

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

Kazakhstan Country Situation Report on POPs

English Summary

Greenwomen, Analytical Environmental Agency

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KAZAKHSTAN

About the International POPs Elimination Project

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

IPEP has three principal objectives:

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

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

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Kazakhstan Country Situation Report on POPs

The review on implementation of obligations of the Republic of Kazakhstan under the Stockholm Convention on POPs has been prepared by Greenwomen, the Analytical Environmental Agency, under the IPEN International Project on POPs Elimination.

The authors collected and systematized all accessible information and documents on implementation of obligations of the Republic of Kazakhstan under the Stockholm Convention on POPs.

The Kazakhstan's compliance with the obligations under the Stockholm Convention on POPs was analyzed in the following main areas:

- 1) Obsolete and unusable pesticides (including those having POPs characteristics) in agricultural sector.
- 2) Equipment containing PCBs (polychlorinated biphenyls) that are used in manufacturing processes and by transportation industry.
- 3) Industrial technologies leading to unintentional release of dioxins and furans.

This document also contains an overview of national laws currently regulating POPs and related to the fulfillment of obligations of the Republic of Kazakhstan under the Stockholm Convention on POPs, analysis of the National Implementation Plan (NIP), including a progress and the problems/difficulties in its implementation.

One of the chapters describes how authorities raise the public awareness of POPs in Kazakhstan.

The review also provides conclusions and recommendations on how better to address the most POPs problems in Kazakhstan.

The sources for materials include the UNDP in Kazakhstan, the Ministry of Energy of the Republic of Kazakhstan, JSC *Zhasyl Damu* (former Kazakh Research Institute of Ecology and Climate), and others. (The references to the sources used in this review are provided as the footnotes at the bottom of a page; very long hyperlinks were shortened for convenience of reading).

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

This report is available in the following languages: English (summary) at IPEN website www.ipen.org and in Russian (full version) at Eco-Accord website www.ecoaccord.org and Greenwomen website www.greenwomen.kz

TABLE OF CONTENTS

INTRODUCTION.....	6
I. LAWS CURRENTLY REGULATING POPs IN KAZAKHSTAN.....	8
MPC (Maximum Permissible Concentration) level of POPs in Kazakhstan.....	11
II. CURRENT SITUATION ON POPs IN KAZAKHSTAN.....	11
- DDT.....	12
- Obsolete pesticides.....	12
- Equipment containing PCBs.....	14
- New POPs.....	15
- UPOPs (unintentionally produced persistent organic pollutants).....	17
- Polybrominated diphenyl ethers (PBDEs).....	17
- Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride.....	18
III. IMPLEMENTATION OF NATIONAL IMPLEMENTATION PLAN: PROGRESS AND OBSTACLES.....	19
IV. ASSESSMENT OF TECHNOLOGIES FOR ELIMINATION OF POPs ALTERNATIVE TO HIGH-TEMPERATURE INCINERATION.....	21
V. KEY COMMITMENTS TO REDUCE/ELIMINATE POPs IN KAZAKHSTAN.....	22
STRATEGIES AND ACTION PLANS IN REGARD TO POPS	
1. Improve of the legislation on POPs.....	24
2. Disposal of pesticides waste containing POPs.....	26
3. Sound management, safe storage and elimination of PCB-containing equipment and waste.....	27
4. Reduce the emissions of unintentionally produced POPs (UPOPs) formed as a result of production.....	28
5. Reduce a negative impact of new POPs on environment.....	29
6. Measures on POPs-contaminated areas.....	31
7. Improve the monitoring of POPs.....	32
8. Improve the exchange of information and engage stakeholders.....	33
9. Raise public awareness of POPs and educate on POPs.....	33
VI. RAISING AWARENESS ON POPs IN KAZAKHSTAN.....	34
VII. ACTIVITIES OF NGOs OF EECCA COUNTRIES ON POPs.....	35
VIII. CONCLUSIONS AND RECOMMENDATIONS.....	36
APPENDIX.....	38

LIST OF TABLES IN THE APPENDIX

Table 1	Priority problems associated with chemicals in Kazakhstan
Table 2	Numbers of storehouses and amount of obsolete and unusable pesticides and containers in Kazakhstan (as at 2014)
Table 3	Data on number of capacitors, capacitors equipment and transformers in the regions of Kazakhstan (as of 2014)
Table 4	The number of PCB-containing equipment in Kazakhstan by industry (as of 2014)
Table 5	Data on PCB-containing equipment in Kazakhstan (as of 2015)
Table 6	Results of the inventory of UPOPs based on the statistical data of manufactured products for 2015
Table 7	Results of the inventory of UPOPs based on the data of manufactured products submitted by enterprises for 2015
Table 8	Results of preliminary PBDEs inventory in Kazakhstan (as of January 1, 2015)
Table 9	Results of preliminary PFOS inventory in Kazakhstan (as of January 1, 2015)
Table 10	Situation in Kazakhstan with POPs listed in Annex A (before 2009)
Table 11	Situation in Kazakhstan with POPs listed in Annex B
Table 12	Situation in Kazakhstan with POPs listed in Annex A (after 2009 and 2011)
Table 13	Schedule of providing the progress reports to COP by the Republic of Kazakhstan, in accordance with the requirements of the Stockholm Convention
Table 14	List of some publications on POPs in mass media in Kazakhstan

INTRODUCTION

The Republic of Kazakhstan signed the Stockholm Convention on Persistent Organic Pollutants on May 23, 2001 and ratified it by the Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007. Kazakhstan became a Party to the Stockholm Convention on September 9, 2007.

Kazakhstan never produced POPs. However, POPs problems in Kazakhstan are considered as those requiring immediate action.

The main sources of pollution with POPs in Kazakhstan are the following:

- obsolete and unusable pesticides (including those having POPs characteristics) in agriculture;
- equipment containing PCBs (polychlorinated biphenyls) that are used in manufacturing processes and by transportation industry;
- industrial technologies leading to unintentional release of dioxins and furans;
- formation of dioxins and furans during a process of open combustion.

The agricultural sector faces the pressing problem related to the obsolete and unusable pesticides, their identification, inventory, storage and elimination.

More than 1500 tons of such pesticides and their mixtures – 10% of them are pesticides with POPs characteristics – are stored as the mixed stockpiles in old storehouses across the country (these storehouses are ramshackle, have leaking roofs and not suitable for storage of POPs).

Pesticides which were buried earlier should be unearthed and eliminated.

There numerous sites in Kazakhstan contaminated with POPs waste. Such sites are scattered and it will take time to detect and clean up the areas contaminated with POPs.

The disposal of empty canisters where POPs were stored also requires a solution (there are more than 330,000 units in Kazakhstan). The canisters pose a real threat to the population's health because people who unaware of toxicity of the canisters often use them to store food and water.

There is a significant amount of equipment containing PCBs in Kazakhstan – 116 transformers and about 50,000 capacitors have been identified. The volume of PCBs contained in them is estimated at approximately 980 tons. The equipment, in case of depressurization, may pose a potential hazard to human health. The total volume of waste containing PCBs is estimated at 250,000 tons.

The calculation of unintentionally formed POPs emissions was implemented in 2015-2016, under the joint project of the Government of the Republic of Kazakhstan/UNDP/GEF entitled "NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan".

The inventory of equipment that could potentially contain PBDEs (Polybrominated diphenyl ethers) – such as electrical and electronic equipment, vehicles, upholstered furniture and seating products) – was also carried out under the mentioned project in 2015-2016.

Each Party of the Stockholm Convention is required to develop a plan for the implementation of its obligations under the Convention, which needs to be transmitted to the Conference of the Parties within two years of the date on which this Convention enters into force for it.

Kazakhstan submitted its first – initial – National Implementation Plan (NIP) to the COP in 2009 addressing the 12 initial POPs listed in the Annex A (elimination - *aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene (HCB); mirex, toxaphene, polychlorinated biphenyls (PCBs); polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF)*) and **Annex B** (restriction – *DDT*).

The first version of the updated NIP was submitted to the Secretariat on 30 April 2015 addressing the 9 new POPs that were added to Annex A after 2009 and 2011 (*alpha- and beta-hexachlorocyclohexane, hexabromobiphenyl, hexabromodiphenyl ether and heptabromodiphenyl ether, lindane, pentachlorobenzene, tetrabromodiphenyl ether and pentabromodiphenyl ether, chlordecone*), as well as *endosulfan*.

The ban on substances added in 2015, came into force in 2016. Due to the fact that Kazakhstan did not notify the Secretariat that the country was not able to accept the amendments for listing new chemicals in Annex A, B or C added in 2009, 2011, 2013 and 2015, these amendments enter into force for the country and therefore, Kazakhstan has obligation to comply with them.

Since Kazakhstan doesn't produce any POPs, the country has no ground to submit a notification for specific exemptions to the Secretariat. (A letter on behalf of the Ministry of Healthcare of the Republic of Kazakhstan was sent to the Secretariat in 2004).

The second version of the updated NIP was prepared in 2017, as part of a joint project of the Government of the Republic of Kazakhstan/UNDP/GEF entitled "NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan". It is in a process of transmission to the Secretariat.

The NIP's preparation and update was carried out in accordance with the Guidelines for Developing a NIP for the Stockholm Convention prepared by the World Bank and the UNEP Chemicals and Waste sub-program, as well as with the Companion guide to the review and updating of National Implementation Plans (Annex to decision SC-1/12).

The updated NIP contains information on assessment of POPs situation in Kazakhstan, including new POPs (which were added in 2009 and 2011), inventories of new POPs (PBDEs and PFOS), the updated data on inventories of unintentionally generated POPs, as well as the measures to address these problems.

I. LAWS CURRENTLY REGULATING POPs IN KAZAKHSTAN

At present, there is no specific legislation on POPs in Kazakhstan, although some documents mention POPs issues.

The Environmental Code of the Republic of Kazakhstan dated January 9, 2007 № 212¹ contains the definition of ‘persistent organic pollutants’ – “the most dangerous organic compounds that are resistant to degradation, having bioaccumulation as its hallmark characteristic and being the objects of transboundary transfer over the air, water and by migratory species, as well as precipitating far from the emission point, accumulating in terrestrial and aquatic ecosystems, causing destruction of the immune and endocrine systems of living organisms and a variety of diseases, including cancer”.

The Ministry of Agriculture, the Ministry of Energy, the Ministry of Health of the Republic of Kazakhstan and their departments are the state bodies in the Republic of Kazakhstan, which perform certain functions related to the management of toxic chemicals including POPs.

One of the responsibilities of **Ministry of Energy and its departments** is To carry out state management of hazardous chemicals, including persistent organic Pollutants, in the performance of implementing the obligations of the Republic of Kazakhstan under international treaties on Persistent Organic Pollutants, on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention), and on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in international Trade (Rotterdam Convention).

Ministry also develops the rules for the management of POPs and waste containing them. The Ministry and its departments also coordinate the procedure for the state registration of pesticides (hazardous chemicals) and approve MPC (Maximum Permissible Concentration) of chemicals in the soil.

