IPEN

The International POPs Elimination Project (IPEP)

GREEN WOMEN
ECOLOGICAL NEWS AGENCY

PCBs

polycholrinated biphenyls

threat to environment and to the health

Bulletin is published within the framework of the realization of the project "Polychlorinated biphenyls pollution in the regions of the Republic of Kazakhstan: territorial monitoring and inventory development – solutions for the problem"

2006

«Polycholrinated biphenyls pollution: monitoring of the territory and PCBs sources inventory development - addressing the problem in Kazakhstan»

The Government of the Republic of Kazakhstan signed the Stockholm Convention on Persistent Organic Pollutants (POPs) in May of 2001.

The Convention took effect on 17 May 2004 after it had been signed by 50 countries. By now 151 countries have signed the Convention and 80 have ratified it.

Of all the CIS countries, the following have signed the Stockholm Convention: Georgia, Kazakhstan (May 2001), Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine. Belarus, Armenia and Azerbaijan ratified the Convention.

PCDs production and application in Kazakhstan

An array of industrial enterprises uses PCDs to produce:

- electrical equipment (transformers, condensers etc.), heat exchange and hydraulic equipment (heat exchange devices, transport hydraulic equipment).

- paints and polymers (glues, paints, oils, hermetic materials, plastificators etc.).

Kazakhstan does not employ polychlorinated diphenyls and chlorine substances production processes (for example, involving production of polychlorinated vinyl, raw materials for pesticides production etc.), leading to ПХД accumulation as transitory byproducts.

Until 1990-1991 Ust-Kamenogorsk Condenser Plant carried out condenser refilling using trichlorinated diphenyl. In 1989 a national-level commission of the Ministry of Healthcare of Kazak SSR banned application of trichlorinated diphenyls and developed an action plan to rehabilitate the territory of the plant. Trichlorinated diphenyls stockpiles (6-9 tones based on the accounts provided by the plant's staff members) and a layer of soil from the plant's territory were removed and buried in a collector pond, while production technologies were redesigned and adjusted. However, the plant has no documentation describing the initial decisions or after-action reports.

Based on the PCBs inventory results gathered in Russian Federation, between 1968 and 1990 the Ust-Kamenogorsk plant used approximately 26,000 tones of. Almost all goods in the form of industrial condensers were returned to Russia or other former Soviet republics. Currently the key issues include: remaining pollution on the territory of the plant, possibly stored used equipment as well as condensers with passed expiration dates.

In 2004 independent ecologists from Ust-Kamenogorsk asked Mr. Kanat Musaparbekov, Deputy Head of Ust-Kamenogorsk Regional Environmental Protection Department to comment on the current situation involving PCDs.

«Polychlorinated diphenyls (PCDs), - believes Mr. Musaparbekov, - were never produced in Ust-Kamenogorsk. The condenser plant applied a technical product containing TCD – trichlorinated diphenyls as an electricity isolation liquid. In 1989 the plant discontinued application of TCD and switched to other petroleum-class technical products. Application of these products does not lead to any dangerous consequences.

In 1989 the condenser plant undertook a series of measures aimed at reducing TCD pollution, since the substance is classified as a persistent organic pollutant.

Irtysh river sedimentary pollution below the condenser plant location developed as a result of the plant's waste waters disposal, rains and melting snows. PCD persistence determines the long-term pollution of the area. However, sedimentary pollution did not result from TCD leakage from the collector pond of the condenser plant since the pond is far removed from the river. In 2003 river water tests taken below the condenser plant did not reveal any TCD presence. However, these dangerous substances can still be located in the soils and sediments».

«The state persistent organic pollutants program has not been developed in Kazakhstan, - continues Mr. Musaparbekov. – The Eastern Kazakhstan regional environmental protection department intends to work with the United Nations representative office in Kazakhstan to include into the National Stockholm Convention implementation action plan activities aimed at assessing POPs pollution in Ust-Kamenogorsk followed by re-cultivation of the polluted areas**».**

However, independent ecologists insist on more thorough studies. The believe that due to evaporation PCDs pollute atmospheric air, enter the underground waters and contaminate the river Irtysh.

