH, β-HCH, γ-HCH, δ-HCH, heptachlor, aldrin, heptachlor epoxide, γ-chlordane, endosulfan I, endosulfan II, α-chlordane, dieldrin, isodrin, p,p'-DDE, p,p'-DDD, p,p'-DDT, endrin and endrin aldehyde, endosulfan sulphate, endrin ketone, p,p'-methoxychlor (determinations made since 2004, except for isodrin);hexachlorobutadiene (determinations made since 2013 in the selected samples).

2.4.2.3.1 River sediments

Cmp for monitoring of river sediments in Poland are located:

- at the closing of catchment area, at estuaries of rivers longer than 50 km,
- at the closing of catchment area, at estuaries of rivers shorter than 50 km, provided that wastewater from large urban centers or industrial plants are discharged to them,

- at the points distributed along the course of rivers longer than 100 km, located at the closing of unit catchment area (among others, of the Vistula, Odra, Warta, Narew, Bug, Pilica, San and Prosna Rivers),
- downstream the mouth of watercourses and rivers longer than 50 km,
- downstream the large cities or cities in which the industrial plants are located,
- at the rivers longer than 50 km flowing into or from the territory of Poland.

For the purposes of monitoring of the river sediments in 2012-2015, the network of cmp was divided into the primary monitoring points in which the sediments were collected for testing on the annual basis and operational monitoring network in which the sediments were tested every three years. Key observations from testing of river sediments in the period 2012-2015 are presented below.

Tests carried out in 2012 demonstrated and confirmed the presence of high POPs content, primarily in the rivers of southern Poland. Pollution with these compounds is associated with processing of hard coal (disposal of wastewater, emission from combustion of coal), production of organochlorine compounds and washout of POPs from the landfills. Presence of high PAH content in sediments of the upper and middle course of the Odra River and pollution of sediments of the upper and partially middle Vistula River with organochlorine compounds should be emphasized. High values of total PAH was observed in Brynica sediments in Sosnowiec (29,061 µg/kg) and in Orzysza sediments in Mikosze (31,649 µg/kg). High values of total DDT in sediments of the Vistula river in Grabie (1,502.3 µg/kg) and Opatowiec (1,035.1 µg/kg).

Determinations of hexachlorobutadiene, commenced and carried out in 2013, proved no concentrations exceeding the limit of quantification in any samples taken from the river sediments (25 µg/kg).

PCB, determined in river sediments of samples taken in 2014, were present in the quantity from <0.7 to 55.9 µg/kg, with their average content of 1.3 µg/kg and geometric weighted average and median - <0,7 µg/kg. 117 samples taken from river sediments contain at least one of determined PCB congeners. PCB 28 congener was found in 62 samples, PCB 52 - in 50 samples, PCB 101 - in 96 samples, PCB 118 - 53 samples, PCB 153 - in 101 samples, PCB 138 - in 48 samples, and PCB 180 - in 77 samples. The highest content of PCB was found in the sediments collected from Łososina in Witowice Górne (55.9 µg/kg). The presence of increased PCB content was also recorded in sediments taken from Odra in Racibórz (12.8 µg/kg), San in Ubieszyn (12.7 µg/kg), Utrata in Żelazowa Wola (11.70 µg/kg) and Warta in Oborniki (10.1 µg/kg).

HCB, determined in river sediment samples taken in 2014, was present in quantity between <0.1 and 9.6 µg/kg. Significantly increased content of this compound was found in sediments collected from the Odra in Kostrzyn – 9.6 µg/kg, Przemsza in Jeleń – 4.7 µg/kg, Vistula in Jankowice – 2.8 µg/kg, in Tyniec – 2.7 µg/kg, Kopanka – 2.4 µg/kg, Gliny Małe – 1.5 µg/kg and Oświęcim – 1.6 µg/kg.

PeCB was determined only in 8 river sediment samples taken in 2014. The highest content of this compound was found in sediments collected from Przemsza in Jeleń – 3.0 µg/kg, Odra in Kostrzyn – 2.0 µg/kg and Vistula in Jankowice – 1.0 µg/kg.

In river sediment samples taken in 2015, the following chemical compounds were present in the concentration exceeding the limit of quantification: dieldrin in 2 samples (in sediments of Ner in Mirosławice (21.1 µg/kg) and Wieprz in Borowica (0.1 µg/kg)), endosulfan II - in one sample (in sediments of Vistula in Oświęcim (1.0 µg/kg)) and endrin in three samples (in sediments of Kaczawa in Prochowice – 3.2 µg/kg, Mała Ina in Witkowo – 1.2 µg/kg and in Czernica in Czarne – 0.7 µg/kg)). No sample tested contained aldrin, isodrine, heptachlor, heptachlor epoxide, γ-chlordane, α-chlordane, endrin aldehyde and ketone, endosulfan I,

endosulfan sulphate and p,p'methoxychlor in concentration exceeding the limit of quantification.

2.4.2.3.2 Lake sediments

Testing of lake water sediments comprised the lakes incorporated into the regional monitoring network and 22 benchmark lakes within the national monitoring network. Tests performed in the lakes belonging to the regional network are performed in several years, primarily five, while the tests in benchmark lakes are performed every 2 years. Tests of the majority of indicators from the group of POPs are performed in the selected group of measurement-control points located in lakes. Key observations from testing of lake sediments in the period 2012-2015 are presented below.

Tests completed in 2012 demonstrated the presence of high POPs content in lake sediments and confirmed that lake sediments are polluted with PCB and HCH isomers heavier than river deposits. Lake sediments are also characterised by higher PAH content as compared to river deposits, which is associated with a significantly higher content of organic matter in lake sediments. High values of total tested PAH in the lake sediments were observed at cmp located on Berzyńskie Lake (11.347 µg/kg), Karczemne Lake (19.284 µg/kg) and Łąckie Duże Lake (24/871 µg/kg). A sample collected from a cmp located on Karczemne Lake indicated a high content of total DDTs in its sediments (157.6 µg/kg).

Determinations of hexachlorobutadiene, commenced and completed in 2013, proved that concentrations did not exceed the limit of quantification in any sample of lake sediments (25 µg/kg).

HCB, determined in the lake sediment samples taken in 2014, was present in the quantity between <0.1 µg/kg and 0.8 µg/kg, with the average content of 0.2 µg/kg and weighted geometric average and median - 0.1 µg/kg. Its presence in the concentration above the limit of quantification was found in 58 samples (51.78% of all samples). Increased HCB content was found in sediments collected from Garbicz Lake (0.7 µg/kg), Ocypel Wielki Lake (0.7 µg/kg), Roś Lake (0.7 µg/kg), as well as in sediments of Niesłysz, Radęcino and Zamkowe lakes (0.5 µg/kg each).

The presence of PeCB, determined in the lake sediment samples taken in 2014, in the concentration higher than the limit of quantification, was recorded only in five samples taken from: Jeziorak Lake (0.4 µg/kg), Garbicz Lake (0.2 µg/kg) as well as Ocypel Wielki, Tuczno and Mełno lakes (limit of quantification – 0.1 µg/kg).

PCB, determined in the lake sediment samples taken in 2014, were present in the quantity from <0.7 to 26.3 µg/kg, with average content of 3.3 µg/kg, geometric average – 1.8 µg/kg, and median - 2.2 µg/kg. 73 samples contained at least one of determined PCB congeners (81.11% of all samples). PCB were detected much more often in sediments from lakes than from rivers which is largely determined by a high content of organic matter in profundal zone of lakes. The content of total PCB higher than 20 µg/kg was identified in lake sediments of Ocypel Wielki Lake – 26.3 µg/kg and Skulska Wieś Lake – 23.3 µg/kg, whereas content higher than 10 µg/kg was recorded in sediments collected from Garbicz Lake – 12.9 µg/kg, Bysławskie Lake – 12.3 µg/kg and Giżno Lake – 10.6 µg/kg.

Samples of bottom sediments collected for testing purposes in 2015 contained only endosulfan II - in 11 samples. The highest content of this pesticide was found in sediments collected from Bikcze Lake (1.8 µg/kg), Jegocin Lake (1.4 µg/kg), Uściwierz Lake (1.0 µg/kg) and Juchacz Lake (1.0 µg/kg). None of the tested samples contained aldrin, dieldrin, endrin, isodrine, heptachlor, heptachlor epoxide, α-chlordane, γ-chlordane, endosulfan I, endosulfan sulphate, endrin aldehyde, endrin ketone, and p,p'-methoxychlor in concentration higher than the limit of quantification.

2.4.2.3.3 The Baltic Sea sediments

In accordance with the "Marine Waters Monitoring Programme ", the sediments in the Polish zone of the Baltic Sea are sampled once in 6 years in open waters, while in the lagoons – once in three years. Samples for testing the presence of POPs in the sediments were collected in 2012 at the following stations: P1 (Gdańsk Deep), P140 (Gotland Basin), P5 and P39 (Bornholm Basin), GJ (Szczecin Lagoon), KW (Vistula Lagoon) and in 2013 at the GJ station. In 2015, samples were collected from deposits at the Vistula Lagoon (KW) and Szczecin Lagoon (GJ) stations.