Ministry of Healthcare and its departments determine the procedure of maintaining the Register of potentially hazardous chemical and biological substances that are prohibited for use in the Republic of Kazakhstan, and manage this Register.

The responsibilities of Ministry of Agriculture and its departments include the official purchase of pesticides (hazardous chemicals) and services for their storage, transportation and use; development, approval and maintenance of the list of pesticides (hazardous chemicals); implementation of state registration of pesticides (hazardous chemicals) and issuance of registration certificates for use of pesticides (hazardous chemicals) at the territory of the Republic of Kazakhstan.

The Ministry also implements the development and approval of requirements related to the production (formulation) of pesticides (hazardous chemicals); their use by aerosol and fumigation methods; development and approval of technical regulations on management of pesticides (hazardous chemicals).

The pesticides (toxic chemicals) that are put into circulation on the territory of the Republic of Kazakhstan are registered with the state and are included in the list of pesticides (toxic chemicals) that are permitted for use on the territory of the country.

The procedure for state registration of pesticides is regulated by the Ministry of Agriculture of the Republic of Kazakhstan.

Import of pesticides containing POPs in Kazakhstan has been banned since 1987.

Production (formulation), selling of pesticides (toxic chemicals) and their use by aerosol and fumigation methods are classified as activities requiring a license (this is defined by the Law of the Republic of Kazakhstan “On permits and notifications”).

The obligations of the relevant ministries, government agencies and institutions are based on specific regulations for certain types of chemical substances (for example, pesticides, transportation of dangerous cargo, narcotic drugs, psychotropic substances, medicines and others). The functions, responsibilities and competencies of the ministries and agencies in many cases are duplicated; there is a weak coordination between them. It leads to disunity of their actions, as each agency cares only about those groups of chemicals that fall within its competence.

¹ Environmental Code of the Republic of Kazakhstan (with amendments and additions as of January 01, 2018). LAWYER (legislation of the Republic of Kazakhstan), 2018. Official site <https://online.zakon.kz/document/?doc_id=30085593> [assessed 10 April, 2018]

Table 1. The articles of Environmental Code regulating some aspects of POPs

№	Articles	Aspects of regulation	Excerpt from provision
1.	Article 90	Management of hazardous chemicals, including POPs	“2. The arrangement on environment protection shall include the following arrangement: ... 4-1) focused on the safe management of hazardous chemicals, including persistent organic Pollutants...”
2.	Article 239	The production and use of pesticides containing POPs Export and import	“4-1. The production and use of pesticides (insecticides), which have in their composition persistent organic pollutants, provided by the international treaties of the Republic of Kazakhstan shall be prohibited. Export and import of these substances shall be permitted only for the purpose of their destroying.”
3.	Article 280	The production and import of products, containing POPs or POPs formation as a result of using such products	“2. The production and import of outputs, containing the persistent organic pollutants or in a result of use of which the persistent organic pollutants are generated, provided by the international agreements of the Republic of Kazakhstan shall be prohibited.”
4.	Article 293-1	Environmental requirements for the storage of waste containing POPs	“1. The storage facilities of wastes, containing persistent organic pollutants shall be equipped by the protective means, securing the prevention of impact of persistent organic pollutants on environment and public health. 2. The accounting of wastes, containing persistent organic pollutants shall be maintained in the registers of the strict accounting. 3. The change of the owner of wastes, containing the persistent organic pollutants without permit of the authorized body in the scope of environmental protection shall be prohibited. 4. The maintenance of cadastre of wastes, containing the persistent organic pollutants shall be maintained by specific section within the frame of State waste cadastre.”
5.	Article 298	Burial of waste containing POPs	“6. The waste burial, contained the persistent organic pollutants, provided by international agreements of the Republic of Kazakhstan on persistent organic pollutants shall be prohibited. The export and import of these wastes shall be allowed only for the purposes of their destruction.”
6.	Article 301	Environmental requirements for the storage of waste containing POPs	The wastes not acceptable for the landfills: ... 6) wastes, containing the persistent organic pollutants; 7) pesticides...”
7.	Article 324	Destruction of POPs by the owners and possessors of the wastes containing POPs	“8. The owners and possessors of the wastes containing the persistent organic pollutants, shall develop the program on their destruction before 2025 with determination of source of finance and present it to the authorized body in the scope of environmental protection within three months from the date of enforcement of this paragraph or acquisition of these wastes into ownership or possession.”

Table 2. Other laws/normative instruments regulating POPs in Kazakhstan

№	Legal/normative instrument	Responsible bodies	Notes
1.	Order “On approval of rules for handling persistent organic pollutants and wastes containing them” dated February 24, 2012 № 40-ө ²	Ministry of Energy	The rules define the operation, decommission of PCB-containing equipment, its inventory; packaging, labeling and organization of storage and transportation of PCB-containing waste.
2.	Law “On plant protection” № 331-II dated July 3, 2002 ³ and Order “On approval of rules for disposal of pesticides (toxic chemicals)” № 15-05/864 dated September 29, 2015 ⁴	Ministry of Agriculture	Provisions related to disposal and burial of banned, obsolete pesticides (pesticides) and their tare.
3.	Decree of the Government of the Republic of Kazakhstan № 515 “On approval of technical regulations “Requirements for safety of pesticides (toxic chemicals)” dated May 29, 2008 ⁵	Ministry of Agriculture	It determines the conditions for circulation of pesticides (toxic chemicals) at the market of the Republic of Kazakhstan, the requirements for their safety when importing, manufacturing (formulating), selling, storing, transporting and applying them. The Regulations also determines the requirements for disposal/destruction of pesticides (toxic chemicals) and their tare.
4.	Law “On state regulation of development of agro-industrial complex and rural areas” № 66 dated July 8, 2005 ⁶	Ministry of Agriculture	It determines the competence of the local representative bodies (<i>maslikhats</i>) and local executive bodies (<i>akimats</i>) in the field of state regulation of development of agro-industrial complex and rural areas, which includes construction, maintenance and reconstruction of special storages (burial sites) for pesticides and their tare.

² Order “On approval of rules for handling persistent organic pollutants and wastes containing them” dated February 24, 2012 № 40-ө, issued by the Minister of environmental protection of the Republic of Kazakhstan. Adilet - Information and legal system of normative legal acts of the Republic of Kazakhstan, 2012. Official site <<http://adilet.zan.kz/rus/docs/V1200007480>> [assessed 10 April, 2018] [*Ministry of Environmental Protection of the Republic of Kazakhstan, throughout its existence, changed its name and some functions. On August 6, 2014 Ministry of Environment and Water Resources of Kazakhstan was dismissed and its functions were transferred to the newly established Ministry of Energy – translator’s note*].

³ Law “On plant protection” № 331-II dated July 3, 2002 (with amendments and additions as of June 15, 2017). LAWYER (legislation of the Republic of Kazakhstan), 2017. Official site <https://online.zakon.kz/document/?doc_id=1031934> [assessed 10 April, 2018]

⁴ Order “On approval of rules for disposal of pesticides (toxic chemicals)” № 15-05/864 dated September 29, 2015, issued by the Minister of Agriculture. Adilet - Information and legal system of normative legal acts of the Republic of Kazakhstan, 2015. Official site <<https://is.gd/yTvAmG>> [assessed 10 April, 2018]

⁵ Decree of the Government of the Republic of Kazakhstan № 515 “On approval of technical regulations “Requirements for safety of pesticides (toxic chemicals)” dated May 29, 2008, issued by the government of the Republic of Kazakhstan. Adilet - Information and legal system of normative legal acts of the Republic of Kazakhstan, 2012. Official site <<http://adilet.zan.kz/rus/docs/P080000515>> [assessed 10 April, 2018]

⁶ Law “On state regulation of development of agro-industrial complex and rural areas” № 66 dated July 8, 2005 (with amendments and additions as of April 28, 2016). (legislation of the Republic of Kazakhstan), 2016. Official site <https://online.zakon.kz/document/?doc_id=30015652> [assessed 10 April, 2018]

MPC (Maximum Permissible Concentration) level of POPs in Kazakhstan

MPC (Maximum Permissible Concentration) for most POPs in Kazakhstan are not yet defined. However, it is possible to find information on MPC for some POPs.

According to the order of the Minister of National Economy of the Republic of Kazakhstan № 168 dated February 28, 2015 “On approval of hygienic standards for atmospheric air in urban and rural settlements”, MPC (mg/Nm³) of pollutants in the atmospheric air of populated areas must be the following:

- **hexachlorobenzene** – 0,013 mg/Nm³;
- **hexachlorocyclohexane** – 0,03 mg/Nm³ (maximum single amount).

The MPC for harmful substances in the air of working area must be the following:

- **hexabromocyclododecane** – 10 mg/Nm³.

II. CURRENT SITUATION ON POPs IN KAZAKHSTAN

The main sources of pollution with POPs in Kazakhstan are the following:

- obsolete and unusable pesticides (including those having POPs characteristics) in agriculture;
- equipment containing PCBs (polychlorinated biphenyls) that are used in manufacturing processes and by transportation industry;
- industrial technologies leading to unintentional release of dioxins and furans;
- formation of dioxins and furans during a process of open combustion.

In terms of Persistent Organic Pollutants (POPs) waste stocks, the Republic of Kazakhstan is the second state after the Russian Federation, and among Eastern and Central European countries with the highest presence of volumes of wastes that contain POPs.

Recycling/destruction of hazardous waste (including obsolete pesticides), storage/disposal of waste (obsolete, banned, unsuitable chemicals), the presence of hazardous chemicals (including pesticides) in food products are among the most serious chemical safety problems in Kazakhstan which require immediate attention.

Kazakhstan never produced POPs pesticides and currently, the country does not import or export them and has no plans to use them or import/export them in the future. However, significant amount of POPs previously produced and used in the former USSR is stored in different places scattered around country.

The priority problems associated with chemicals in Kazakhstan presented in the Table 1 in the Appendix.

DDT

Kazakhstan never produced DDT. The use of DDT in USSR was officially banned in 1971 and all stocks of DDT that were used in agriculture were buried in the burial sites. Information on the volumes of buried DDT was lost in 1990s due to the liquidation of the USSR's organization *Selkhozimiya*.

DDT was used in Kazakhstan – until 1990s – for veterinary and medical purposes. Small residual amounts of DDT are still found in Kazakhstan – in soil, plants, water, workplace air and food.

In 2002, 105 tons of obsolete pesticides (including 0,5 tons of DDT) were buried in the East Kazakhstan region.

Obsolete pesticides

The agricultural sector faces the pressing problem related to the obsolete and unusable pesticides, their identification, inventory, storage and elimination.

The main reasons for the accumulation of obsolete and unusable pesticides in Kazakhstan are the following:

- Prohibition of already purchased chemicals due to their toxicity or potential environmental hazard.
- Long-term storage of pesticides with a short shelf life.
- Improper storage and stock tracking.
- Products that have passed their shelf life.

More than 1500 tons of such pesticides and their mixtures – 10% of them are pesticides with POPs characteristics – are stored as the mixed piles in old storehouses across the country (these storehouses are ramshackle, have leaking roofs and not suitable for storage of POPs).