In 1998, almost ten years after the condenser plant had discontinued application of PCDs, independent ecologists from Ust-Kamenogorsk studied Irtysh river water quality below the condenser plant and established that PCDs concentration in the water was 3.6 times higher than the maximum acceptable concentration levels. .

The ecologists came to a conclusion that from the territory of the plant PCDs entered the underground waters and got carried into Irtysh. They insist on the accuracy of their findings since the research was conducted in cooperation with representatives of Kazhydromet's surface waters unit and the actual analyses were taken by the scientists representing Organic chemistry institute of Russia's Siberian Academy of Sciences.

Mrs. Galina Khabdullina, the Laboratory head of the Eastern-Kazakhstan regional environmental department disagrees with the findings:

The collector pond is located far away from the plant. The pond is not close to the Irtysh river either. Currently we have no data to state that the plant leads to POPs water pollution. POPs have not been used at the plant since 1989.

Overall I must say that, in my opinion, nobody controls this parameter since no adequate equipment is available. This requires some highly specialized equipment.

Kazakhstan's transformers inventory results

(Environmental protection ministry, UNDP project: "Initial support to the Republic of Kazakhstan aimed at fulfilling obligations under the Stockholm Convention on persistent organic pollutants (POPs)»

Transformers - ***116 units, including***:
- 105 units - JSC «Ispat Karmet»;
- 8 units - JSC «ANPZ»;
- 2 units - JSC «Ferrochrome»;
- 1 transformer - «Oskemen vodokanal» state enterprise.

Condensers – more than ***38*** thousand units, including:

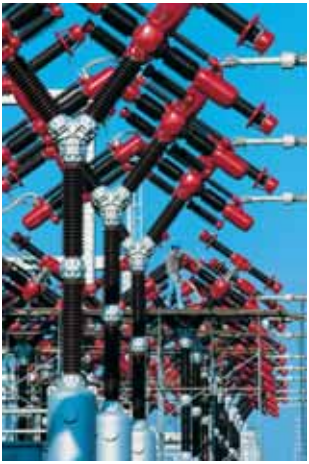
- 15 thousand units buried at the Semipalatinsk nuclear testing range;
- 16 thousands units currently being used at JSC «Aksu ferroalloy plant»;
- 1450 units - JSC «Kazzinc»;
- 811 units – at JSC "KEGOC" electric sub-stations storage units
- 557 units accounted for by the CJSC National Company "Kazakhstan Temir Zholy".

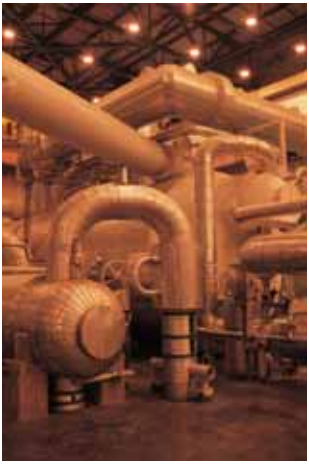
Condensers utilized by the country's industries

- *energy generation and distribution* – more than 2,5 thousand units.
- *mining* - approximately 20 thousand units.
- *railroads* - approximately 600 units.
- *chemical industry* - approximately 400 units.

Condensers and transformers in the regions of the country

- 14 865 condensers buried at the Semipalatinsk nuclear testing range.
- *Pavlodar region* – 31 244 condensers
- *Eastern-Kazakhstan region* – 1 transformer, 1977 condensers and 34 condensing units.
- *Karaganda region* – 105 transformers, 1262 condensers and 6 condensing units.
- *Aktubinsk region* - 520 condensers.
- *Western-Kazakhstan region* - 351 condensers and 2 condensing units.
- *Mangystau region* - 323 condensers.
- *Jambyl region* - 290 condensers.





In response to the "Green-women" ecological news agency request, "Mercury Plus Ltd." (Karaganda) responded: **"On the territory of the production facilities operated by Mercury Plus, i**n the process of the existing constructions disassembly, condensers produced at Ust-Kamenogorsk condenser plant were located. The condensers possibly contain трихлордифенил. Currently the issue of the condensers recycling is of high importance to the enterprise".