In samples of sediments taken in 2012 and 2013 the following determinations were made:

- seven PCB congeners (PCB 28, PCB 52, PCB 101, PCB 118, PCB 153, PCB 138, PCB 180),
- three HCH isomers (α-HCH, β-HCH, γ-HCH),
- HCB,
- DDT (o,p'-DDT, p,p'-DDT) and its two metabolites (p,p'-DDE, p,p'-DDD).

In the surface layer of sediments (0-2 cm), the lowest HCH concentration amounting to 0.02 ng/g of dm was measured in the Bornholm Basin (P5 and P39 stations) and the Gdańsk Deep (P1 station). The highest concentrations were recorded in lagoons and amounted to 13.94 ng/g of dm (the Vistula Lagoon – KW) and 15.43 ng/g of dm (the Szczecin Lagoon – GJ, 2013). Concentrations of seven PCB congeners in the surface layer of sediments (0-2 cm) were spatially diversified. The lowest concentrations were recorded in the Bornholm Basin (P5) and the Gdańsk Deep (P1 station) with the total amounting to 0.21 ng/g of dm, while the highest concentration was recorded in the Szczecin Lagoon – 87.28 ng/g of dm (collected in 2013). The lowest concentration of total HCH and total DDT was measured in the surface layer of sediments in the Gdańsk Deep (accordingly, 0.19 and 0.32 ng/g of dm) and the Vistula Lagoon (0.19 and 0.34 ng/g of dm, respectively). The highest concentration of total HCH and total DDT was recorded in the Szczecin Lagoon – 25.03 ng/g of dm and 82.59 ng/g of dm, respectively (samples collected in 2013).

2.4.2.4 Soil

Monitoring of chemism of arable soils in Poland aims at tracking changes of different properties of soils used for agriculture, especially of chemical properties, taking place in specific time periods as a result of agricultural and non-agricultural human activity. Due to relatively low variability of soil properties in time, this monitoring is conducted in a five-year cycle. Measurement series were performed in the following years: 1995, 2000, 2005, 2010 and 2015. Soil testing is conducted in 216 permanent measurement points located in arable lands throughout the country.

Testing determines, among others, the following indicators:

- PAH content: naphthalene, fenanthren, anthracene, fluoranthene, chrysene, benzo(a)anthracene, B(a)P, benzo(a)fluoranthene, benzo(ghi)perylene, fluoren, pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, fluoren. Until 2015 only the total content of PAH was examined. The above PAH will be determined in samples taken in 2015.
- Pesticide content: DDT/DDE/DDD, aldrin, dieldrin, endrin, α-HCH, β-HCH, γ-HCH, carbaryl, carbofuran, maneb, atrazine – the SEM has been covering this determination since 2015.

Samples collected in 2015 were used in 2016 for the purposes of determination. Data for this measurement cycle will be in turn available in the second quarter of 2017.

2.4.2.5 Food

The following foodstuffs are examined in Poland:
- food of animal origin (e.g. meat, milk, eggs, fish, honey),
- vegetables, e.g. cauliflower, paprika, tomatoes,
- fruits, e.g. bananas, grapes, apple,
- grains, e.g. wheat, oats, rye,
- other, e.g. orange juice, apple drink/juice,
- food for infants and young children.

"The national control programme for presence of prohibited substances and residues of chemical, biological and medicinal products in animals and food of animal origin", carried out by the VI, provides for examination of organochlorine pesticides (DDT and metabolites, α, β, γ-HCH, HCB), aldrin, dieldrin, chlordane, endrin, endosulfan, heptachlor) and PCB congeners (PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180).

VI collects the samples from pigs, cattle, horses, sheep, poultry (hens, chickens, turkeys, ducks, geese), fish, rabbits, game and samples of cow milk, eggs and honey.

"The national control programme for dioxins, furans, dioxin-like polychlorinated biphenyls (dl-PCBs) and non dioxin-like PCBs (ndl-PCBs) in animals and in products of animal origin", carried out since 2006 provides for examination of PCDD, PCDF, dl-PCB and ndl-PCB. The purpose of the program is:

- detecting cases of exceeding the permissible levels of PCDD/F, dl-PCB and ndl-PCB in animals and in food of animal origin specified in the Regulation No 1881/2006,
- exploring and revealing the reasons for formation and occurrence of the cases of exceeding the permissible levels of dioxins, furans, dl-PCB and ndl-PCB in foodstuffs of animal origin to protect public health,
- controlling food products of animal origin in order to determine their compliance with the requirements specified in the veterinary legislation.

The programme assumptions are developed on the annual basis by the Chief Veterinary Officer and define the number of samples to be collected by each voivodship for the purpose of performing the control tests.

Food samples for testing to determine the content of dioxins, furans and dl-PCB compounds are collected throughout the country, in accordance with the Instruction of Chief Veterinary Officer issued on annual basis.

In the years 2009-2014, within the activities implemented by the SSI, the Voivodship Sanitary and Epidemiological Stations collected within the monitoring and official control of food, the samples of products of vegetable and animal origin for testing of pesticide residues, including organochlorine pesticides (aldrins, dieldrin, chlordane, DDT, endrin, HCH isomers and heptachlor) constituting the POPs. The aforementioned pesticides were analysed in accordance with the definition of residues. Samples for tests were taken from fruits and vegetables, cereals, products for children and infants, as well as from eggs, milk, butter, meat, fish and olive oil. Number of samples taken is presented in Table 10.

Table 10 Number of samples taken in the period 2009-2014 for testing of pesticide residues. Source: [SSI].

	Number of samples taken for testing			
Year	Fruit/vegetables	Cereals	Products for children and infants	Products of animal origin
2009	1174	153	135	153
2010	878	151	181	255
2011	923	147	190	354
2012	975	175	183	270
2013	1025	151	158	235
2014	990	179	169	220

Organochlorine pesticide residues were found in the samples taken in 2009 and 2010 (Table 11), whereas no such residues were found in the samples taken in the years 2011-2014, which is presumably associated with increasing the quantitative limit of quantification by the laboratories from 0.001 up to 0.01 mg/kg. The greatest share in detected residues was recorded for DDT isomers.

Level of concentrations of the detected pesticides is very low, significantly below the agreed MRL values and is insignificant from the consumer's health point of view. In the studied period, only one case of exceeding the permissible DDT value in eggs - 0.16 mg/kg was detected. The MRL for total DDT isomers is 0.05 mg/kg.

Table 11. DDT test results for samples in the period 2009-2010 Source: [SSI].

Year	Products of plant origin			Products of animal origin		
	Number of tested samples	Number of samples with residues	Concentration range (mg/kg)	Number of tested samples	Number of samples with residues	Concentration range (mg/kg)
2009	1462	8	0.008 – 0.018	153	3	0.003 – 0.007
2010	1210	5	0.009 – 0.05	255	1	0.16

Additionally, lindane residues were identified in two samples of plant origin in 2010 (γ-HCH isomer) in the quantity of 0.001 and 0.002 mg/kg, whereas one sample contained aldrin and dieldrin residues (as sums) in the quantity of 0.008 mg/kg. These quantities are much lower than the permissible values established for these compounds.

Since 2012, the SSI has been preparing a sampling plan for testing the content of PCDD, PCDF and PCB, dl-PCB and ndl-PCB in foodstuffs controlled by the SSI bodies. These tests are implemented in cooperation with the NVRI-NRI.

The tests cover all PCDD/F, dl-PCB and ndl-PCB listed in the Regulation No 1881/2006. Methods of sampling for the purposes of official control of the aforementioned compounds levels in foodstuffs are specified in details in the Regulation No 589/2014.

In total, in the years 2012-2015, the analysis covered 39 samples of products of plant origin of plant origin (vegetable oil - 5, potatoes - 5, apples - 5, wheat flour - 4, cabbage - 5, dried basil - 15), 14 samples of products of animal origin (cottage cheese - 9, yellow cheese - 5) and 15 samples of food for particular nutritional uses for infants (thermally preserved, ready for consumption, meat and vegetable products containing chicken meat and salmon meat, so-called "jars"). The selection of products for tests resulted, among others, from recommendations of the European Commission and arrangements made at the meetings of the EC Expert Committee for POPs.

In 2016 the SSI bodies conducted the tests for dioxins on 15 samples of preparations intended for initial and secondary nutrition of infants. For none of the above samples the test proved the exceeding the highest permissible limits for PCDD, PCDF, dl-PCB and ndl-PCB.

Content of tested pollutants was very low in vast majority of the tested samples, slightly exceeding the quantitative limit of quantification and, as a consequence, significantly below the maximum permissible levels of tested pollutants for individual categories of food products, or so-called limits for taking the actions established in the subsequent revisions of the Commission's recommendations on reducing the presence of PCDD/F and PCB in feed and food. The only product in which the levels of PCDD and PCB were relatively high (in one of samples exceeded the limit for taking the actions was identified) was dried basil. Considering, however, that the consumption of dried basil in the general population is very low, the consumer's exposure to PCDD present in this product poses no risk to health.