The large amounts of obsolete pesticides were buried in landfills in Kazakhstan in 1960s-1980s and there is no information on their location and quantity. There are old storehouses in almost all regions of the country, according to information received from public. It demonstrates the need for detailed inventory of POPs burial sites, old abandoned storehouses, former aerodromes that were used by agricultural aviation, and so forth.

It is necessary to identify the buried pesticides in order to determine the most acceptable, environmentally safe technology for their destruction.

Experts state that the main problem of obsolete pesticides in Kazakhstan is burial sites because: 1) there is no information on exact number of such burial sites and their locations; 2) there is no information on what pesticides were buried.

Lyudmila Petrova, Director of *Angel*, the NGO from Atbasar city (Akmola region), informed that there were storehouses with pesticides near Atbasar city (in Atbasarsky, Zhaksy and Esilsky districts) in 1980s adding that the citizens who had their plots of land near the storehouses had problems with growing vegetables. These plots were abandoned later.

The storehouses were abandoned for a long time and later were demolished. Several years ago, Petrova sent the official request to the Atbasar city sanitary-epidemiological department and to the Kokshetausky regional sanitary-epidemiological department (Kokshetau city). Petrova received the official response which informed that there were no places contaminated with chemicals in the Akmolinsky region. However, some farmers during the private conversations allegedly stated that the authorities obliged them to get rid of “trash” (i.e. obsolete pesticides). These farmers eliminated such pesticides either by dropping them into the river, burying or leaving them in remote places in the steppe. It is very difficult now to find the spots with those buried obsolete pesticides.

It was mentioned above that the large amounts of obsolete pesticides were buried in landfills in Kazakhstan in 1960s-1980s and there is no information on their location and quantity. There is an urgent need for detailed inventory of POPs burial sites, old abandoned storehouses, former aerodromes that were used by agricultural aviation, and so forth. Some NGOs expressed the idea to encourage public to provide information about the alleged burial grounds with pesticides and urge the authorities to take samples in order to identify if soil and water are contaminated with POPs.

There is not yet established controlling system for obsolete pesticides in Kazakhstan.

Currently, there are two facilities in Kazakhstan for storing obsolete pesticides: one locates in Akmolinskaya oblast (managed by LLP *Eco-guarantor*) and another one locates in Kostanayskaya oblast (managed by LLC *Sharuya*).

The total amount of obsolete pesticides stored in various facilities in Kazakhstan amounted 1,617,637.75 kg (liters); the total number of containers – more than 169,660 pieces, as of April, 2014, according to the Ministry of Energy (*please see **Table 2 “Numbers of storehouses and amount of obsolete pesticides and containers in Kazakhstan, as at 2014” in Appendix***).

Equipment containing PCBs

PCBs stockpiles. There are no stockpiles of pure PCBs and oils based on them (sovtol, sovtol and others) in Kazakhstan. Leftovers of trichlordiphenyl and production waste of the Ust-Kamenogorsk capacitor plant were buried in the accumulation pond near the plant in 1989-1991.

The preliminary inventory of PCB-containing equipment was carried out in February 2003, under the UNDP/GEF project entitled “Initial assistance to the Republic of Kazakhstan to meet its obligation under the Stockholm Convention on POPs”.

There is a significant amount of equipment containing PCBs in Kazakhstan.

Currently, **116 transformers and about 50,000 capacitors have been identified** (please see **Table 3 “Data on number of capacitors, capacitors equipment and transformers in the regions of Kazakhstan” (as of 2014) in the Appendix**).

The volume of PCBs contained in them is estimated at approximately 980 tons.

The total amount of waste containing PCBs is estimated at 250,000 tons.

This equipment (in case of depressurization) may pose a potential hazard to human health.

Transformers. There are 114 transformers filled with sovtol produced in Chirchik, Uzbekistan, and 4 transformers produced in France (according to the preliminary inventory results).

Capacitors. Around 15,000 capacitors are buried at the Semipalatinsk Test Site (*also known as “The Polygon”; it was the primary testing venue for the Soviet Union’s nuclear weapons – translator’s note*).

Currently, over 23,000 capacitors are in operation. 78 capacitors with an unknown number of capacitors’ units in them are filled with trichlorobiphenyl that was mainly produced by the Ust-Kamenogorsk condenser plant before 1990.

Please see the **Table 4 in the Appendix for the number of PCB-containing equipment in Kazakhstan by industry (as of 2014)**.

Data on PCB-containing equipment in Kazakhstan (as of 2015) – please see Table 5 in the Appendix.

There are 5 “hot spots” with PCB contamination (as of 2014) in Kazakhstan:

- 1) territory around the Ust-Kamenogorsk capacitor plant (UKCP) in Eastern Kazakhstan;
- 2) storage pond of UKCP;
- 3) territory around the abandoned electric substation in Ekibastuz (Northeastern Kazakhstan);

4) manufactory for production of cable and shoe plastic at the Pavlodar chemical plant;

5) territory of former military bases in the Northern Balkhash.

During 2007-2009, under the budget program, the dismantling and packing of capacitors was implemented at the former military base *Daryal-U*.

10,052 capacitors were shipped and destroyed in Germany (by Envio Recycling GmbH & Co.KG). 6000 capacitors still remain in the *Daryal-U*'s storehouse. The owners of the capacitors wait for allocation of budget money to eliminate these capacitors.

The project implemented by UNDP/GEF/Government of the Republic of Kazakhstan entitled “**Design and execution of a comprehensive PCB management plan for Kazakhstan**” was implemented in 2011-2015.

The regulatory frameworks for the safe management of PCBs were developed under this project and 360 companies started the inventory of their PCB-containing equipment.

The elimination of PCB-containing equipment was implemented under this project.

The first shipment of sovtol (80 metric tons) was exported from Kazakhstan on April 2, 2014 to Lyon (France) and was destroyed at Trédi plant on July 2, 2014.

The Karaganda-based company *Promothod*, which won a tender to export the capacitors and received the export license in 2015, shipped **128 metric tons of PCB-containing capacitors** to France on June 2, 2015.

The second shipment (**24 metric tons**) was shipped to France on June 22, 2015.

232 metric tons of PCB-containing equipment in total was removed from Kazakhstan during the project implementation period.

New POPs

Kazakhstan never produced chlordecone, endosulfan, alpha- and beta-HCH (hexachlorocyclohexane) and lindane. However, these chemicals could potentially be imported and thus, be stored in old storehouses, among old pesticides.

Kazakhstan imports only those pesticides that are included in the “List of pesticides permitted for use on the territory of the Republic of Kazakhstan for 2013-2022”, approved by the order of Minister of Agriculture № 143 dated December 27, 2012 and its annual additions.

However, in 2016 in Kazakhstan the fact of illegal import of a pesticide of unknown origin, without appropriate marking, was registered.

In May 2016, the Beskaragay branch of the RGI “Republican methodological center of phytosanitary diagnostics and prognosis” informed the East Kazakhstan regional inspection of

Committee of the state inspectorate in the agro-industrial complex of the Ministries of Agriculture of the Republic of Kazakhstan (hereinafter - the Inspection of the Committee) about 97 barrels of pesticide of unknown origin, without proper marking, which were located at the territory of the Karabasky rural district of the Beskaragay district. The fact of illegal import of the unregistered in the Republic of Kazakhstan pesticide trifluralin 480 (19,400 liters) by *Long Xing* LLP was registered.

The Inspection of the Committee checked the received alert to make sure that the illegal storage and use of unregistered pesticide that is not listed in the list of pesticides allowed for use at the territory of the Republic of Kazakhstan occurred (violation of the Law on Plant quarantine). *Long Xing* LLP was subject to the administrative fine of 50 MCI (monthly calculation index).

EcoForum Kazakhstan, in December 2016, on behalf of Kazakh environmental NGOs, sent its appeal to the Prime Minister of the Republic of Kazakhstan, the Ministry of National Economy, its Committee on Consumer Protection and the Ministry of Agriculture requesting to take measures on the alert related to the *Long Xing's* activity, as well as to check whether *Long Xing* LLP used in Kazakhstan POPs that been subject to international prohibitions and restrictions.

EcoForum Kazakhstan received reply to its appeal in February, 2017 informing that according to the order of the Inspection of the Committee, trifluralin was placed for temporary storage in the storehouse for pesticides in Karabas village in the Beskargay district, with further burial of pesticide and its packaging.

The Economic Investigation Service of the State Revenue Department of the Eastern Kazakhstan region, as of today, instituted a criminal case before the court against *Long Xing* LLP on illegal import of trifluralin. The Economic Investigation Service didn't find any evidence of import and use of POPs pesticides (such as aldrin, dieldrin, heptachlor, hexachlorobenzene, DDT, mirex, toxaphene and chlordane).

There is no monitoring of POPs in Kazakhstan on the regular basis but one can obtain the global monitoring data, as well as the research data on the content of pesticides in the components of environment.

The atmospheric air in Atyrau city and Borovoye resort polluted with such new POPs as beta-HCH and lindane, according to the data of the Global monitoring of the atmospheric air.

The experts of the Regional Centre for Capacity Building and the Transfer of Technology in the Central and Eastern Europe (based in Brno, Czech Republic, Director, Prof. Dr. Ivan Holoubek) during the implementation of the project on air pollution monitoring in Kazakhstan in 2009 had found that there was air pollution with *lindane*.

It can be assumed that there are sources of new POPs pollution in Kazakhstan.

In 2016, under the project "NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan", inventory data of new POPs was updated.

UPOPs (unintentionally produced persistent organic pollutants)

The issue of monitoring of POPs emissions is live issue in Kazakhstan. The system of permanent monitoring of POPs, including new POPs, is not yet established.

In Kazakhstan, virtually all industries might be the potential sources of UPOPs emissions (the leading ones are energy, ferrous and non-ferrous metallurgy, chemical, petrochemical, pulp and paper, and cement industries).

In 2015-2016, under the project “NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan”, emissions of unintentionally formed POPs (UPOPs) for 2015 were calculated.

UPOPs emissions, based on the statistical data of manufactured products for 2015, amounted to **3,159 g TEQ/year** ; based on data obtained from enterprises for 2015 – **2,776 g TEQ/year** (*please find more details in the **Tables 6 and 7 in the Appendix***).

Polybrominated diphenyl ethers (PBDEs)

Kazakhstan never produced PBDEs. Since PBDEs are used to manufacture a wide range of consumer goods (electrical and electronic equipment; upholstered furniture and seating furniture), the inventory of consumer goods which could potentially contain PBDEs was carried out.

The estimation of PBDEs was carried out in accordance with the *Guidelines for the inventory of polybromodiphenyl ethers (PBDEs) listed under the the Stockholm Convention on POPs*.

According to the preliminary inventory data (without the detailed analysis of presence of PBDEs in some equipment and goods), the **volume of PBDEs in Kazakhstan** is amounted to 888,07 tons (as of January 1, 2015) – *please see more details in the **Table 8 in the Appendix***.

It should be noted that these numbers were obtained only by calculation. More detailed analysis should be implemented in order to determine whether some products contain PBDEs and in what quantity.

Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride

Kazakhstan never produced PFOS. Since PFOS is used to manufacture a wide range of consumer goods (for example, synthetic carpets, detergents, toner and ink for printers, etc.), the initial inventory of some consumer goods which could potentially contain PFOS was carried out (carpet products and fire extinguishers).

The estimation of PFOS was carried out in accordance with the *Guidance for the inventory of perfluorooctane sulfonic acid (PFOS) and related chemicals listed under the Stockholm Convention on POPs*.

According to the preliminary inventory data, the **volume of PFOS** in the carpet products and fire extinguishers in Kazakhstan is amounted to 137,39 tons (as of January 1, 2015) – *please see more details in the **Table 9 in the Appendix***.

It should be noted that these numbers were obtained only by calculation. More detailed analysis should be implemented in order to determine whether some products contain PFOS and in what quantity.

It is not possible now to assess the contamination with **pentachlorobenzene (PeCB)**, since the guides and recommendations on its assessment are not available. The unintentional releases of PeCB are taken into account for UPOPs emissions inventory.

III. IMPLEMENTATION OF THE NATIONAL IMPLEMENTATION PLAN: PROGRESS AND OBSTACLES

Kazakhstan submitted its first National Implementation Plan (NIP) to the Secretariat of the Stockholm Convention on December 8, 2009.

It provided information on the situation in Kazakhstan with POPs listed in Annex A (aldrin, hexachlorobenzene, heptachlor, dieldrin, mirex, toxaphene, chlordane and endrin, polychlorinated biphenyls (PCBs) and dioxins - elimination); **Annex B** (DDT - restriction)⁷ – see the **Tables 10 and 11 in the Appendix.**

First version of the revised NIP was submitted to the Secretariat on 30 April 2015 to reflect the **situation with the 9 new POPs that were added to Annex A after 2009 and 2011** (alpha- and beta-hexachlorocyclohexane, hexabromobiphenyl, hexabromodiphenyl ether and heptabromodiphenyl ether, lindane, pentachlorobenzene, tetrabromodiphenyl ether and pentabromodiphenyl ether, chlordecone), as well as the situation with **endosulfan** – see the **Tables 12 in the Appendix.**

The status of the **second version of the revised NIP** provided in the section “Electronic Reporting System of the Stockholm Convention (Third reporting)” - ‘*Pending approval for transmission*’ (Kazakhstan marked ‘*a significant change in national circumstances (e.g., infrastructure or institutional arrangement)*’ and ‘*inventories of persistent organic pollutants, after improvement or updating indicating a change in the scope of the problem to be addressed*’ as the trigger for the review and updating of the NIP).

The status of the **third and fourth versions of the revised NIP** - ‘*In the process of transmission*’ (Kazakhstan marked ‘*inventories of persistent organic pollutants, after improvement or updating indicating a change in the scope of the problem to be addressed*’ as the trigger for the review and updating of the NIP).

The schedule of progress reports to COP by the Republic of Kazakhstan (in accordance with the requirements of the Stockholm Convention) – please see the Table 13 in the Appendix.

The ban on substances added in 2015, came into force in 2016. Due to the fact that Kazakhstan did not notify the Secretariat that the country was not able to accept the amendments for listing new chemicals in Annex A, B or C added in 2009, 2011, 2013 and 2015, these amendments enter into force for the country and therefore, Kazakhstan has obligation to comply with them.

Kazakhstan didn’t produce and doesn’t produce new POPs which were added in 2009 and 2011 to the Stockholm Convention. However, the country imports the products from USA, the EU member countries, India, China and the Russian Federation which potentially may contain new

⁷ Kazakhstan: Report to the Secretariat of the Stockholm Convention on POPs on the implementation of the Republic of Kazakhstan of its obligations under the Stockholm Convention on Persistent Organic Pollutants. Electronic reporting system for the implementation of obligations under the Stockholm Convention (Third Communication). Stockholm Convention. Official site, 2015 <goo.gl/ww2ebm> [accessed 10, April 2018].

POPs. Some products containing PBDEs and PFOS could arrive to Kazakhstan during Soviet period and still remain in the country.

The NIP of Kazakhstan was analyzed during the preparation of this report to determine if it contains the necessary elements, in accordance with the Guidance for Developing National Implementation Plan for the Stockholm Convention for Persistent Organic Pollutants.⁸

The NIP contains the basic required elements (for example, a description of the institutional, policy and regulatory frameworks, including the roles of stakeholders, the assessment of the situation and problems with POPs in the country, existing monitoring programs for emissions and their impact on the environment and human health, level of awareness of target groups, etc.).

However, there are also some “gaps” in the NIP: a mechanism for development/revision/update of the NIP and a process of consultation with stakeholders are not defined; participation of different sectors in the implementation of the NIP is also not clearly specified. There is lack of coordination between state bodies on POPs issues.

The removal of 232 metric tons of PCB-containing equipment, inventory of UPOPs, PBDEs and PFOS, development of regulatory frameworks for safe handling of PCB-containing equipment (360 enterprises in Kazakhstan are started inventory of their PCB-containing equipment), should be marked as **positive points in the implementation process of the NIP**.

The disadvantages of the implementation of the NIP include gaps in legislation, lack of intersectoral cooperation and training, poor implementation of laws, etc.

Here are some difficulties in monitoring, record and elimination of POPs. To date, Kazakhstan has no comprehensive monitoring system for POPs including UPOPs and new POPs in environment and consumer goods. The country doesn't have a laboratory accredited for the identifying of dioxins and furans.

The state bodies in Kazakhstan didn't conduct any comprehensive measurements of POPs content in food and biological substrates. However, some research was done by NGOs.

The Toxics and Waste Programme of *Arnica* (a Czech non-governmental organization), *Karaganda Ecological Museum* (NGO) and *CINEST, Center for the Implementation of New Environmentally Sound Technologies, the Public Foundation* (Karaganda, Kazakhstan) conducted a series of studies aimed at collecting data on POPs (dioxins, PCBs, DDT, etc.) in soil, bottom sediments, eggs of free range chickens, cow's milk and fish in Central and Eastern Kazakhstan.

The data collection was carried out under the project entitled “Empowering civil society in the Republic of Kazakhstan in the improvement of chemical safety” (funded by the European Union, co-funded by the Global Greengrants Fund and IPEN, the International POPs Elimination Network, under activities of IPEN's working groups on dioxins, PCBs, waste and toxic metals).

⁸ Guidance for Developing National Implementation Plan for the Stockholm Convention for Persistent Organic Pollutants, 2017 <<http://chm.pops.int/Implementation/NIPs/Guidance/GuidanceforDevelopingNIP/tabid/3166/Default.aspx>> [assessed 10 April, 2018)

There is a need to improve the skills of personnel who deal with POPs at the different stages of their life cycle, as well as the skills of personnel working on equipment designed to identify POPs.

Kazakhstan updated its NIP in 2017, under the joint project of the Government of the Republic of Kazakhstan/UNDP/GEF entitled “NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan”. The main amendments of the NIP include, among others, the following:

- updated laws;
- updated data on the inventory of pesticides and UPOPs (unintentional POPs);
- up-to-date data on PCB-containing equipment;
- proposals for the development of POPs monitoring;
- united action plan within the NIP.

IV. ASSESSMENT OF TECHNOLOGIES FOR ELIMINATION OF POPs, ALTERNATIVE TO HIGH-TEMPERATURE INCINERATION

It is very important for Kazakhstan to assess possible chemical and non-chemical alternatives to POPs, as well as the technologies alternative to high-temperature incineration.

Kazakhstan doesn't use the Guidelines on best available techniques and provisional guidance on best environmental practices (BAT/BEP Guidelines), according to Amina Beybitova, the UNDP Project manager.

The former Ministry of Environment Protection (it was dismissed in 2014 and its functions were transferred to the Ministry of Energy) in 2010 approved the list of best technologies, which was revised a year later. However, information about whether this list is still valid is not available.

Kazakhstan, in 2014, had planned to build a plant for disposal of POPs in Pavlodar region (with financial assistance from World Bank). Public and NGOs exerted pressure on the authorities refusing to approve this plan and that later led to its cancellation.

V. KEY COMMITMENTS TO REDUCE OR ELIMINATE POPs IN KAZAKHSTAN

Kazakhstan, in 2017, developed its new NIP (2017-2028) which is in process of approval.

Information on the strategies, action plans and delivery time of the implementation of measures and activities for POPs is obtained from the new NIP which was provided by the Ministry of Energy of the Republic of Kazakhstan in April, 2018.

Kazakhstan, according to its National Implementation Plan on the obligations under the Stockholm Convention on POPs for 2017-2028, has the following priorities in regards of POPs⁹:

- POPs detailed inventory, including inventory of new POPs added to the Stockholm Convention;
- development of POPs monitoring system;
- development of unified POPs management system;
- improvement of legislation on chemical safety and development of mechanisms for its implementation;
- capacity building of human resources in regard to POPs.

Activity, strategies and action plans include the following:

In regard to POPs pesticides:

- Implement an inventory of burial sites to identify the amount of pesticides stored; repackage and store them in the special facilities in ecologically sound manner, for future elimination.
- Implement monitoring of POPs pesticides within the USSMENR (Unified State System for Monitoring the Environment and Natural Resources).
- Take steps to develop and implement environmentally sound technologies for elimination of identified stocks of POPs waste.

In regard to PCBs:

- Ensure more detailed inventory of PCBs (equipment and contaminated areas).

⁹ Information on the strategies, action plans and delivery time of the implementation of measures and activities for POPs is obtained from the National Implementation Plan (NIP) of the Republic of Kazakhstan on its obligations under Stockholm Convention on Persistent Organic Pollutants for 2017-2028. Provided by the Ministry of Energy of the Republic of Kazakhstan. April, 2018.

- Develop a detailed plan for decommission of PCB-containing equipment at enterprises, indicating the stages and deadlines for such decommission.
- Identify the places for collection and temporary storage of decommissioned and dismantled equipment prepared for elimination.
- Identify the ways to eliminate the PCB-containing equipment; waste and contaminated soil (for example, consider building a plant for POPs elimination).

In regard to unintentionally formed POPs (UPOPs):

The Stockholm Convention defines that each Party shall take some measures to reduce the total releases derived from anthropogenic sources of each of the chemicals listed in Annex C (polychlorinated dibenzo-p-dioxins and dibenzofurans, hexachlorobenzene and polychlorinated biphenyls), with the goal of their continuing minimization and, where feasible, ultimate elimination. The main step in this regard is to implement the best available technologies and best environmental practices.

Kazakhstan should take the following steps:

- Implement an inventory of UPOPs emissions.
- Conduct a research on possible implementation of best available technologies to reduce UPOPs emissions.
- Introduce best available technologies and modernize existing technologies in order to reduce industrial UPOPs emissions.

In regard to stockpiles and waste containing POPs:

The Convention aims at the environmentally sound management of stocks, waste and products that consist of POPs, contain them or contaminated by them.