In response to the "Green-women" request, Eastern-Kazakhstan regional environmental protection department responded that in 2003 in the framework of the joint project involving Environmental Protection Ministry and UNDP an experts working group had been established to include representatives of the regional environmental protection departments ensuring POPs inventory development and collection of materials throughout the Republic of Kazakhstan.

A Manual was developed under the general title "Developing the inventories of equipment and materials, containing or applying PCDs and PCDs-containing wastes".

The approved Manual provides information on key physical, chemical and toxicological properties of PCDs, trademarks of PCDs-containing materials, produced in the former Soviet Union and its Republics, production and spheres of application. The Manual is designed for experts developing inventories of equipment and materials containing PCDs, as well as PCDs-containing wastes.

Overall the inventory development project involved 4 national companies and 78 large and medium-size enterprises potentially housing PCDs or PCDs-containing equipment.

«Based on the inventory development results, in Eastern Kazakhstan region PCBs-containing equipment is located at facilities operated by JSC «Kazzinc», «Oskemen vodocanal (Ust-Kamenogorsk water channels)", «Kazakhmys» and others. According to UNDP data, in Eastern Kazakhstan region there are currently 1 transformer, 1977 condensers and 34 condensing units», - states a response obtained from the Eastern Kazakhstan regional environmental protection department.

«A collector pond located close to the Ust-Kamenogorsk condenser plant serves as the main source of POPs emitted into the environment. In its condenser production processes, as electricity isolation liquids, the plant utilized trichlorinated biphenyls (TCBs), containing up to 2,5% PCBs – highly chlorinated biphenyls such as chlorphene A-5- and A-60.

Despite the rehabilitation project implemented in 1990-1991, based on the soils analysis conducted on

the territory of the plant and the nearby Ablaketka region, 10 years later PCBs content in soils remains high *(on the territory of the plant its concentration remains at 1730 mg/kg, on the shores of Irtysh - 7-4 mg/kg, while the maximum acceptable concentration is 0,06 mg/kg).*

Academician V. Fedorov's Applied Geophysics Institute executed the most extensive regional pollution study in 1985. In the framework of the study, researchers obtained samples of snow, water, sediments, water and surface plants, fish etc. Moreover the work involved samples of breast milk from women who did not come in contact with PCBs, and those who did (women working at the Ust-Kamenogorsk condenser plant).

The study decisively concluded that the Ust-Kamenogorsk condenser plant acts as a source of environmental pollution and human contamination.

In 2000-2001, another study was conducted in Ust-Kamenogorsk in the framework of technical partnership between Kazakhstan and Germany. The objective was to develop proposals for lowering underground waters pollution and environmental risks posed by industrial wastes.

In 2005, in the framework of the Ust-Kamenogorsk environmental passport development, researchers obtained samples of soils, sediments and water to determine TCDs contents. Kazakhstan's Ministry of Education Chemistry Institute conducted analysis of the samples. The results will be available no earlier than December 2005 and will coincide with the release of the environmental passport of Ust-Kamenogorsk.

Kazakhstan's Stockholm Convention implementation national action plan will also be ready in December 2005.

Overview of industries in the economy of Kazakhstan, using PCDs-containing equipment

Energy generation and distribution

Kazakhstan's energy sector includes energy production, transmission and distribution enterprises. The first group encompasses energy generation facilities, such as Central energy and heat generation plants, City energy generation stations, Hydro electric power plants and City heat generation facilities. The national company JSC "KEGOC" manages electric energy transmission from the producers into the regions, while regional energy network companies ensure energy distribution among individual customers. All of these enterprises use transformers designed to increase and decrease the electric currents, as well as other oil-rich equipment (oil switches, reactors, oil-filled cables). The vast majority of the electric equipment is filled with the transformer oil conforming to the State Standard GOST 982-68. However, substantial quantities of equipment utilize polychlorinated diphenyls.