To summarize, one can assess that the content of PCDD, PCDF and PCB in tested products raises no reservations from the point of view of protection of public health. It should however be noted that a small number of tested products affects the uncertainty of the above evaluation. Therefore, the tests should be continued.

Detailed results of tests of the content of PCDD and PCB (calculated according to the concept of upper-bound limit of quantification) in the abovementioned products are presented in the tables below.

Table 12 POP content in products. Source: [SSI].

	PCDD/F		PCDD/F/dl-PCB		ndl-PCB	
	Average ± SD	Scope	Average ± SD	Scope	Average ± SD	Scope
Product (year)	pg WHO-TEQ x g $^{-1}$ of fresh weight				ng x g $^{-1}$ of fresh weight	
Potatoes (2012)	0.014±0.001	0.013-0.015	0.017±0.002	0.016-0.020	0.051±0.000	0.051-0.052
Apples (2012)	0.013±0.000	0.013[a]	0.016±0.000	0.016[a]	0.056±0.004	0.053-0.063
Wheat flour (2012)	0.013±0.000	0.013[a]	0.016±0.000	0.016[a]	0.057±0.003	0.056-0.060
Headed cabbage (2013)	0.013±0.000	0.013[a]	0.016±0.000	0.016[a]	0.051±0.000	0.051[a]
Dried basil (2014)	1.473±0.640	0.740-3.340[b]	1.675±0.701	0.850-3.700	0.383±0.545	0.130-2.310
Products for infants (2015)	0.014±0.003	0.013-0.025	0.024±0.013	0.016-0.069	0.084±0.097	0.052-0.433

	pg WHO-TEQ x g $^{-1}$ of fat				ng x g $^{-1}$ of fat	
Vegetable oil (2012)	0.059±0.008	0.053-0.073	0.074±0.008	0.067-0.088	0.214±0.174	0.045-0.494
Cottage cheese (2013)	0.365±0.275	0.013-0.670	0.673±0.514	0.016-1.260	1.197±1.231	0.051-3.970
Yellow cheese (2013)	0.550±0.063	0.460-0.610	0.970±0.071	0.930-1.070	1.520±0.701	0.870-2.510

[a] all results equal to the limit of quantification for the method
[b] the highest result exceeded the limit for taking the action for total PCDDs and PCDFs amounting for dried herbs to 2.1 pg WHO-TEQ x g.

Table 13. List of active substances (POPs) tested by the laboratories - Y (yes) or N (no) by laboratories of the SPHSIS. Source: [SPHSIS].

Active substance classified as POP	**Central Laboratory**	**Laboratories of the PPI-NRI in Poznan**	**Laboratory of the Institute of Horticulture in Skierniewice**
Aldrin	Y	Y	Y
Chlordane	N	N	N
Dieldrin	Y	Y	Y
Endrin	N	Y	Y
Heptachlor	Y	Y	Y
Hexachlorobenzene	Y	N	Y
Mirex	N	N	N
Toxaphene	N	N	N
PCB	N	N	N
DDT (1,1,1-trichloro-2,2-bis(4-chlorophenylo)ethane)	Y	Y	Y
Chlordecone	N	N	N
Hexabromobiphenyl	N	N	N
HCH, including lindan	Y	Y	Y
Etrabromodiphenyl ether $C_{12}H_6Br_4O$	N	N	N
Pentabromodiphenyl ether $C1_2H_5Br_5O$	N	N	N

Hexabromodiphenyl ether $C_{12}H_4Br_6O$	N	N	N
Heptabromodiphenyl ether $C_{12}H_3Br_7O$	N	N	N
Perfluorooctanesulfonyl acid and its derivatives (PFOS)	N	N	N
Endosulfan	Y	Y	Y
Hexachlorobutadiene	N	N	N
Polychlorinated naphthalenes	N	N	N
Chloroalkanes C10-13 (Short-chain paraffins) chlorinated)	N	N	N
Hexabromocyclododecane HBCDD	N	N	N
Pentachlorophenol, its salts and esters	N	N	N

Table 14. Results of tests for residues of plant protection products, including POPs in the years 2012-2015. Source: [SPHSIS].

Year	POPs	Determined level [mg/kg]	Type of collected sample
2012	dieldrin	0.077	cucumber
	DDT	0.007	carrot
	DDT	0.008	carrot
	DDT	0.011	carrot
	DDT	0.018	carrot
	HCH-alpha	0.01	champignon
2013	DDT	0.01	parsley root
	DDT	0.018	parsley root
	endosulfan sulphate	0.008	field cucumber
	endosulfan sulphate	0.013	strawberry
	endosulfan-alpha	0.005	strawberry

	endosulfan-beta	0.008	strawberry
2014	dieldrin	0.04	field cucumber
2015	DDT-p,p	0.006	potato
	DDT	0.011	carrot
	DDT	0.033	soil
	DDT	0.0081	soil

Table 15. Number of samples taken from vegetables, fruit and cereals by SPHSIS in 2012-2015 for the testing for residues of plant protection products. Source: [SPHSIS].

Year	**Number of collected crop samples**		
	Vegetables	**Fruit**	**Cereals**
2012	1234	933	575
2013	1179	1193	443
2014	1000	985	362
2015	1142	921	766

2.4.2.5.1 Raw materials and products of animal origin

Table 16 presents the number of samples tested for the PCB content, collected from the domestic and imported products of animal origin in the years 2010-2015 under *The national control programme for presence of prohibited substances and residues of chemical, biological and medicinal products in animals and food of animal origin*.

Table 16. Number of taken and examined samples for PCB content in the products of animal origin examined in 2010-2015. Source: [GVI].

	Number of samples taken						**NC - number of non-compliant results**					
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
	Examinations results for domestic products of animal origin											
Cattle	208	171	163	123	112	103	0	0	0	0	0	0
Pigs	307	276	247	203	184	193	0	0	0	0	0	0
Sheep/goats	20	20	15	15	15	15	0	0	0	0	0	0
Horses	31	32	30	25	28	25	0	0	0	0	0	1
Rabbits	20	20	13	10	10	10	0	0	0	0	0	0
Fish	81	62	53	32	26	24	0	0	0	0	0	0
Chickens	157	198	168	164	170	170	0	0	0	0	0	0
Turkeys	50	50	38	40	37	38	0	0	0	0	0	0
Geese	47	37	26	27	25	28	0	0	0	0	0	0

Ducks	30	28	18	18	17	18	0	0	0	0	0	0
Milk	124	106	107	126	88	90	0	0	0	0	0	0
Eggs	161	112	82	75	75	81	0	0	0	0	0	0
Honey	16	15	16	16	15	16	0	0	0	0	0	0
Farm wild game	11	13	14	8	11	15	0	0	0	0	0	0
Wild game	102	104	84	70	61	42	0	0	0	0	0	1
	Examinations results of the imported products of animal origin											
Cattle	0	1	0	0	0	1	0	0	0	0	0	0
Pigs	4	3	4	2	0	0	0	0	0	0	0	0
Poultry	0	0	0	0	0	0	0	0	0	0	0	0
Fish	80	29	27	24	20	19	0	0	0	0	0	0
Honey	1	0	1	0	3	3	0	0	0	0	0	0
Sheep	0	0	0	0	0	0	0	0	0	0	0	0
Eggs	0	0	0	0	0	0	0	0	0	0	0	0

Assessment of the examinations results on the environmental pollution (pesticides, PCB, toxic elements) indicated the presence of low concentrations of these compounds, frequently at the level of detectability used in the analytical methods. Despite a common observance of presence of organochlorine pesticides and PCB (> 50%), their concentrations were most frequently at the level of hundredth and thousandth parts of mg/kg, which constitutes only a few percent of the limited values for these compounds.

Table 17 presents the number of samples taken and examined PCDD/PCDF/dl-PCB in food products examined in 2009-2011 under *The national control tests of dioxins, furans, dioxin-like polychlorinated biphenyls (dl-PCB) and non-dioxin-like polychlorinated biphenyls (ndl-PCB) in animals and in products of animal origin*.

Table 17. Number of taken and examined samples for PCDD/PCDF/dl-PCB in food products examined in 2009-2011. Source: [GVI].

	Number of samples taken			**NC - number of non-compliant results**		
	2009	**2010**	**2011**	**2009**	**2010**	**2011**
Test results for domestic products of animal origin						
Cattle	6	6	5	0	0	0
Pigs	10	6	5	0	0	0
Sheep/goats	3	4	3	0	0	0
Fish	35	58	44	3	4	1
Freshwater fish	10	10	10	0	0	0
Chickens	6	6	7	0	0	0
Milk	16	7	7	0	0	0
Goat milk	3	10	10	0	0	0
Chicken eggs	14	10	10	1	0	3
Quail eggs	4			0		
Goose eggs	2	2	2	0	0	0
Duck eggs	2	2	2	0	0	0
Wild game	3	4	4	0	1	0

Analysis of the presented data demonstrates that, in the case of eggs, the averages of dl-PCB content determined in 2009-2011 ranged from 0.19 to 0.69 pg WHO-PCB-TEQ/g of fat. In the concerned years there was no clear trend for dl-PCB content in eggs.