Kazakhstan should take the following steps:

- Complete an inventory to identify stocks and waste, as well as the areas contaminated by POPs/new POPs.
- Implement safe, efficient and environmentally sound management of POPs waste and stockpiles, in accordance with the requirements of Stockholm and Basel Conventions, and ensure that:
 - POPs waste is collected, transported and stored in an environmentally sound manner;
 - POPs waste is eliminated in an environmentally sound manner and in an economically viable way;
 - any use of POPs in products and processes is prohibited;
 - POPs don't move across international borders without taking into account the international rules (Basel Convention).

In addition, the measures should include raising awareness of state bodies, strengthening the

human resources in chemical safety field, encouraging the active participation of representatives of enterprises and public, informing and educating public, especially in rural areas.

Strategies and action plans in regard to POPs

1. Improve the legislation on POPs

Implementation of obligations under the Stockholm Convention and activities under NIP, including the POPs inventory, should be defined by the legislative frameworks. In this connection, it is necessary to develop a draft law aimed at introducing changes and amendments to the Environmental Code of the Republic of Kazakhstan, the Law “On safety of chemical products” and other legislative acts on hazardous chemicals, including POPs.

It is necessary to introduce the legislative amendments related, for example, to the following aspects:

1. Transportation, use, disposal, removal of pesticides, including those containing POPs.
2. UPOPs emissions.
3. Rules for management of POPs and waste containing them.

These amendments should be developed in accordance with the Stockholm Convention and other international treaties on hazardous chemicals ratified by the Republic of Kazakhstan.

The NIP defines the delivery time for development of the draft Law on introducing amendments and additions to some legislative acts of the Republic of Kazakhstan on hazardous chemicals, including POPs (2018-2021).

The authorized bodies in the field of environmental protection, industrial safety, agriculture, health, sanitary and epidemiological welfare of the population, foreign affairs, customs, etc. are responsible for **adjusting the authority of state bodies under the POPs coordination mechanism** (in **2018**).

The role and responsibility of parties concerned in chemical safety was analyzed during the preparation of the NIP. Please see **Table 1 “Roles and responsibility of parties concerned in chemical safety in Kazakhstan”** (below) which provides information on the competencies of the ministries of the Republic of Kazakhstan and other government bodies responsible for chemical safety matters and for various aspects of chemicals management – in accordance with the current legislation on chemicals management, including POPs.

Table 1. Roles and responsibility of parties concerned in chemical safety in Kazakhstan

Institution	Production of chemicals	Import/export	Storage/Stockpiles	Transportation	Waste management	Contaminated spots	Alternatives, communications	Health and chemical safety
Ministry of Energy	+		+	+	+	+	+	+
Ministry of Healthcare	+		+				+	+
Ministry of Agriculture (in regards of pesticides)	+	+	+	+		+		
Ministry for Investments and Development	+		+	+	+	+	+	+
Ministry of Culture and Sports							+	
Ministry of Education and Science	+						+	
Ministry of Foreign Affairs							+	
State Revenue Committee of Ministry of Finance		+	+	+				
Production enterprises, industry associations	+	+	+	+	+		+	+
NGOs	+		+	+	+	+	+	+
Farmers and Agricultural Associations			+			+	+	+

2. Disposal of pesticides waste containing POPs

In order to solve the problems associated with a disposal of POPs-containing waste, it is necessary to undertake measures that take into account various aspects of these problems.

It is necessary to conduct the most complete inventory of pesticides including the laboratory studies and to create a complete register of obsolete and unusable pesticides, including POPs pesticides, indicating their storage locations, conditions, volumes and other applicable information.

In order to reduce the negative impact of POPs pesticides on human health and the environment, it is necessary to take measures for the safe storage and disposal of pesticide wastes. The measures might include the following:

- 1) Conducting a detailed inventory of obsolete pesticides.
- 2) Building the warehouses for temporary storage of pesticide waste.
- 3) Repackaging of obsolete pesticides.
- 4) Collection and transportation of POPs waste to a place of destruction or temporary storage.
- 5) Destruction of POPs-containing waste.

In addition, it is required to take actions for cleanup of areas contaminated with pesticides waste, conducting, as a first step, a research on technologies for restoration of soil contaminated with POPs-containing waste and implementing work to restore of contaminated areas.

Timeframes for disposal of pesticides waste containing POPs

1) 2017-2018

– **Inventory of warehouses, burial grounds, aerodromes of agricultural aviation and other places of possible contamination with obsolete pesticides** (including POPs-containing) at 80% of the territory which wasn't covered during the preliminary inventory.

(Responsible bodies – the authorized bodies in the fields of environmental protection, agriculture, health, sanitary and epidemiological welfare of the population; local executive bodies, and so forth).

4) 2017-2020

– **Research on the development of technology for the restoration of soil contaminated with pesticide waste**, including pesticides with POP properties, as well as a research regarding the impact of POPs pesticides on the health of population living in or near the contaminated areas.

(Responsible bodies – the authorized bodies in the fields of environmental protection, healthcare, sanitary and epidemiological welfare of the population, education and science; science and research institutes, NGOs).

2) 2018-2019

– Development of complete list of pesticide waste, identification of POPs samples obtained during the inventory, repacking of pesticides waste, construction of warehouses for temporary storage of pesticides.

(Responsible bodies – the authorized bodies in the fields of environmental protection, agriculture, healthcare, sanitary and epidemiological welfare of the population; local executive bodies, and so forth).

5) 2020-2025

– Elimination of pesticides waste.

(Responsible bodies – the authorized bodies in the fields of environmental protection, agriculture; local executive bodies, and enterprises for waste management).

– Restoration of POP-contaminated soil.

(Responsible bodies – authorized body in the fields of environmental protection, agriculture; local executive bodies, farmers and agricultural associations).

3. Sound management, safe storage and elimination of PCBs-containing equipment and waste

1. Improve an inventory of PCB-containing equipment, reporting of such equipment to an authorized body in the field of environmental protection, monitoring of PCB-containing equipment and waste at enterprises – in order to continuously update information on such equipment.

2. Increase the number of accredited laboratories working with equipment, measuring instruments, techniques and official standards allowing to determine PCBs – in order to improve the accuracy of the inventory of PCB-containing equipment in Kazakhstan and ensure that this inventory covers the whole territory of the Republic of Kazakhstan.

3. Organize the temporary storage facilities for PCB-containing equipment, as well as to ensure the safe elimination of PCB-containing equipment and waste.

4. Implement the cleanup of PCB-contaminated areas to rehabilitate them and to reduce the negative impact of PCBs on human health and the environment.

5. Conduct training for personnel of enterprises and regulatory bodies on sound management of PCBs to increase their capacity building.

Timeframes

for sound management, safe storage and elimination of PCB-containing equipment and waste

1) Annually – from 2017 to 2028

– Detailed inventory of PCB-containing equipment inventory.

(Responsible bodies – the authorized bodies in the fields of environmental protection, energy, industrial safety, defense; and industrial enterprises).

2) 2017-2018

– Organization of temporary storage facilities in the industrial enterprises and specialized enterprises for waste management.

(Responsible bodies – the owners of PCB-containing equipment, industrial enterprises, and specialized enterprises for waste management).

3) **2018-2020**

– **Construction of a plant for destruction of hazardous waste.**

(Responsible body – the authorized body in the field of environmental protection).

4) **2020-2025**

– **Destruction of PCB-containing equipment and waste.**

(Responsible bodies – the owners of POPs waste, a plant for destruction of hazardous waste, departments of the authorized body in the field of environmental protection).

– **Rehabilitation of PCB-contaminated areas.**

(Responsible bodies – the authorized bodies in the field of environmental protection, agriculture, local executive bodies, enterprises for waste management).

– **Restoration of POP-contaminated soil.**

(Responsible bodies – authorized body in the field of environmental protection, local executive bodies, and so forth).

The destruction of all PCB stocks in Kazakhstan must be completed by 2025.

4. Reduce the emissions of unintentionally produced POPs (UPOPs) formed as a result of production

It is necessary to amend the legislation of the Republic of Kazakhstan in regards to UPOPs, improve the monitoring and control of UPOPs emissions, as well as modernize existing enterprises and build new ones considering the best available technologies and best environmental practices.

Kazakhstan should take the following steps:

1. Organize chemical analytical laboratory focused on implementing the tasks under the Stockholm Convention on POPs, including the identification of UPOPs

There is no specialized laboratory to identify dioxins and furans in Kazakhstan. However, for effective implementation of obligations of the Republic of Kazakhstan under the Stockholm Convention on POPs, it is necessary to implement analysis of UPOPs emissions on a regular basis, as well as monitor dioxin and furan emissions. Here is an emerging need it to organize a dioxin testing laboratory, which also could provide its service for other Central Asian countries.

2. Implement monitoring and development of annual inventory of dioxin and furan emissions

These steps should be implemented by industrial enterprises with assistance of dioxin testing laboratory. Businesses and state budget should monitor and finance such activity.

3. Analyze of waste gas purification systems at the enterprises and develop the recommendations for applying the Best Available Technologies (BAT) and Best Environmental Practices (BEP) to reduce dioxin and furan emissions and other UPOPs.

4. Reduce the emissions of UPOPs, including dioxins and furans – for example, replacing materials which are used for production by the enterprises; modifying the technological processes (including monitoring of equipment use and maintenance); and upgrading the equipment).

Timeframes for reducing emission of unintentionally produced POPs (UPOPs)

1) 2017-2018

– **Organization of chemical analytical laboratory for identification of dioxin, furans and UPOPs.**

(Responsible bodies – the authorized bodies in the fields of environmental protection, sanitary and epidemiological welfare of the population).

3) 2018-2020

– **Analysis of existing waste gas purification systems in the enterprises and development of recommendations for applying the Best Available Technologies (BAT) and Best Environmental Practices (BEP) to reduce the emissions of dioxin, furans and other UPOPs.**

(Responsible body – the authorized body in the field of environmental protection).

2) 2018-2028

– **Monitoring and development of annual registry of emissions of dioxins, furans and other UPOPs.**

(Responsible bodies – the authorized bodies in the field of environmental protection; dioxin lab and industrial enterprises).

4) 2020-2028

– **Improvement of existing technologies and application of BAT and BEP in the enterprises.**

(Responsible bodies – the authorized bodies in the field of environmental protection; industrial associations and enterprises).

5. Reduce a negative impact of new POPs on environment

Kazakhstan didn't produce and doesn't produce new POPs which were added in 2009 and 2011 to the Stockholm Convention (PBDEs and PFOS). However, the country imports the products from USA, the EU member countries, India, China and the Russian Federation which potentially may contain new POPs. Some products containing PBDEs and PFOS could arrive to Kazakhstan during Soviet period and still remain in the country.

It is important for Kazakhstan at this stage to introduce amendments and additions to its legislative acts on regulation of new POPs, complete a detailed inventory, improve the

monitoring system for new industrial POPs and raise awareness of stakeholders and general public of new POPs.

Kazakhstan should take the following steps, in particular:

1. Complete a detailed inventory of PBDEs and PFOS.

The preliminary inventory of PBDE and PFOS was conducted under the joint project of the Government of the Republic of Kazakhstan/UNDP/GEF entitled “NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan”. It is necessary to implement the laboratory research to identify the presence and quantity of new POPs in products/materials and monitoring of products, waste, electronic and electrical equipment, furniture, etc. to identify if they contain PBDEs and PFOS.