Other industrial complexes

In Kazakhstan the principal industrial complexes include oil and gas, mining, manufacturing, chemical, textile and food processing industries. Considering that the vast majority of enterprises was built during the Soviet times and designed to serve the needs of the entire Soviet Union, most production facilities have significant capacity. Typically these include energy and materials intensive production processes. Most of them have their own energy production facilities and electric sub-stations containing large quantities of oil-filled equipment. Moreover, production facilities operate auxiliary electric units powering specialized processes, such as electric smelters at metallurgic plants, roller lines in manufacturing processes, for example at JSC Ispat-Karmet, Aksu ferroalloy Plant, National Company Kazchrome etc..

Utilities

Local governments manage neighborhood utilities as well as the so called social sector including hospitals, educational institutions, theaters and other facilities. Transformer units serving homes and the social sector in cities and towns use transformers filled with transformer oil. Considering the high toxic levels, PCDs-containing equipment was not utilized for these purposes.

Small and medium-sized enterprises

We touched upon small and medium-sized manufacturing enterprises in the overall industrial complexes overview. Services-oriented small and medium-sized enterprises typically do not use separate energy generation units, relying on specialized energy suppliers (specialized enterprises or township utility providers).

Energy distribution technologies

Transformers

The vast majority of enterprises uses oil-filled as well as dry transformers. However, some production facilities rely on sovtol-filled transformers supplied by the Chyrchyk Plant For example, in its metal sheets production unites utilizes 105 TNZ-type transformers.

Typically, sovtol-filled transformers were located inside production units with high fire and explosion safety standards. At the same time, lots of enterprises throughout the country use imported transformers with unknown fillers. The vast majority of them dates prior to 1990.

Condensers

Condensers are relatively widely used at production facilities relying on the constant electricity current. For example, JSC KEGOC electric sub-stations currently use 820 condensers containing the total of 7626 liters of PCDs. The Aksu Ferroalloy Plant installed 16,379 trichlorinated diphenyls-containing condensers produced at the Ust-Kamenogorsk Condenser Plant.

Management and control

Currently the country has no legislative framework ensuring safe management of PCDs-containing materials and equipment. Management and control over such equipment rely on the current provisions regulating operations involving highly-toxic substances (State Standards, manuals and instructions).

In the near future it is critically important to develop specialized POPs-related norms, based on experiences of other nations and accounting for the relevant provisions formulated by institutions of the United Nations.

To ensure effective management and control over PCDs-containing equipment, Kazakhstan needs to establish a specialized center charged with overseeing all PCDs-related issues, including development of legislative acts regulating safe equipment management, decommissioning and recycling at a specialized center.

Contents

During the Soviet era, the Ust-Kamenogorsk Condenser Plant served as Kazakhstan's only facility responsible for analyzing PCDs contents in power generation and distribution equipment. Currently the Chemistry Institute of Kazakhstan's Ministry of education and science carries out trichlorinated diphenyls analyses.

PCDs and PCDs-containing equipment (primary inventory development results)

PCDs stockpiles

There are no stockpiles of pure polychlorinated diphenyls and derivative oils on the territory of the Republic. The remaining trichlorinated diphenyls accumulated at the Ust-Kamenogorsk Condenser Plant and industrial wastes were buried in the plant's collector pond in 1990.

The transformer plant located in the town of Chyrchyk in Tashkent region of Uzbekistan served as the main consumer of sovtol-10. A large number of enterprises, including those located in Kazakhstan (for example, the Ust-Kamenogorsk titanium and manganese combine), still use products manufactured at the Chyrchyk plant.

Equipment containing PCDs

Transformers

According to the preliminary inventory data, currently on the territory of the Republic there are 104 sovtol-filled transformers produced by JSC "Transformer" (Chyrchyk). 4 transformers have been decommissioned.

105 transformers are installed at JSC Ispat-Karmet, 2 transformers – at JSC Ferrochrome and 1 transformer at the Ust-Kamenogorsk water channel facility.

However, the country's industrial enterprises still also use a large number of imported transformers made in the United States, Germany, Bulgaria, Romania, Poland and other countries. Some of the imported transformers date back to 1930s and for most of them the oil content is unknown.