In the case of meat, the average of dl-PCB content in 2009-2011 was within the range of 0.13 – 2.21 pg WHO-PCB-TEQ/g of fat. Pigs (0.13-0.43 pg WHO-PCB-TEQ/g of fat) and chickens (0.16-0.21 pg WHO-PCB-TEQ/g of fat) meat was characterized by the lowest and stable content of dl-PCB, whereas the highest content was observed in cattle meat (1.51 pg WHO-PCB-TEQ/g of fat in 2011). In 2009-2011 growth is observed in concentration of dl-PCB content in meat of cattle and sheep.

Content of dl-PCB in milk in 2009 was at the similar level for milk of both species: with ca. 0.4 pg WHO-PCB-TEQ/g of fat, while in the following years the dl-PCB content in goat milk increased and reached the value of 1.03 and 0.95 pg WHO-PCB-TEQ/g of fat in 2010 and 2011, respectively.

With regard to fish, the highest concentrations of dl-PCB were observed in the saltwater fish (in 2009 up to 5.33 pg WHO-PCB-TEQ/g of fresh weight of salmon). In farmed fish – carp and trout, content of dl-PCB in 2009 amounted to 0.76 and 0.65 pg WHO-PCB-TEQ/g of fresh weight respectively, while in the following years a decrease was observed in content of dl-PCB for carp to 0.2 pg WHO-PCB-TEQ/g of fresh weight.

Since 2010, determinations have also included the quantity of ndl-PCB in the samples (6 congeners are identified – PCB 28, 52, 101, 138, 153, 180). In 2010, quantity of ndl-PCB was observed in salmon (on average ca. 40.18 ±11.64 ng/g), in 2011 the highest concentrations of ndl-PCB were observed in meat of salmon and sea trout (ca. 32.38±14.71 ng/g). The averages in both years are much below the limit of 75 ng/g proposed by the European Commission.

Table 18 presents the test results PCDD/PCDF/dl-PCB in the samples of food products examined in 2012-2015 under *Control tests of dioxins, furans, dioxin-like polychlorinated biphenyls (dl-PCB) and non-dioxin-like polychlorinated biphenyls (ndl-PCB) in animals and in products of animal origin*.

Table 18. Number of taken and examined samples for residues of PCDD/PCDF/dl-PCB in food products in 2012-2015. Source: [GVI].

	Number of samples taken				**NC - number of non-compliant results**			
	2012	**2013**	**2014**	**2015**	**2012**	**2013**	**2014**	**2015**
Test results for domestic products of animal origin								
Cattle (muscles)	0	0	7	7	0	0	0	0
Pigs (muscles)	0	0	8	10	0	0	0	0
Sheep/goats (muscles, liver)	10	18	35	22	5	8	0	2
Horses (muscles/liver)	0	12	10	8	0	0	0	0
Baltic fish	30	28	47	15	0	0	9	1
Freshwater fish	10	34	14	0	0	0	0	0
Chickens/turkeys	0	0	14	20	0	0	0	0
Rabbits	0	5	0	0	0	0	0	0
Cow milk	10	14	0	0	0	0	0	0

Goat milk	10	5	10	10	0	0	0	0
Sheep milk	2	5	12	6	0	0	0	0
Chicken eggs	32	25	31	60	3	3	1	4
Quail eggs	0	0	0	6	0	0	0	0
Goose eggs	0	0	0	0	0	0	0	0
Duck eggs	0	0	0	0	0	0	0	0
Food for infants, milk products	4	4	0	0	0	0	0	0
Import – fish	0	30	15	13	0	0	0	0
Wild game	48	24	0	0	0	0	0	0

The results of domestic food test performed in 2012 -2015 confirm in majority the tests results for PCDD/PCDF and PCB in animals and in products of animal origin obtained in the previous years. The results obtained in 2012 enable stating that concentration of the examined chemical pollutions in muscles, milk, tissues of farmed fish are low and therefore their consumption poses no threat to human health. There are, however, certain types of food (liver and muscles of cervidae, liver of wild boars, eggs from free range hens and certain Baltic fish species), which may pose a threat to health at least for some groups of consumers. The EU strategy implemented in Europe on the reduction of PCDD in the environment, in food and feeds, contributes to reduction in human exposure to PCDD. The superior objective 8 of the EU strategy, i.e. reduction of exposure of the European population, was achieved as a result of reduction within over the twenty years period of industrial waste emissions by approximately 80%. The risk of PCDD penetration to human body via food was also reduced by introducing the new restrictive limits of permitted concentrations in food (ca. 25%) and in feeds. The limits for ndl-PCB were introduced for the first time in 2012. However, in recent years the number of crisis situations in Europe related to the occurrence of PCDD in the food chain has not been decreasing. Although, the industrial emissions were restricted and strict regulations implemented, the atmosphere continues to be polluted with new volumes of PCDD. Serious concerns are raised by non-industrial sources of PCDD such as households heating systems, traffic fumes, house waste burning, meadow fires and water and land reservoirs. Control of PCDD originating from these sources requires taking a variety of actions to increase the knowledge of the society on the effects of PCDD pollution of its living environment. Due to the chemical persistence, PCDDand PCB will remain in the environment for years, being the source of subsequent problems.

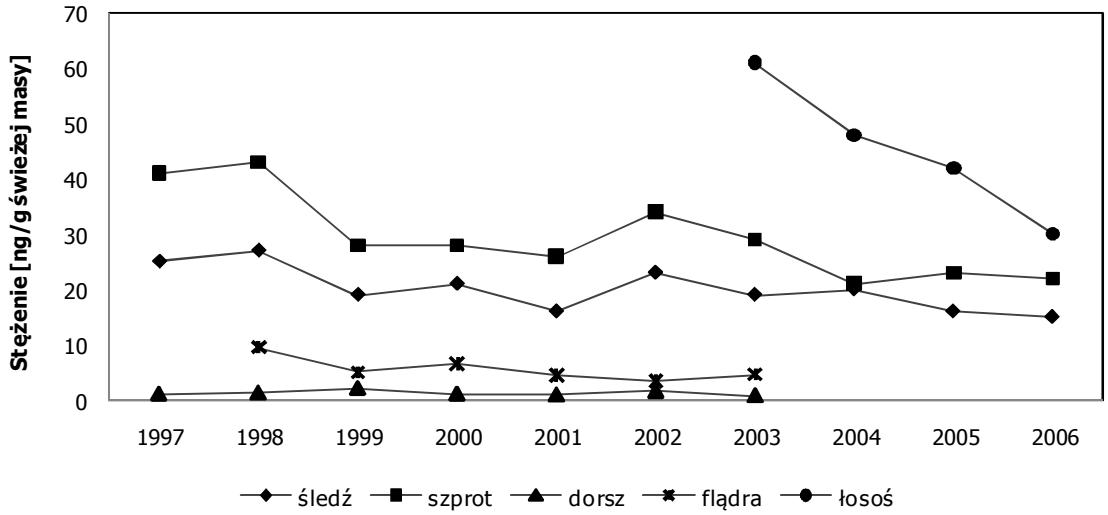
In 2013, the cases of occurrence of high concentrations were observed in certain types of food, including: livers and muscles of cervidae, livers of wild boars and eggs from free range hens, sheep livers and Baltic fish and derived products. The abovementioned products may pose a threat to health at least for some groups of consumers, which implies the need for continued control tests in food. The tests of the other types of food enable stating that concentration of the examined chemical pollutions in muscles, milk and tissues of farmed and imported fish are low and therefore their consumption poses no threat threat to human health.

In 2014, the cases of occurrence of increased concentrations were observed in certain types of food, including: eggs from free range hens, livers and muscles of sheep, goat and sheep milk and Baltic fish and derived products. The abovementioned products may pose a threat to health at least for some groups of consumers, which indicates the need to conduct permanent

control tests of food. The tests of the other types of food enable stating that concentration of the examined chemical pollutions in muscles, milk and tissues of farm and imported fish are low and therefore their consumption poses no threat to human health.

In 2015 the cases of occurrence of the increased concentrations were observed in the same types of food as in the previous year, i.e.: eggs from free range hens, livers and muscles of sheep and Baltic fish and derived products. The abovementioned products may pose a threat to health at least for some groups if consumers and therefore indicate the need for permanent control tests in food. The tests of the other types of food enable stating that concentration of the examined chemical pollutions in muscles, milk and tissues of the imported fish are low and therefore their consumption poses no threat to human health.

Figure 8 presents the changes in the years 1997-2006 in content of total PCB in muscle tissue of southern Baltic fish. The following fish species were examined: herring, sprat, flounder and cod, captured during research cruises on the following fishing areas: Szczecin Bay (PB), Kołobrzesko–Darłowskie (KD), Ustecko–Łebskie (UL), Władysławowskie (W), Gdansk Bay (GG), and Bornholm station (B), Gdańsk Deep (GD) and salmon purchased from fishermen.