2. Develop the measures for reduction of PBDEs and PFOS emissions including the introduction of BAT for collection and recycling of waste PBDEs and PFOS.

It is necessary to foresee the measures for reducing PBDEs and PFOS emissions during the recycling of consumer goods since these goods may potentially contain PBDEs and PFOS.

3. Raise awareness of stakeholders of regulation of PBDEs and PFOS (custom bodies, private enterprises manufacturing consumer goods and products, waste management companies, local executive bodies).

**Timeframes
for reducing emission of unintentionally produced POPs (UPOPs)**

1) 2017-2020

– Initial evaluation of new POPs use: gathering information from key stakeholders on the importing goods and use of PBDEs and PFOS in industrial sector.

(Responsible bodies – the authorized bodies in the fields of environmental protection, industrial safety, custom, etc.).

– Detailed inventory of sources of PBDE and PFOS, their use, life cycle and potential emissions.

(Responsible bodies – the authorized bodies in the fields of environmental protection, industrial chemical safety, industrial associations, etc.).

2) 2017-2018

– Development of measures to reduce the PBDE and PFOS emissions, including the introduction of BAT for collection and recycling waste.

Responsible bodies – the authorized bodies in the fields of environmental protection, industrial safety, industrial associations, enterprises and NGOs).

– Raising awareness of stakeholders of regulation on PBDE and PFOS (custom, private enterprises for production and import of goods, waste management companies, local executive bodies).

(Responsible bodies – the authorized bodies in the fields of environmental protection, local executive bodies, industrial associations, enterprises and NGOs).

6. Measures on POPs-contaminated areas

It is necessary to implement a thorough inventory in the POPs-contaminated regions, in order to determine the contaminated areas, POPs and their quantity, as well as to analyze the impact of POPs to environment and human health and needs assessment for cleaning and recultivation.

The development of specific measures is necessary to prevent further contamination with POPs – due to leakage, evaporation or environmental pollution caused by natural disasters, such as floods.

It is also necessary to analyze the possible ways of recultivation of contaminated soil identifying and choosing the best technology for it, as well as identify the ways to eliminate of contaminated soil, including the destruction of it at the special plant aimed for destruction of hazardous waste.

Timeframes for implementing the measures on POPs-contaminated areas

1) 2019-2021

– Implement the detailed inventory in POPs-contaminated regions, followed by the analysis of the impact of POPs to environment and human health and needs assessment for cleaning and recultivation of contaminated soil; a feasibility study

(Responsible bodies – the authorized bodies in the fields of environmental protection, healthcare, sanitary and epidemiological welfare of the population and so forth).

2) 2022

– Develop the specific measures to prevent further contamination with POPs (due to leakage, evaporation or environmental pollution caused by natural disasters, such as floods)

(Responsible bodies – the authorized bodies in the fields of environmental protection, sanitary and epidemiological welfare of the population, industrial safety, water management, NGOs, and so forth).

3) 2022-2023

– Analyze the best possible ways for recultivation of contaminated soil identifying and choosing the best technology for it and implementing a feasibility study

(Responsible bodies – the authorized bodies in the fields of environmental protection, healthcare, sanitary and epidemiological welfare of the population and so forth).

4) 2022-2023

– Analyze the best possible ways of elimination of contaminated soil identifying and choosing the best technology for it and implementing a feasibility study

(Responsible bodies – the authorized bodies in the fields of environmental protection, local executive bodies).

7. Improve the monitoring of POPs

There will be two stages of POPs monitoring.

First stage (2018-2023) – monitoring of surface water, soil and air.

Second stage (2024-2028) – monitoring of surface water, soil and air will be continued, along with the monitoring of POPs in human blood and breast milk.

The improvement of the regulatory framework for monitoring system of POPs is a priority.

It is recommended to conduct the monitoring of POPs accumulation in breast milk and human blood everywhere around the country; the monitoring of POPs in surface water and soil – in the identified contaminated areas.

It is also necessary to strengthen the technical capacity of regional laboratories in order to obtain reliable data on contamination with POPs the surface and ground water, soil and air.

The research and studies on level of contamination of soil and groundwater with POPs should be extended, especially in places where obsolete and banned pesticides were buried, in waste dumps and other “hot spots”.

Timeframes for implementing to improve the monitoring of POPs

1) 2017-2020

– Strengthen the technical capacity of regional laboratories

(Responsible bodies – the authorized bodies in the fields of environmental protection, healthcare, sanitary and epidemiological welfare of the population, testing labs and so forth).

2) 2018-2020

– Introduce the specific type of state monitoring - monitoring of POPs, including monitoring of the environment (water, air, soil) and monitoring of POPs accumulation in a human body (blood and breast milk)

(Responsible bodies – the authorized bodies in the fields of environmental protection, healthcare, sanitary and epidemiological welfare of the population, RSE *Kazgidromet*, testing labs).

3) 2017-2020

– Conduct a research on contamination of soil and groundwater with POPs, especially in places where obsolete and banned pesticides were buried, in waste dumps and other “hot spots”

(Responsible bodies – the authorized bodies in the fields of environmental protection, healthcare, sanitary and epidemiological welfare of the population, testing labs, science and research institutes, NGOs and so forth).

8. Improve the exchange of information and engage stakeholders

1. Coordination mechanism on POPs

For today, the functions, responsibilities and competencies of the ministries and departments in the field of chemical safety and POPs are duplicated in many cases, and there is a weak coordination between them. There is a lack of an integrated system for the effective management of waste and chemicals, including POPs.

In order to fulfill the obligations under the Stockholm Convention, it is necessary to establish a coordination mechanism for interaction between the agencies working in the field of sound management of hazardous chemicals and POPs.

The National Coordination Center of the Republic of Kazakhstan on Persistent Organic Pollutants (NCC on POPs) was proposed to serve as the facilitating body to coordinate an interaction and actions between the ministries, departments and stakeholders on POPs issues, as well as the implementation of NIP. The JSC *Zhasyl Damu* will perform as NCC on POPs in Kazakhstan ensuring the implementation of obligations of the country under the Stockholm Convention and activities under NIP; establishing the working groups on improvement of legislation on POPs in Kazakhstan, raising public awareness on POPs, analyzing the results of scientific and research work on POPs and implementing other functions related to POPs.

2. Reporting on hazardous chemicals, including POPs

For timely decision-making on POPs issues, it is necessary to establish the system of statistical reporting on POPs and develop a mechanism obligating the enterprises to provide information on the sources of POPs emissions including UPOPs emissions, reduction and elimination of such emissions and other aspects related to POPs.

9. Raise public awareness of POPs and educate on POPs

It is necessary to raise awareness of decision-makers, manufacturers and public of negative impact of POPs on environment and public health; ensure the public access to updated information on POPs in Kazakhstan and prepare materials for various target groups on POPs issues providing information on how to reduce POPs contamination.

Kazakhstan should take the following steps:

- **2017-2028** – conduct training and seminars for various target groups (officials, manufacturers, NGOs, students, general public, etc.) on sound management of POPs;
- **2017-2020** – develop information materials, online courses to raise awareness of POPs and safe handling of them.

VI. RAISING AWARENESS OF POPs IN KAZAKHSTAN

The website of **RSE “Information and Analytical Center for Environmental Protection” of the Ministry of Energy of the Republic of Kazakhstan** contains some information on POPs in Kazakhstan.¹⁰

The detailed information on the joint project of the Government of the Republic of Kazakhstan/UNDP/GEF entitled “NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan” (2014- 2017) can be found at the site of **JSC *Zhasyl Damu***.¹¹

Zhasyl Damu also provided free access to the online course on POPs on its website¹².

The national and regional mass media cover the subject of POPs in Kazakhstan – please see the list of some publications on POPs in mass media in the Annex (Table 14).

Training and workshops on POPs

Training and workshops were conducted during the project “NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan”.

Representatives of state bodies, enterprises, including the enterprises for waste management and recycling, associations, laboratories, medical institutions, universities and NGOs took part in the training and workshops.

¹⁰ Results of inventory of UPOPs and new POPs in Kazakhstan. RSE “Information and Analytical Center for Environmental Protection” of the Ministry of Energy of the Republic of Kazakhstan. Official site <<http://iacoos.gov.kz/2017/08/23/3942>> [assessed 10 April, 2018]

¹¹ JSC *Zhasyl Damu* was created following the transformation of Kazakh Scientific Research Institute of Ecology and Climate of the Ministry of Environmental Protection of the Republic of Kazakhstan (the Ministry was dismissed in 2014 and its functions were transferred to the Ministry of Energy) by the State Decree № 978 dated July 26, 2012.

¹² Training module on capacity building on POPs issues for stakeholders. *Zhasyl Damu* <<http://zhasyldamu.kz/ru/rezyume-programmy.html>> [assessed 10 April, 2018]

VII. ACTIVITIES OF NGOs OF EECCA COUNTRIES ON POPs

Kazakhstan never produced POPs. However, POPs problems in Kazakhstan are considered as those requiring immediate action.

The NGOs of EECCA countries implement important work for raising public awareness of POPs.

The significant initiative of NGOs on promoting the implementation of the Stockholm Convention on POPs is the International POPs Elimination Project (IPEP) implemented in 2004-2006 by the IPEN's member organizations. 350 NGOs from 65 countries took part in its implementation. IPEN, a global network of over 500 participating organizations from more than 100 countries that working together for a world in which toxic chemicals are no longer produced or used in ways that harm human health and the environment.

Over 70 projects were implemented in the EECCA region during this time (including the projects in Belarus, Kazakhstan and Kyrgyzstan). These projects were aimed to identify contaminated spots; to analyze the harmful impact of POPs on human health and to reduce such impact; to build capacity and raise awareness of POPs; to develop suggestions on rehabilitation of contaminated areas; to collect information on new POPs, and so forth.

Greenwomen, the Analytical Environmental Agency (Kazakhstan), in cooperation with the Program on Chemical Safety of Eco-Accord, the Center for Environment and Sustainable Development (Russia) implemented a project aimed at achieving in Central Asia Goal 2020 "The Toxic Free Future". One of the main outcomes of the project was the development of the Subregional Action Plan for NGOs aimed at achieving common goals for NGOs in Central Asia in the field of chemical safety.

The project was continued in 2010. Some planned actions of the Subregional Action Plan were implemented – for example, the educational modules on chemicals and health were developed for specific target groups (NGOs, public, media, local authorities, businesses).

Greenwomen, in order to raise public awareness, had prepared few reviews: 1) "Implementation of the Stockholm, Rotterdam and Basel Conventions in Kazakhstan" (2013); 2) "Highly hazardous pesticides" (2014); 3) "Is it necessary to use pesticides to feed the world?" (2017).

The training module "Stockholm Convention on Persistent Organic Pollutants (POPs) and new POPs" (2014) was developed for some target groups (civil servants, businessmen, representatives of civil society and media).

The representatives of civil society organizations and IPEN member organizations in the same year issued the Statement regarding the highly hazardous pesticides (HHP) calling to take the urgent measures to ban their production, import and use.