Condensers

The preliminary inventory data indicates that currently there are over 38 thousands condensers located all over the country, of which about 15 thousands are buried at the Semipalatinsk nuclear testing range. Over 23 thousands condensers and 78 condenser units with unknown numbers of condensers inside are still operating throughout Kazakhstan. The condensers and condenser units were mainly produced at the Ust-Kamenogorsk Condenser Plant priori to 1990 and are filled with trichlorinated diphenyls. The above mentioned equipment is located at the following facilities:

- 16 379 condensers installed at the Aksu ferroalloy plant (a branch of the National Company JSC «Kazchrome»).
- 4 condenser units and 1450 condensers filled with trichlorinated diphenyls – at JSC «Kazzinc», of which 498 have been decommissioned.
- 811 condensers have been decommissioned and are currently being stored at the JSC KEGOC electric sub-stations. 9 units are still operational.
- 7 condenser units and 70 condensers are located at facilities of CJSC National Company Kazatomprom.
- 557 condensers reported by CJSC National Company "Kazakhstan Temir Zholy"
- JSC Ispat-Karmet utilizes 1024 condensers and 105 transformers.
- 211 condensers were installed at JSC AZHS.
- 23 condensers with unknown contents – at the state enterprise "Oskemen vodokanal" (Ust-Kamenogorsk water channel) in the city of Ust-Kamenogorsk, 3 condensers produced at UKKZ were installed at JSC «Kazakhmys» and 80 condensers – at Altrade, Ltd in Ust-Kamenogorsk region.

- A lot of enterprises in Karaganda and Western-Kazakhstan regions use several condensers or 2-4 condenser batteries.

- In 2002, an electric substation in the town of Ekibastuz decommissioned approximately 15000 UKKZ-produced condensers, which were later buried at the Semipalatinsk nuclear testing range.

Other equipment

The country actively utilizes other types of oil-filled equipment, such as oil switches, reactors, cables. In accordance with data compiled in Russian Federation, the above mentioned types of equipment produced in the Soviet Union did not contain polychlorinated diphenyls. PCDs can only be present in similar imported devices, of which there are substantial quantities throughout the country. It has to be selectively tested for PCDs presence.

At the same time, the Pavlodar chemical plant produces polychlorinated vinyl-based cable and shoe plasticate. The plant has been partly operational since 1990s. The technologic processes employed at the plant provided for the use of polychlorinated diphenyls as heat conductor in the polycholrine vinyl-based plas-

ticate reactor heating system. The volume of polychlorinated diphenyls employed in the process amounted to 6 cubic meters. Currently the remaining stockpiles do not exceed 1-1.5 cubic meters.

Currently none of the specialists responsible for the plant's production processes are employed at the plant and nobody can determine the location of the remaining полихлордифенил. Since Kazakhstan does not produce polyvinylchloride and all raw materials for the plant have to be imported, the plant is not economically viable and it is not feasible to restart production. There is a possibility that the plant will be shut down, its equipment will be reduced to scrap metal and the remaining chemicals will be poured down the drain. This has to be avoided, while the remaining polychlorinated diphenyls and polluted equipment have to be properly decommissioned and recycled.

PCDs-containing wastes

Currently in Kazakhstan there are 4 main sources of PCDs-containing wastes:

1. Territory of the UKKZ plant.

Until 1990-1991 Ust-Kamenogorsk Condenser Plant carried out condenser refilling using trichlorinated diphenyls. In 1989 a national-level commission of the Ministry of Healthcare of Kazak SSR banned application of trichlorinated diphenyls and developed an action plan to rehabilitate the territory of the plant.

Trichlorinated diphenyls stockpiles (6-9 tones based on the accounts provided by the plant's staff members) and a layer of soil from the plant's territory were removed and buried in a collector pond, while production technologies

were redesigned and adjusted to use Japanese-made DOF substance. However, the plant has no documentation describing the initial decisions or after-action reports.