Stężenie [ng/g świeżej masy]	Concentration [ng/g of fresh weight]
śledź	herring
szprot	sprat
dorsz	cod
flądra	flounder
łosoś	salmon

Figure 8 Changes in content of total PCB content in muscle tissue of Baltic fish in 1997-2006
Source: [PFA].

When analysing the research results, a decrease in the content of total PCB content in muscle tissue of all fish species is observed, except for cod, since 1997 to 2001, followed by noticeable slight increase in 2002 and decrease to the level from 2001 in the subsequent year. In the following years a clear reduction in PCB content in the tissue of herring and sprat has not been observed. In the case of salmon, there was a noticeable decrease in the content of total PCB in the concerned years. Due to low share of fat in the total body weight of flounder and cod, when presenting concentration of total PCB per fresh weight, it proved to be very low in these fish species as compared with the other examined species.

Table 19 presents the number of samples taken and examined for residues of organochlorine pesticides (DDT and its metabolites, α-HCH, β-HCH, γ-HCH, HCB, aldrins, dieldrin, chlordane, endrin, endosulfan, heptachlor and bromopropylate) in domestic and imported products of animal origin conducted in 2005-2009 under *the National control programme for prohibited substances and residues of chemical, biological and medicinal products in animals and in food of animal origin*.

Table 19. Number of taken and examined samples for residues of organochlorine pesticides in products of animal origin in 2005-2009. Source: [GVI].

	Number of samples taken					**NC - number of non-compliant results)**				
	2005	**2006**	**2007**	**2008**	**2009**	**2005**	**2006**	**2007**	**2008**	**2009**
Test results for domestic products of animal origin										
Cattle	165	151	157	167	175	0	0	0	0	1
Pigs	265	261	271	289	272	0	0	0	0	2
Sheep/goats	20	20	20	21	20	0	0	0	0	0
Horses	30	30	37	34	32	0	0	0	0	0
Rabbits	20	19	20	21	20	0	0	0	0	0
Fish	71	66	61	59	71	0	0	1	0	1
Chickens	145	154	160	183	193	0	0	0	0	0
Turkeys	42	40	37	39	47	0	0	0	0	0
Geese	35	37	34	36	38	0	0	0	0	0
Ducks	29	24	28	27	29	0	0	0	0	0
Milk	135	120	123	131	114	0	0	0	0	0
Eggs	98	102	129	133	150	0	1	0	0	0
Honey	15	18	12	16	15	0	0	0	0	0
Farm wild game	0	2	4	7	4	0	0	0	0	0
Wild game	82	83	80	89	104	0	0	2	1	0
Test results of the imported products of animal origin										
Cattle	1	0	2	3	2	0	0	0	0	0
Pigs	20	15	6	2	1	0	0	0	0	0
Poultry	3	4	5	0	0	0	0	0	0	0
Fish	90	87	64	81	103	0	0	0	0	0
Honey	1	0	1	1	3	0	0	0	0	0
Sheep	0	0	1	0	0	0	0	0	0	0
Eggs	0	0	3	0	0	0	0	0	0	0

During the analysed period, a single case of non-compliance for wild game was detected in 2008: DDT exceeding (concentration 1 487 mg/kg of fat). In 2009 there were 4 the cases of exceeded values recorded: DDT in pig fat (concentration 1 423 mg/kg of fat), DDT in muscles of farm fish (concentration 666 mg/kg of fresh weight), γ-HCH in pig fat (concentration 44 mg/kg of fat) and γ-HCH in cattle fat (concentration 44 mg/kg of fat).

Table 20 presents the number of taken and examined samples for residues of DDT and HCH in products of animal origin for 2010-2015, according to data presented by the Chief Veterinary Inspectorate.

Table 20. Number of taken and examined samples for residues of DDT and HCH in products of animal origin in 2010-2015. Source: [GVI].

	Number of samples taken						**NC - number of non-compliant results**					
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
	Test results for domestic products of animal origin											
Cattle	208	171	163	123	112	103	0	0	0	0	0	0
Pigs	307	276	247	203	184	193	0	0	0	0	0	0
Sheep/goats	20	20	15	15	15	15	0	0	0	0	0	0
Horses	31	32	30	25	28	25	0	0	0	0	0	0
Rabbits	20	20	13	10	10	10	0	0	0	0	0	0
Fish	81	62	53	32	26	24	0	0	0	0	0	0
Chickens	157	198	168	164	170	170	0	0	0	0	0	0
Turkeys	50	50	38	40	37	38	0	0	0	0	0	0
Geese	47	37	26	27	25	28	0	0	0	0	0	0
Ducks	30	28	18	18	17	18	0	0	0	0	0	0
Milk	124	106	107	126	88	90	0	0	0	0	0	0
Eggs	161	112	82	75	75	81	0	0	0	0	0	0
Honey	16	15	16	16	15	16	0	0	0	0	0	0
Farm wild game	11	13	14	8	11	15	0	0	0	0	0	0
Wild game	102	104	84	70	61	42	1	0	0	0	0	0
	Test results of the imported products of animal origin											
Cattle	0	1	0	0	0	1	0	0	0	0	0	0
Pigs	4	3	4	2	0	0	0	0	0	0	0	0
Poultry	0	0	0	0	0	0	0	0	0	0	0	0
Fish	80	29	27	24	20	19	0	0	0	0	0	0
Honey	1	0	1	0	3	3	0	0	0	0	0	0
Sheep	0	0	0	0	0	0	0	0	0	0	0	0
Eggs	0	0	0	0	0	0	0	0	0	0	0	0

In 2007, exceeding of the highest permissible levels was confirmed in two samples of Baltic salmon and in one sample of pig muscles. In 2008, exceeding of the highest permissible levels was observed in four samples of Baltic salmon and two samples of milk. In 2009 exceeding the permissible limits was detected in three samples of Baltic salmon and in one sample of chicken eggs.

The analysis of the presented data shows that content of total PCDD/F in majority of the products of animal origin in 2006-2009 has increased (with the exception of fish, sheep meat and goat milk).

In the case of eggs, it was possible to observe a doubling of concentration of total PCDD/F for chicken eggs (from 0.59 to 1.23 pg WHO-PCDD/F-TEQ/g of fat) and geese (from 0.35 to 0.89 pg WHO-PCDD/F-TEQ/g of fat) in the concerned period.

In the case of pigs meat there was an observed increase from 0.24 to 0.43 pg WHO-PCDD/F-TEQ/g of fat, cattle from 0.9 to 1.41 pg WHO-PCDD/F-TEQ/g of fat and chickens from 0.56 to 1.1 pg WHO-PCDD/F-TEQ/g of fat.

Content of total PCDD/F in 2006-2008 in the muscle tissue of fish decreased only to re-increase in 2009 for salmon and carp and to continuously decrease in the case of sprat and herring.

2.4.2.5.2 Organic food

AFQI conducts under the official control the inspections of products from organic production for detection of pesticide residues. Within the control, the following pesticides compounds included in the POPs list covered by the Stockholm Convention are determined:

- α-HCH,
- β-HCH,
- γ-HCH – Lindane,
- chlordane,
- dieldrin,
- DDT,
- endosulfan - as Endosulfan II isomer,
- endrin,
- heptachlor,
- HCB.

In 2011-2013, the examination covered the total of 82 samples of products from organic production from among which the pollution with the following organochlorine pesticide was detected in 5 samples with residues of: four samples contained - γ-HCH – Lindane at the levels of 0.97 mg/kg, 0.37 mg/kg, 0.48 mg/kg, 0.03 mg/kg and one sample contained pp'-DDE at the level of 0.020 mg/kg and pp'-DDT at the level of 0.04 mg/kg [AFQI].

In 2014-2015, the examination covered 115 samples of products from organic production in total, from among which 3 samples contained pollutions with the following pesticides residues included in the list of POPs covered the Stockholm Convention:

-pirimiphosmethyl (1 sample),

-dithiocarbamates (2 samples).

2.4.2.5.3 Feeds

Organochlorine compounds (aldrins, dieldrin, chlordane, DDT, endrin, heptachlor, endosulfan, HCB and HCH) are determined in the samples of feeds examined within the monitoring and official control of feeds for pesticide residues, implemented by the RVL in Poland since 2004. Since the same year the tests for determining dioxins (PCDD/F) and dioxin-like PCB (dl-PCB) in feeds have been carried out.

The programme principles are prepared by the Chief Veterinary Officer on the annual basis and specify the number of samples to be collected by each voivodship for the purpose of conducting the control tests. Data obtained during the conducted inspections and control tests are analysed and used for establishing the programmes of the official control of feeds in the following years.

The material for sampling includes feeds materials of vegetable and animal origin as well as feed mixtures for animals. Samples for the PCDD/F and dl-PCB tests are collected primarily from fish meals and feeds containing fats, from bakery industry products intended for feeds,

from food industry oils as well as from materials of plant origin subject to drying with the use of fuel oils. Samples for determination of the content of organochlorine pesticides in feeds are collected mainly from feed materials of plant origin (cereals, middlings, bran). Table 21 presents the results of control of organochlorine pesticide residues, PCDD and ndl-PCB as well as PCB in the feed materials and feed mixtures for animals in 2004 -2015.