In 2012, the Toxics and Waste Program of *Arnica* (a Czech non-governmental organization), *Karaganda Ecological Museum* (NGO) and *CINEST, Center for the Implementation of New Environmentally Sound Technologies, the Public Foundation* (Karaganda, Kazakhstan) started the implementation of project "Empowering civil society in the Republic of Kazakhstan in the

improvement of chemical safety” (funded by the European Union, co-funded by the Global Greengrants Fund and IPEN, the International POPs Elimination Network, under activities of IPEN’s working groups on dioxins, PCBs, waste and toxic metals).

These NGOs, under the project, conducted the informational campaign to raise awareness of chemical safety issues, as well as organized seminars, conferences and round tables.

They are also conducted a series of studies aimed at collecting data on POPs (dioxins, PCBs, DDT, etc.) in soil, bottom sediments, eggs of free range chickens, cow's milk and fish in Central and Eastern Kazakhstan.

VIII. CONCLUSIONS AND RECOMMENDATIONS

Most of NGOs of EECCA regions, in general, are aware of POPs problems and went through training. These NGOs at the same time have a need to improve their legal and legislative skills, to receive more scientific information on POPs, their sources and their impact on human health and the environment. NGOs consider the information about the technologies for elimination of POPs alternative to high-temperature incineration as very important and expressed the wish to receive more such information.

The support from scientists and experts is extremely important for success of activities of NGOs, including their actions and campaigns.

Article 10 of the Stockholm Convention “Public information, awareness and education” stipulates that each Party shall, within its capabilities, promote and facilitate, among others, ‘public participation in addressing persistent organic pollutants and their health and environmental effects and in developing adequate responses, including opportunities for providing input at the national level regarding implementation of this Convention’. (“Party”, according to the Conventions, means a State or regional economic integration organization that has consented to be bound by this Convention and for which the Convention is in force).

The following steps should be taken to increase public participation in solving the issues related to POPs:

- More actively engage the public to the monitoring of implementation of obligations of the country under the Stockholm Convention – through a *monitoring body (it is suggested to establish it)*, which will be consisted of representatives of general public and NGOs.

- Raise awareness of potential threats of POPs to the environment and human health – through seminars and training.

- Ensure that the public has access to the public information on POPs and that the information is kept up-to-date.

- Develop mechanism encouraging industrial enterprises and professional users to provide information on POPs emissions, including UPOPs; elimination of POPs and its sources, and other aspects related to POPs.

- Ensure that the public have complete information about chemicals that are contained in the products, properties of these chemicals and their impacts on human health and the environment, as well as information on alternatives for these chemicals.

- Ensure the participation of representatives of the public and NGOs in working groups and committees that analyze the economic aspects and environmental acceptability of proposed technologies for POPs elimination.

- The special attention should be given to the development and implementation of educational and public awareness programs on POPs and their alternatives (especially for women, children and other vulnerable groups) emphasizing the negative impact of POPs at human health and the environment.

It is advisable, as the NGOs of EECCA countries believe, to develop the mechanisms and procedures for public participation in the implementation of the Stockholm Convention, as well as the principles of interaction with the representative and executive bodies on issues related to POPs.

Joint actions of state bodies and NGOs may include the following:

- Different actions on POPs.
- Establishment of a public control over the stockpiles and production waste containing POPs, as well as over the actions of industrial enterprises on POPs (including public participation in the identification of unauthorized stocks of obsolete and banned pesticides).
- Participation in international projects to address POPs. Development and implementation of educational and training programs at the national and international levels.

- The official bodies whose activity is related to POPs should hold meetings with public prior the important events related to the Stockholm Convention (for example, COP) to discuss position of Kazakhstan, progress and obstacles in the implementation of the Stockholm Convention.

- It is necessary to engage the public in the preparation of reports on the implementation of obligations under the Stockholm Convention, which Kazakhstan provides to the Secretariat of the Convention.

Given the global nature of POPs and urgency to solve this problem in Kazakhstan, Kazakh environmental NGOs believe that the primary action should be aimed at improving the legislation related to POPs.

APPENDIX

Table 1. Priority problems associated with chemicals in Kazakhstan¹³

Nº	Nature of the problem	Scale of the problem	Problem severity	Particularly problematic chemicals	Priority level
1.	Presence of hazardous chemicals in food	National	High	Pesticides, nitrates	1
2.	Recycling / elimination of hazardous wastes	National	High	Radioactive waste, obsolete pesticides, slag, etc.	1
3.	Occupational health in agriculture	National	High	Pesticides, fertilizers	1
4.	Storage / disposal of waste (obsolete prohibited, unusable chemicals)	Local	High	POPs, pesticides, etc.	1
5.	Contamination of inland waters and waterways	Local	High	PAHs, phenol, heavy metals, pesticides, POPs	2
6.	Groundwater contamination	Regional	Medium	Pesticides, petroleum products, PCBs, heavy metals	2
7.	Soil contamination	Local	Medium	Petroleum products, pesticides, heavy metals	2
8.	Industrial POPs	National	Medium	New substances under the Stockholm Convention, PCBs (PCTs)	2
9.	Pollution of the seas and lakes	Transboundary	Medium	Petroleum products, pesticides, heavy metals, PCBs	3

Note:

1: Source: National profile on chemicals management in the Republic of Kazakhstan, Astana, 2013.

2: 1 – the most serious problems, 2 – next problem(s) by the importance, etc.

¹³ National Implementation Plan (NIP) of the Republic of Kazakhstan on its obligations under Stockholm Convention on Persistent Organic Pollutants for 2015-2028. Stockholm Convention, 2015. Official site (please click on the tab “Addressing COP 4 amendments”) <<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

Table 2. Numbers of storehouses and amount of obsolete pesticides and containers in Kazakhstan (as at 2014)¹⁴

Region (Oblast)	Obsolete, unusable pesticides, kg (liters)	Storehouses			Buried pesticides, kg (liters)	Tare (units)	
		Standard	Designed especially for storage	Amount of pesticides, kg (liters)		Total	From purchases that were paid from state budget
Akmolinskaya	1500 000	10	207	-	13020	39310	10009
Aktobinskaya	0	2	39	-	0	2936	-
Almatinskaya	0	-	-	-	3580	316	256
Eastern Kazakhstan	60331	6	67	-	16270	14435	8530
Zhambylskaya	0	3	-	-	-	0	0
Western Kazakhstan	0	2	6	-	11400	5414	5414
Karagandinskaya	0	2	25	-	269000	0	0
Kostanayskaya	57306	9	224	533498,8	823493,0	54189	11018
Atyrauskaya	0	1	-	-	-	420	420
Kyzylordinskaya	0	-	-	-	-	-	-
Mangistauskaya	0	-	-	-	-	-	-
Pavlodarskaya	70	-	14	6213	120000	625	625
Northern Kazakhstan	0	1	203	-	-	9054	9054
Southern Kazakhstan*	0,75	-	1	-	-	42961	31082
Total:	1617637,75	36	786	539711,8	1256763	169660	76208

*The inventory in South Kazakhstan was carried out in 2013, under the GEF/FAO project entitled "Lifecycle Management of Pesticides and Disposal of POPs Pesticides in Central Asian Countries and Turkey"

¹⁴ Results of inventory of UPOPs and new POPs in Kazakhstan. RSE "Information and Analytical Center for Environmental Protection" of the Ministry of Energy of the Republic of Kazakhstan, 2018. Official site <<http://iacos.gov.kz/2017/08/23/3942>> [assessed 10 April, 2018]

Table 3. Data on number of capacitors, capacitors equipment and transformers in the regions of Kazakhstan (as of 2014) ¹⁵

Region (Oblast)	Capacitors	Capacitors equipment	Transformers
Pavlodarskaya	31,244		
Eastern Kazakhstan	1,977	34	1
Karagandinskaya	1,262	6	105
Aktobinskaya	520		
Western Kazakhstan	351	2	
Mangistauskaya	323		
Zhambylskaya	290		
Other regions	More than 2,000		
Total:	≈ 37,967	42	106

¹⁵ The table was compiled by Greenwomen according to the data provided by the National Implementation Plan (NIP) of the Republic of Kazakhstan on its obligations under Stockholm Convention on Persistent Organic Pollutants for 2015-2028. Stockholm Convention, 2015. Official site (please click on the tab "Addressing COP 4 amendments")
<<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

Table 4. The number of PCB-containing equipment in Kazakhstan by industry (as of 2014) ¹⁶

Nº	Industries	Number of PCB-containing equipment
1.	Energy	More than 2,500
2.	Mining and smelting industry	≈ 20,000
3.	Railway transport	≈ 600
4.	Chemical industry	≈ 400

Table 5. Data on PCB-containing equipment in Kazakhstan (as of 2015)¹⁷

Nº	Name	Identified, units	Eliminated, units	Buried, units	Remaining equipment including those in operation, units
1	Transformers	166	33	0	133
2	Capacitors	52 861	12452	14865	25544
3.	Capacitors installations	78	0	0	78
	Total	53 105	25 936	14865	25755

¹⁶ The table was compiled by Greenwomen according to the data provided by the National Implementation Plan (NIP) of the Republic of Kazakhstan on its obligations under Stockholm Convention on Persistent Organic Pollutants for 2015-2028. Stockholm Convention, 2015. Official site (please click on the tab "Addressing COP 4 amendments") <<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

¹⁷ Ibid

Table 6. Results of the inventory of UPOPs based on the statistical data of manufactured products (for 2015)¹⁸

Group	Groups of sources	Annual emissions (g TEQ/year)				
		Air	Water	Soil	Products	Waste
1.	High-temperature incineration of waste	124,9	0,0	0,0	0,0	0,7
2.	Production of ferrous and steel and non-ferrous metals	903,9	0,2	0,0	0,0	448,8
3.	Heat and power generation	648,6	0,0	0,0	0,0	898,1
4.	Manufacture of products using mineral raw materials	85,4	0,0	0,0	0,1	0,0
5.	Transport	11,3	0,0	0,0	0,0	0,0
6.	Uncontrolled combustion processes	0,0	0,0	0,0	0,0	0,0
7.	Manufacture of chemical products and consumer goods	5,6	0,0	0,0	0,0	0,0
8.	Miscellaneous	0,0	0,0	0,0	0,0	0,0
9.	Removal	0,0	1,2	0,0	0,0	29,9
10.	Identification of potential "hot" spots				0,0	0,0
1-10	Subtotal:	1779,7	1,4	0,0	0,1	1377,5
	Total:	3159				

¹⁸ Report on inventory of UPOPs (unintentionally produced persistent organic pollutants) emissions. Prepared under the project "NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan" JSC Zhasyl Damu, Official site, 2018 <<http://zhasyldamu.kz/images/UNDP1/19-06-17/NO%20SOZ.pdf>> [April 10, 2018]

Table 7. Results of the inventory of UPOPs based on the data of manufactured products submitted by enterprises (for 2015)¹⁹