Table 21. Test results of organochlorine pesticide residues, dioxins and PCB content in feeds in 2004-2015 Source: [GVI].

Tests direction	Planned	Collected	Failing to meet the requirements
2004			
Organochlorine pesticides		3	0
PCDD+PCDF, dl-PCB)		268	8
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180)		111	0
2005			
organochlorine pesticides		339	0
PCDD+PCDF, dl-PCB)		405	3
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180)		302	0
2006			
organochlorine pesticides	158	332	0
PCDD+PCDF, dioxin-like PCB	144	339	3
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180)	160	212	0
2007			
organochlorine pesticides	158	215	0
dl- dioxins PCB (PCDD+PCDF)	80	134	3
PCBs(congeners no. 28, 52, 101, 118, 138, 153, 180)	160	124	0
2008			
organochlorine pesticides	160	220	8
PCDD+PCDF, dl-PCB)	80	131	1
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180	160	126	0
2009			
organochlorine pesticides	160	213	0

(PCDD+PCDF, dl-PCB)	160	181	2
PCB (congeners no. 28, 52, 101, 118	80	77	0
2010			
organochlorine pesticides	160	248	1
(PCDD+PCDF, dl-PCB)	160	208	5
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180	80	91	0
2011			
organochlorine pesticides	160	193	0
Dioxins (PCDDsPCDFs dl-PCB)	240	279	9
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180	80	92	0
2012			
organochlorine pesticides	160	177	0
Dioxins (PCDD+PCDF, dl-PCB)	240	264	4
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180	80	91	0
2013			
organochlorine pesticides	160	174	0
(PCDD+PCDF, dl-PCB)	240	314	1
PCBs (congeners no. 28, 52, 101, 118, 138, 153, 180	8	90	0
2014			
organochlorine pesticides	160	179	0
(PCDD+PCDF, dl-PCB)	240	300	7
PCB (congeners no. 28, 52, 101, 118, 138, 153, 180	80	76	0
2015			
organochlorine pesticides	160	167	0
(PCDD+PCDF, DL-PCB)	250	343	5

PCB (congeners no. 28, 52, 101, 118, 138, 153, 180	80	74	1

On the basis of the results of the conducted control tests of feeds it can be stated that in 2004 -2012 the most frequent source of PCDD/F included fish meal, fish oils, vegetable oils and mineral additives. The main source of PCDD and dl-PCB are products manufactured from Baltic fish. It is associated with the fact that in the period of 2004-2012 the level of PCDD and PCB in fish originating from the Baltic Sea was not reduced and concentrations of these compounds in feeds continue to reach the level of the limits for actions taken due to presence of both PCDD/F and PCB. The situation regarding fish oils is more favourable, however many samples of vegetable oils and mineral additives remains at the limit value for taking the actions [5].

In 2013, the levels of PCDD determined in the feed samples were below 30% of permissible limits in average. Fish meals made once again the exception with the average content of almost 50% of the limit. The average content of PCDD/F and dl-PCB and total PCDD/PCDF/dl-PCB was the highest for samples of animal origin and amounted to 1.9 ng WHO-TEQ/kg of feeds with humidity of 12% [6].

In 2015, the tests were conducted for determining the level of PCDD and content of pesticides in the feed materials and feeds mixtures. Determination of the level of PCDD was conducted in total of 272 samples, whereas determination of pesticide residues in 341 samples. Control activities resulted in identification of 5 samples (examined for PCDD and dl-PCB) of materials failing to meet the requirements.

2.4.2.5.4 Living organisms

Within the own development project implemented in the National Veterinary Research Institute-National Research Institute entitled "Free-living animals as an indicator of environmental pollution and important element in the national food security strategy" included the assessment of, among others, PCDD pollution of free - living animals in the forest and aquatic environment [7]. The tests included the following groups of organisms:

- Free-living freshwater fish; various freshwater fish (omnivorous and predatory) species, settlements and water from the same aquatic environment were selected for tests. The testing material included all fish collected from 10 reservoirs. The samples were collected from rivers and lakes subject to various impacts:
    - Łańskie Lake, Maróz Lake – Masurian Lakeland,
    - Brda river (Człuchowski district) – impact of pig farms,
    - Wkra river (Żuromiński district) – impact of poultry farms,
    - Lipczyno Wielkie Lake – Pomeranian Lakeland,
    - Dunajec (the area of Rożnowski Reservoir),
    - Reservoir of the Rybnik Power Plant,
    - Vistula River in Krakow and Warsaw,
    - Odra River in Wroclaw and Warta Mouth.

Since the alarming results for some compounds were observed in fish captured in the Vistula River in the vicinity of Krakow in 2011, in 2012 fish were captured in additional three points, which included: Łączany town in the upper course of the river below Krakow, Dąbie district in Kraków and Grabie town in the lower course of the Vistula River.

- wild boars, deer and roe deer captured from the industrial and agricultural areas:
    - Legnica-Głogów Copper Mining District (LGCMD),
    - the area of Zinc Smelter in Miasteczko Śląskie (USID),

- Turoszowski Lignite Belt (TLB),
- Belchatow Lignite Belt (BLB),
- Warmian-Mazurian Lakeland (WML).

Common presence of DDT residues and its metabolites as well as PCB was observed in the examined samples of fish muscle tissue. Residues of p, p'-DDE were present in all fish samples and of p, p'-DDD in 97% of the samples. The presence of p, p'-DDT in 62% and its metabolite o, p'-DDT was sated in 45% of the samples.

HCB and HCH isomers were detected among the other examined pesticides. Content of low concentrations of HCB, in the range of 0.1 μg/kg to 32 μg/kg of tissue (average content of approximately 2 μg/kg) was observed in 56% of fish. Low content of α-, β- and γ- HCH isomers was detected in approximately 30% of the samples (average concentration of approximately 1 μg/kg of fish tissue).

The presence of PCB was detected in more than 99% of tested samples. Among the examined PCB congeners, the congeners 153, 138, 180 and 101 were present in more than 99% of samples. The other congeners were detected in more than 60% of fish.

Among the examined key freshwater fish species in the omnivorous fish, several times higher totals of DDT (p, p'-DDE, p, p'-DDD, o, p'-DDT, p, p'-DDT) and total PCB (congeners 28, 52, 101, 138, 153 and 180) were determined as compared to the predatory fish (Table 22). The highest concentrations of DDT and its metabolites as well as PCB were determined in the breams muscle tissue.

Table 22. Total DDT content and total PCB content in muscle tissue of the selected fish species. Source: [7].

Species		Number of samples	Concentration values [μg/kg]				
			Average	Min. - Max.	Median	90-percentile	95-percentile
Total DDT	Bream	89	139	3.8-1921	35.0	316	761
	Roach	69	41.3	3.0-414	14.8	96.4	197
	Pikeperch	29	8.9	2.0-27.2	7.7	14.0	22.3
	Pike	47	7.5	1.8-27.8	4.9	14.9	22.8
Total PCB	Bream	89	31.0	0.7-238	23.8	74.6	93.4
	Roach	69	33.1	0.4-790	5.4	50.7	86.7
	Pikeperch	29	3.2	0.6-11.7	1.4	6.8	9.4
	Pike	47	1.9	<0.1-16.8	0.7	4.1	7.3

Total concentrations of PCDD, PCDF and dl-PCB in muscles, fat and liver of cervidea were higher than in tissues and liver of cattle[6]. The permissible limit of total PCDD/PCDF/dl-PCB in muscles and fat of cattle amounts to 4.0 pg WHO-TEQ/g of fat. Average concentrations of total PCDD/PCDF/dl-PCB were the lowest in the agricultural area (2.79 ± 1.76 pg WHO-TEQ/g fat), significantly lower than in the industrial areas (from 3.20 ± 3.20 to 6.64 ± 2.95 pg WHO-TEQ/g of fat). Range of concentrations in muscles of cervidae from the industrial areas amounted from 0.93 up to 10.80 pg WHO-TEQ/g of fat, whereas from agricultural areas from 0.79 up to 4.39 pg WHO-TEQ/g of fat. In the fat of cervidae the level of total the determined compounds was slightly higher as compared to muscles (from 0.76 to 26.82 pg WHO-TEQ/g of fat in the industrial areas as compared to the scope of 0.86 to 4.84 pg WHO-TEQ/g of fat from

[6] Since the legislation provides no specified limits for permissible values of concentrations in tissues and liver of free - living animals, when assessing the levels of the examined pollutions, the results were compared to the permissible limits set forth for tissues and livers of farm animals (Regulation No 1881/2006/EC).

agricultural area). The highest quantity for PCDD/F and dl-PCB was observed in the livers of cervidea, exceeding the limit permissible for cattle as much as thirty times (permissible limit in livers of cattle amounts to 10.0 pg WHO-TEQ/g of fat). In the industrial areas the range of concentrations amounted from 16.41 to 326.61 pg WHO-TEQ/g of fat. Equally high concentrations were observed in livers of animals from agricultural area (from 19.20 to 165.22 pg WHO-TEQ/g of fat). The lowest concentrations were observed in the agricultural area (Podlaskie), while the highest in Upper Silesian Industrial District [7].

In 2004, the tests were conducted for the level of organochlorine pesticides, p, p′-DDT and its metabolites, HCB HCH isomers, chlordane and its metabolites and 18 congeners of PCB in the samples of blood serum of mothers, the serum of the cord blood and milk [8]. The samples were collected from 22 mothers from the Greater Poland region. Additionally, 11 congeners of PBDE were determined in the milk samples. p, p′-DDT and its main metabolite – p, p′-DDE, along with HCB were detected in all samples of milk and serum. The median concentration of p, p′-DDE in blood serum of mother, cord blood and milk amounted to 343, 329 and 634 ng/g of fat, respectively. PCB congeners (138, 153 and 180) were the main determined congeners in all serum samples, whereas congener no. 170 was detected in 74% and 100% of the samples of cord blood serum and blood of mother, respectively. Except for congeners no. 74, 101 and 105 which were detected with the frequency of 77%, 23% and 82%, all examined PCB congeners were detected in all samples of milk. The median concentration of total PCB in the samples of blood serum of mother, cord blood and milk amounted to 79, 60 and 133 ng/g of fat, respectively. Median concentration of total PBDE in the milk samples amounted to 2.0 ng/g of fat ranging from 0.8 to 8.4. Concentration of the BDE congener no. 47 was the highest and along with the PBDE congener no. 153 was present in all samples. The test results indicate that concentration values of the examined substances are in the lower range of concentrations determined in the other European countries.

In recent years, the tests were also conducted for content of total PCDD/PCDF in milk samples of women living in municipal and rural areas [9]. The authors presented a method enabling determination of 29 congeners of PCDD, PCDF and dl-PCB. The average content of total PCDD/F and dl-PCB in the milk samples for people from municipal areas amounted to 7.429 pg WHO-TEQ/g of fat (0.431-14.27), while in milk of mothers living in rural areas this content was lower and amounted to 6.448 pg WHO-TEQ/g of fat (0.539-12.61).

3.5 Technical support

In 2011-2013, the Bureau for Chemical Substances completed the following training projects covering, among others, the issues related to the Stockholm Convention and POPs:

2011

- The support in developing system of sound chemicals management in Moldova in order to facilitate economic integration with the European Union,
- The support in developing system of sound chemicals in management Georgia in order to facilitate economic integration with the European Union,
- The support in developing system of sound chemicals in management Armenia in order to facilitate economic integration with the European Union.

2012 – 2013

Trainings for professionals chemicals and management environmental protection in Armenia.

2013

Chemicals Management in the Republic of Moldova – approximation to the EU legislation and other international standards.

2014

Preparation of public administration staff of Moldova for tasks related to the process of approximation of the chemicals management system to the EU and international standards.

3.6 Financial resources and mechanisms

The tasks of public administration and public bodies are financed within the limit of expenditures provided in the budget act in the appropriate parts of the state budget.

NFEP&WM, within the national and the EU funds (among others, Infrastructure and Environment Operational Programme 2014-2020), will co-finance the activities, implementation of which contributes indirectly to delivering the objectives specified in the Stockholm Convention.

The strategy for 2013 - 2016 with the perspective to 2020 envisages the financial support, among others, for the following activities in the environmental priorities:

PRIORITY 1: Protection and sustainable management of water resources – activities involving protection of waters consisting in building and modernization of sewage systems (wastewater treatment plants, sewage networks) and investments covering management of municipal wastewater sludge.

PRIORITY 2: Sound waste management and protection of soil surface – the initiatives concerning transition from the system consisting in landfilling of waste to the system supporting raw materials processing, recovery and their use for energy production (increasing the possibility of use the wastes for energy production by thermal processing of waste, in particular biodegradable waste, including sludge), implementation of low-waste production technology, activities on reclamation and/or revitalization of areas degraded by industrial and business activity.

PRIORITY 3: Atmosphere protection – the tasks related to improvement of air quality by reducing the emission of harmful substances into the atmosphere (comprehensive elimination of the existing, inefficient heating devices and collective heat distribution systems) and tasks consisting in increasing the energy use effectiveness.

PRIORITY 5: Interdisciplinary - including, among others, item 5.3: *Support for environmental monitoring operations: 1) Environmental monitoring* – the tasks related to the implementation of the State Environment Monitoring, including monitoring the POPs.

Additionally, under activity 2.1 of the Infrastructure and Environment Operational Programme 2014-2020 *Adaptation to climate changes along with protection and increasing resistance to natural calamities, in particular natural disasters and environment monitoring,* it is possible to provide support for environment monitoring systems for surface waters (i.a. evaluation of the ecological and chemical condition) and air monitoring.

The priority programme of the NFEP&WM entitled *Supporting the Minister of the Environment in the implementation of environmental protection policy. Part 1) Expert's reports, studies, implementation of international obligations,* enables obtaining financial support of the Minister of the Environment for execution of tasks under the Stockholm Convention.

3.7 Synergy

The synergy process for the activities under the Basel, Rotterdam and Stockholm Conventions has been conducted since February 2010. This process involves coordination of the activities under three conventions in the scope of joint technical issues. The purpose of this process is to identify the areas of joint actions, to expand technical and technical background and to solve

the problems going beyond the technical scope of a single convention. At the UNEP level, the reconstruction of the secretariats of the three conventions was performed effecting in establishing the joint Secretariat of the Basel, Rotterdam and Stockholm Conventions to achieve better effectiveness of convention activities management at the global level and reduction in administrative costs.

Apart from the activities at the global and regional level, the process of cooperation between the conventions has been also implemented at the national level. Since 2010, Poland has been carrying out working cooperation between the CIEP (responsible for implementation of the taks under the Basel Convention), the Ministry of Environment, (implementing partially the tasks under the Stockholm Convention) and the Bureau for Chemical Substances (responsible for implementation of tasks under the Stockholm and Rotterdam Conventions).

Chemical substances covered by the provisions of the Rotterdam Convention, as they become waste or part of waste, are subject to the requirements of the Basel Convention in the scope of their generation and management, recycling or disposal in the country or when they are subject to transboundary shipment. Similarly, chemical substances covered by the provisions of the Stockholm Convention, as they become waste or part of waste, are subject to the requirements specified in Article 6 of the Stockholm Convention, concurrently with due consideration to any applicable regulations of the existing international instruments and agreements on cooperation with the bodies of the Basel Convention.

The works concerning synergy of the three aforementioned conventions in Poland concern the activities related to chemical safety at the national level and managing chemical substances waste in a manner safe for the environment and human health by means of harmonization of the activities of competent authorities assigned for implementation of the tasks under the Basel, Rotterdam and Stockholm Conventions. At the working level, the aforementioned authorities are agree the position of Poland at the meetings of the EU states and the Basel, Rotterdam and Stockholm Conventions on the on-going basis, during which the approval is given to the strategies and action plans on the implementation of methods of dealing with chemical substances and waste safe for the environment and human health. An example of such cooperation include the consultations between the CIEP and the Bureau for Chemical Substances on determining the content of technical guidelines on the methods of POPs waste management safe for environment and human health that were approved by the 12th Conference of the Parties to the Basel Convention, held on 4 – 15.05.2015.

4 PLANNED MEASURES

Implementation of the Stockholm Convention requirements should provide optimal effects from of the perspective of human health and environmental preservation.

Responsibilities of the parties as regards implementation of any obligations resulting from the Stockholm Convention are specified in the texts of the Conventions, and of the EU Member States additionally in the Regulation No 850/2004. As a result, Poland is obliged to:

- take the measures to reduce or eliminate releases of POPs from production and use,
- take the measures to reduce or eliminate releases of POPs from unintentional production,
- take the measures to reduce or eliminate releases from stockpiles and waste,
- develop the plan for implementation of the Conventions and update it on regular basis,
- monitor the presence of dioxins, furans and PCB in the environment,
- participate in the information exchange programmes,
- promote and facilitate the access to information, increase awareness on the POPs among the public and educate the public,
- encourage and conduct research and monitoring,
- participate in technical support programmes,

- report,
- determine the fines for breaching the provisions of the Regulation.

Since the entry of the Stockholm Convention into force, Poland has fulfilled the obligations resulting thereof, particularly in the field of prohibition of production and use, disposal of the expired plant protection products (similar to POPs) and oils polluted with PCB, as well as reducing undesired emission. According to the conducted analyses, the other tasks to be performed in the field of POPs under the Stockholm Convention consists primarily in the continuation and extension of activities taken in previous years.

The institutional and legal system in Poland applying to different aspects of the POPs issues is sufficiently developed. Poland holds sufficient research potential enabling performance of research in the scope of monitoring, control and neutralization of the POPs, as well as assessments of risk resulting from presence of the POPs in the environment, to health and agricultural production.