Group	Groups of sources	Annual emissions (g TEQ/year)				
		Air	Water	Soil	Products	Waste
1.	High-temperature incineration of waste	5,6	0,0	0,0	0,0	2,2
2.	Production of ferrous and steel and non-ferrous metals	133,9	0,2	0,0	0,0	18,4
3.	Heat and power generation	1112,7	0,0	0,0	0,0	1484,5
4.	Manufacture of products using mineral raw materials	2,9	0,0	0,0	0,0	0,1
5.	Transport	0,2	0,0	0,0	0,0	0,0
6.	Uncontrolled combustion processes	0,0	0,0	0,0	0,0	0,0
7.	Manufacture of chemical products and consumer goods	0,1	0,0	0,0	0,0	0,0
8.	Miscellaneous	0,0	0,0	0,0	0,0	0,0
9.	Removal	0,0	0,9	0,0	0,1	13,9
10.	Identification of potential "hot" spots				0,0	0,0
1-10	Subtotal:	1253,3	0,9	0,0	0,2	1519,1
	Total:	2776				

¹⁹ Report on inventory of UPOPs (unintentionally produced persistent organic pollutants) emissions. Prepared under the project "NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan". JSC *Zhasyl Damu*, Official site, 2018 <<http://zhasyldamu.kz/images/UNDP1/19-06-17/NO%20SOZ.pdf>> [assessed 10 April, 2018]

**Table 8. Results of preliminary PBDEs inventory in Kazakhstan
(as of January 1, 2015) ²⁰**

Nº	Areas of PBDEs using	Amount of PBDEs, metric tons
1.	Electrical and electronic equipment	84,3
2.	Transportation	693,2
3.	Furniture production (upholstered furniture and seating furniture)	110,57
	Total:	888,07

**Table 9. Results of preliminary PFOS inventory in Kazakhstan
(as of January 1, 2015) ²¹**

Nº	Products made with PFOS	Amount of PFOS, metric tons
1.	Fire extinguishers	100,89
2.	Carpet products	36,50
	Total:	137, 39

²⁰ Results of inventory of UPOPs and new POPs in Kazakhstan. RSE “Information and Analytical Center for Environmental Protection” of the Ministry of Energy of the Republic of Kazakhstan, 2018. Official site <<http://iacoos.gov.kz/2017/08/23/3942>> [assessed 10 April, 2018]

²¹ Ibid.

Table 10. Situation in Kazakhstan with POPs listed in Annex A (before 2009) ²²

Name of chemical	Production, use, export/import	Measures taken	Regulating laws
Aldrin	<p>Aldrin was used as a pesticide in 1970s in Kazakhstan. However, at the same time a ban on the sale of this chemical began, as were proved its toxic properties and ability to be accumulated in the tissues of living organisms. It was then decided to bury small batches of this POP in various places.</p> <p>Aldrin was identified in Kazakhstan among obsolete pesticides during their inventory in 2003-2004.</p>	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Hexachlorobenzene	Hexachlorobenzene was found in Kazakhstan among obsolete pesticides during their inventory in 2003-2004.	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Heptachlor		Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Dieldrin		Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Mirex		Prohibition on production, on	Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic

²² Greenwomen prepared **Tables 9** using "Kazakhstan: report on the National Implementation Plan for the Stockholm Convention for the Secretariat of the Stockholm Convention. Electronic reporting system for the implementation of commitments under the Stockholm Convention (Third Communication)" as a source <goo.gl/ww2ebm> and the National Implementation Plan of the Republic of the Republic of Kazakhstan on the Stockholm Convention on Persistent Organic Pollutants (first, initial NIP, 2009 – please click on the tab "Initial NIPs"). Stockholm Convention, 2009. Official site <<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

		all uses, import (2012)	<p>Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Polychlorinated biphenyls (PCBs)		Prohibition on production, on all uses, import (2012)	<p>Order of the Minister of Healthcare of the USSR(1989)</p> <p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Toxaphene	<p>In 2001, Kazakhstan, prior the signing of the Stockholm Convention, under the UNEP project, for the first time, implemented a preliminary inventory of obsolete and banned pesticides including POPs.</p> <p>15 metric tons of toxaphene was found in the Northern Kazakhstan during the inventory.</p>	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Chlordan		Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>
Endrin		Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>

Table 11. Situation in Kazakhstan with POPs listed in Annex B²³

Name of chemical	Production, use, export/import	Measures taken	Regulating laws	Additional information/notes
DDT	Despite the fact that DDT was banned in the USSR in 1971, it was used in Kazakhstan for veterinary and medical purposes until 1990s.	Prohibition on production, on all uses (before 2001), import (2007)	<p>Orders of the Minister of Healthcare of the USSR (1971, 1989)</p> <p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	<p>In 2001, Kazakhstan, prior the signing of the Stockholm Convention, under the UNEP project, for the first time implemented a preliminary inventory of obsolete and banned pesticides including POPs.</p> <p>0,5 metric tons of DDT was found in the Western Kazakhstan during the inventory; it was buried in 2002.</p> <p>Small residual amounts of DDT are still found in soil, plants, water, air and food.</p>

²³ Greenwomen prepared **Tables 10** using "Kazakhstan: report on the National Implementation Plan for the Stockholm Convention for the Secretariat of the Stockholm Convention. Electronic reporting system for the implementation of commitments under the Stockholm Convention (Third Communication)" as a source: goo.gl/ww2ebm and the National Implementation Plan of the Republic of the Republic of Kazakhstan on the Stockholm Convention on Persistent Organic Pollutants (first, initial NIP, 2009 - please click on the tab "Initial NIPs"). Stockholm Convention, 2009. Official site <<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

Table 12. Situation in Kazakhstan with POPs listed in Annex A (after 2009 and 2011) ²⁴

Name of chemical	Production, use, export/import	Measures taken	Regulating laws	Additional information/notes
Alpha-hexachlorocyclohexane (α-HCH)	Kazakhstan didn't use it	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	
Beta-hexachlorocyclohexane (β-HCH)	Kazakhstan didn't use it	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	
Hexabromobiphenyl		Prohibition on production, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	

²⁴ Greenwomen prepared **Tables 11** using "Kazakhstan: report on the National Implementation Plan for the Stockholm Convention for the Secretariat of the Stockholm Convention. Electronic reporting system for the implementation of commitments under the Stockholm Convention (Third Communication)" as a source <goo.gl/ww2ebm> and the National Implementation Plan (NIP) of the Republic of the Republic of Kazakhstan on the Stockholm Convention on Persistent Organic Pollutants for 2015-2028. Stockholm Convention. Official site, 2015 (please click on the tab "Addressing COP 4 amendments") <<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

			Kazakhstan)	
Hexabromodiphenyl ether and heptabromodiphenyl ether		Prohibition on production, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	
Lindane		Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	<p>The experts of the Regional Centre for Capacity Building and the Transfer of Technology in the Central and Eastern Europe (based in Brno, Czech Republic, Director, Prof. Dr. Ivan Holoubek) during the implementation of the project on air pollution monitoring in Kazakhstan in 2009 had found that there was air pollution with <i>lindane</i>. It can be assumed that there are sources of new POPs pollution in Kazakhstan.</p> <p>PCBs, β-HCH and lindane were found in the atmospheric air of Atyrau city and Borovoye resort ²⁵.</p>
Pentachlorobenzene		Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	

²⁵ Report on the inventory of new POPs pesticides. Center "Promoting Sustainable Development", within the framework of the joint project of the Government of the Republic of Kazakhstan/UNDP/GEF entitled "NIP update, integration of POPs into national planning and promoting sound medical waste management in Kazakhstan" (2014-2017). JSC *Zhasyl Damu*, 2018. Official site <<http://www.zhasyldamu.kz/proekt-proon.html>> [assessed 10 April, 2018]

Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride		Prohibition on production, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	Kazakhstan, reporting on the situation with PFOS, stated that the country didn't take steps for PFOS phase-out as more safe substances appear (the reasons are the lack of information on alternative substances or methods, lack of financial resources, limited technical capacity, lack of information on the volume of products containing PFOS). The country also did not undertake any action to support research and development of safe chemical and non-chemical products, processes, methods and strategies that are alternative to PFOS.
Tetrabromodiphenyl ether and pentabromodiphenyl ether,		Prohibition on production, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	
Chlordecone	Kazakhstan didn't use it	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	
Endosulfan	Kazakhstan didn't use it	Prohibition on production, on all uses, import (2012)	<p>Law of the Republic of Kazakhstan #259-III "On Ratification of the Stockholm Convention on Persistent Organic Pollutants" dated June 7, 2007</p> <p>Environmental Code of the Republic of Kazakhstan № 212 dated January 9, 2007 (articles 239, 280, 288 and 298 prohibiting the production, use, import and export of POPs to Kazakhstan)</p>	

Table 13. Schedule of the progress reports to COP by the Republic of Kazakhstan, in accordance with the requirements of the Stockholm Convention²⁶

№	Event	Conferences of the Parties (COPs)	Year
1.	Kazakhstan began implementing its obligations under the Stockholm Convention on POPs. NIP approval		2010
2.	First National Report. Review of strategies on reducing the unintentional releases of POPs (UPOPs)	COP-5	2011
3.	Evaluation of implementation	COP-6	2013
4.	Progress report on discontinuation of use of PCBs		2014
5.	Second National Report. Review of strategies on reducing the unintentional releases of POPs (UPOPs)	COP-7	2015
6.	Evaluation of implementation	COP-8	2017
7.	Progress report on discontinuation of use of PCBs	COP-9	2019
8.	Third National Report. Review of strategies on reducing the UPOPs		2020
9.	Progress report on discontinuation of use of PCBs	COP-11	2023

²⁶ National Implementation Plan (NIP) of the Republic of Kazakhstan on its obligations under Stockholm Convention on Persistent Organic Pollutants for 2015-2028. Stockholm Convention. Official site (please click on the tab “Addressing COP 4 amendments”) <<http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>> [assessed 10 April, 2018]

10.	Fourth National Report. Review of strategies on reducing the UPOPs		2024
11.	Evaluation of implementation	COP- 12	2025

Table 14. List of some publications on POPs in mass media in Kazakhstan

National TV channel *Khabar 24* prepared the story on April 30, 2014 entitled «Plant for disposal of POPs will be constructed in Kazakhstan»:

<https://www.youtube.com/watch?v=v7Wmd37blFM>

National TV channel 31 prepared the story on August 25, 2015 entitled «Project for construction of plant for disposal of POPs in Kazakhstan is canceled»:

<https://www.youtube.com/watch?v=4xYG9-hzLFI>

Media of Kazakhstan (both national and local) widely covered the situation on the construction of plant for disposal of POPs in Pavlodar (Northern Kazakhstan). The full list of publication is very long; one can find the stories online.

National online newspaper *Panorama* published the article on 17 July, 2015 entitled “More than 200 metric tons of toxic substances were removed from country under the project on management of PCBs”: <http://panoramakz.com/index.php/layout/ecology/item/38268->

Regional Public online TV 101.kz prepared the story entitled “Pollutants that cause cancer” on 21 May, 2017: <https://www.youtube.com/watch?v=DPQLfuUZrus>

Regional news website *Nv.kz (News of Karagandy and Karagandinskaya oblast)* published the story on April 12, 2017 entitled «Environmentalists in Karaganda found toxic substances in chicken eggs»: <http://www.nv.kz/2017/04/12/153209/>