Implementation of the provisions of the Stockholm Convention requires no establishment of any new institutions. All tasks aimed at implementation of the Convention may be fulfilled by the existing bodies, institutions and companies while expanding their areas of interest with issues related to POPs, in accordance with the scope of their competencies and activity.

To eliminate the PCDD/F emission from individual households, Poland will continue its actions for reduction of low emission aiming at reducing the POPs emission from incinerating fuels in the housing sector in the scope of individual households covered by no central heating network.

Further implementation of tasks adopted by the Stockholm Convention in Poland will require continuation of the works planned in the regulations, environmental protection programs, policies and other planning documents mentioned above and indicated in this document, in the scope of:

- extending the scope and providing the decision-makers with reliable information that enables making economic and social decisions,
- efficient operation of the monitoring system substances covered by the Stockholm Convention,
- assessing the impact of POPs on the environment and human health,
- securing the funds for investments required by the provisions of the Stockholm Convention.

Analysis of the possibilities to implement the Stockholm Convention in Poland, as of 30 April 2016, demonstrated the following favourable conditions:

- no production of the POPs,
- satisfactory legislation status,
- qualified research personnel,
- market transformation fostering modernisation of industry,
- considerable potential of technical infrastructure in the field of eliminating POPs releases and waste disposal,

In addition, the following adverse conditions were identified:

- highly general information on use of new POPs in Poland,
- no financial options to extend the SEM with the monitoring of the new POPs in the environment,

- shortages in the scope of information on releases of POPs covered by the Stockholm Convention to soil, waste and products and on the levels of POPs in products and waste,
- high costs of activating the new procedures in the laboratories in relation to the number of determinations made,
- limited amount of data on human exposure to PCDD, PCB and other POPs,
- insufficient financial measures for tests, monitoring, inventories and POPs elimination,
- low awareness of the society with regard to POPs-related hazards,
- incinerating waste in house heating systems, craft firms, etc.

TASKS TO BE EXECUTED

Task 1. Conducting an inventory of the POPs emission into the environment

This task includes the works related to verification of the indicators of POPs emission into the atmosphere and the expenditures related to performance of inventories of the emissions of the POPs covered by the Stockholm Convention.

Time frame: continuing task

Coordination: NCEM – verification of the indicators of POPs emission to the environment and inventory-taking of the POPs emission into the atmosphere and CIEP - inventory of the emissions of the persistent organic substances to soil and water under the E-PRTR, above the limit values specified in Annex II to the Regulation No 166/2006.

Task 1.1. Conducting an inventory of POPs emission into air, water and soil

This task includes the works related to performance of inventory of the emissions of POPs covered by the Stockholm Convention.

Time frame: continuing task

Coordination: NCEM, – inventory of the POPs emission into the atmosphere and CIEP inventory of the emissions of POPs to soil and water under the E-PRTR, i.e. above the limit values specified in Annex II to the Regulation No 166/2006.

Task 1.2. Verification of indicators of PCDD/F emission to air

This task includes verification of the indicators of PCDD/F emissions to air from the secondary production of non-ferrous metals, from the processes of sintering in metallurgy and from incineration of industrial and hazardous waste. Values of emission indicators are significantly affected by, among others, changes in technology and modernization of plants. Therefore the indicators should be periodically verified. This applies particularly to the major sources of emissions.

Estimation of the volume of emission from certain processes is burdened with substantial uncertainty, due to the fact that they were determined based of the indicators of the PCDD/F emission into air calculated on the basis of measurements performed in the other countries, and thereby taking no Polish conditions into account. In 2008-2009, the works aimed at improvement the quality of data on the PCDD/F emission by complementing and updating numerous indicators for the PCDD/F emission into air.

It is expedient to perform the measurements of dioxin emission from metal production processes and incineration of industrial and hazardous waste. Verification of indicators will enable fulfilling the provisions of Article 5 and 11 of the Convention, and its results will be used in the programme of public statistics on inventory of air pollution emission and reporting for the purposes of the UNECE/EMEP and EEA.

Time frame: continuing task

Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 1.3. Verification of indicators of HCB and PCB emission to air

The values of emission indicators are significantly affected by changes in technology and modernization of plants, therefore systematic update of the indicators is important, especially for major sources of emissions. In 2001, HCB emission measurements were conducted for instance in sinter and cement plants, which provided the basis for verification of the applied indicators and estimating the volume of HCB emissions. It is necessary to develop the national emission indicators from secondary production of metals.

Certain PCB emission indicators have been complemented and revised over the last 2 years, for instance, on the basis of the measurement data. Updating data from the conducted inventory of power equipment containing PCB, and in the case of HCB – verification of the indicators from the secondary production of non-ferrous metals (especially copper) is of importance. The verified indicators will find application in the programme of public statistics for inventory of air pollution emission and preparation of the inventory reports for the purposes of UNECE/EMEP and EEA. The indicators will enable meeting the provisions of Article 5 and 11 of the Convention.

Time frame: continuing task Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 1.4. Development and verification of HCB and PCB emission indicators to the other elements of the environment (excluding air)

In the case of HCB and PCB releases into surface waters, soil, products and waste/residues, there is little data on relevant indicators and therefore it is important to expand such information.

The indicators will be used, among others, to develop the inventory of pollution releases to the environment under the programme of public statistics and in reporting for the purposes of UNECE/EMEP and EEA.

Time frame: continuing task Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 2. Ecological education – development and implementation of information and educational activities on the risks posed by POPs

Educational activities on the hazards associated with the impact of the POPs to human health and natural environment.

Time frame: continuing task

Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 3. Expert's reports, reports, opinions, research and development activities on emission and releases of POPs

Scientific research and R&D activities will be conducted on the basis of the scientific research financing system by Ministry of Science and Higher Education the in force in Poland, also co-financed by the EU.

Time frame: continuing task Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 3.1. Performing the analysis of technologies used to determine the respective emission levels

The task will include preparation of list of the technologies used for different types of activities with the largest share of national emissions and analysing the levels of emissions for particular technologies and possible perspectives of the emission reduction. The obtained results will serve to indentify the possible methods of reducing the releases of POPs, while in relation to the installations covered by the obligation to obtain the integrated permission, the provisions of the Directive 2010/75/EU (IED) shall apply.

Time frame: 2017-2020

Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 3.2. Assessing the potential to apply the alternative methods for reducing the PCDD/F emission in municipal services management

The assessment will require collecting possibly the widest resource of information on the alternative processes for municipal and individual heating systems and expert assessment of the opportunities to apply them in Poland. This task aims at fulfilling the provisions of the EU strategy on dioxins, furans and PCBs and the provisions of Article 6 of the Convention.

Time frame: 2017-2020

Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 3.3. Analysis of the potential for reducing the POPs emission in the metallurgy sector

The results of the analysis in question will contribute to identify the opportunities for reducing the POPs emission from processes of the secondary production of aluminium and copper, production of steel in oxygen converter furnaces and production of iron ore sinters. The share of this group of processes amounts to 8.5% of the total POPs emission in the national economy and the metallurgical equipment emitting POPs is quite numerous, whereby in relation to the installations covered by the obligation to obtain the integrated permission, the provisions of the Directive No 2010/75/EU (IED) shall apply.

Time frame: 2017-2020

Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 3.4. Performing the analysis of the optional introduction of restrictions in use of fuels in the low emission sources

Performance of research on solid fuels used in municipal service management, in particular on hard coal, constituting the basic fuel, aims at examining the possibilities of reducing the availability of the coal varieties with high content of components contributing to formation of POPs in the combustion process.

Time frame: 2017 – 2020

Coordination: Ministry of the Environment in consultation with the Bureau for Chemical Substances

Task 4. Identification of the impact of POPs on human health and environment

The task will involve determining the current impact of POPs on human health with regard to presence of POPs in various components of the environment (air, water, sediments, soil) and products (including food).

Time frame: continuing task Coordination: Ministry of the Environment in consultation with the Ministry of Health

Task 5. Monitoring of the current status of the national environmental pollution with POPs

Task 5.1. Continuation of the monitoring of POPs pollution status in the selected components of the environment

The task will consist in monitoring of the POPs pollution status in the selected components of the environment (air, soil, surface waters, sediments) under the SEM and, if financially possible, expanding it with the new elements.

Time frame: continuing task Coordination: Chief Inspector of Environmental Protection

Task 5.2. Updating the binding acts to adjust the scope of POPs monitoring to the requirements of the Stockholm Convention.

Time frame: 2017-2020

Coordination: Ministry of the Environment

FINANSING THE TASKS PLANNED FOR IMPLEMENTATION UNDER THE STOCKHOLM CONVENTION

Financing the tasks planned for execution in this document will be provided from the budget funds of the Ministry of the Environment, Bureau for Chemical Substances and Chief Inspector of Environmental Protection, also with the support of the NFEP&WM funds.

According to the arrangements made between the Ministry of Health and the Ministry of Environment, contribution for the Stockholm Convention, starting from 2015, is paid by the Ministry of Health.