Despite the rehabilitation project implemented in 1990-1991, based on the soils analysis conducted on the territory of the plant and the nearby Ablaketka region, 10 years later PCBs content in soils remains high (on the territory of the plant its concentration remains at 1730 mg/kg, on the shores of Irtysh - 7-4 mg/kg, while the maximum acceptable concentration is 0,06 mg/kg).

2. The UKKZ collector pond

The plant's collector pond is located on a mountainous slope on the opposite side of Ust-Kamenogorsk. The pond constantly receives additional wastes from the plant's recycling facilities and the adjacent collector niches.

The pond is filled with melting waters (based on various estimates, water levels reach 2-6 meters), there are no protective barriers and only nominal security force. The pond presents an acute danger of polluting Irtysh river waters with POPs. There are testing wells drilled around the pond, however nobody monitors the presence of pollutants. The pond contains accumulated trichlorinated diphenyls (the plant's staff members estimate that accumulated quantities reached approximately 6-9 tones) and a layer of soil removed from the plant's territory in the course of the rehabilitation project.

The beach soil and pond waters analyses indicated that PCDs concentration on the beach reached 12 438 mg/kg, in the water – 0,19 mg/kg. Hence, the pond can potentially lead to atmospheric air pollution as a result of PCDs evaporation during the warm season and Irtysh river pollution resulting from PCDs presence in the underground waters.

3. The territory of the Ekibastuz electic sub-station

The substation construction began under the Soviet Union to transmit electricity generated at Ekibastuz's heat and electric stations into the Union's European regions and further into countries of the Eastern bloc.

The substation was designed to transform the variable electric current into the constant current using condenser batteries. By the time of the Union's demise, over 15 thousands condensers had been installed along the open tracts on both sides of the transforming substation.

Within the next few years marked by a severe economic crisis most of the condensers were damaged and taken out of the air-tight containers. People living in the neighboring villages tried to remove non-ferrous metal – copper shafts – from the condensers.

In 2001, a special commission was established in Ekibastuz to eliminate the threat of environmental pollution and contamination resulting from trichlorinated diphenyls evaporation (a cluster of summer houses and Irtysh-Karaganda canal are located close to the substation).

In the course of the liquidation works conducted in 2002, the new owners of the substation uninstalled the condensers and applied construction foam to replace the air-tight packaging.

Soil sections contaminated by trichlorinated diphenyls leakage occurring in the course of the liquidation project were removed and packaged into sacks.

Later condensers and soil sacks were transported to the Semipalatinsk nuclear testing range.

However, the liquidation procedures were not completed. The soil was not removed from under the condenser ramps. Under the ramps PCDs concentration reaches 26 200 mg/kg. Consequently, it is of utmost importance to uninstall the ramps and remove the soil and temporarily bury the soil in an enclosed storage facility or at the Semipalatinsk range until a permanent storage option can be identified for the wastes.

4. The condensers burial ground at the Semipalatinsk nuclear testing range

In 2002, the condensers burial ground was established in the town of Kurchatov at the Semipalatinsk nuclear testing range Experimental field. On the surface the burial ground consists of a relatively small hill about 2 meters in height surrounded by a barbed wire fence with the appropriate precautionary signage.

In 1940s and 50s, the Experimental field served as the testing ground for on-the-surface nuclear tests. Considering the high levels of environmental pollution, this territory will be excluded from agricultural and industrial operations for the next few hundred years. On the field there are multiple buildings, which can be refurbished and used as temporary POPs wastes storage facilities.

The Semipalatinsk testing range was chosen as the burial site since it is located far from all inhabited areas (the nearest town – Kurchatov – is located 70 kilometers away), the underground water do not have access to rivers or other bodies of water, the territory of the range will not be used for the next several centuries. Two buildings were selected as the most suitable burial grounds. To transport the condensers from Ekibastuz to Kurchatov a special transportation route was developed and vetted with the appropriate Emergency Situation Ministry and Regional Environmental Protection Department officials.

14,865 condensers were placed vertically forming 7-8 layers. Wooden blocks soaked in antiseptic and fire-resistant liquids were place in between the layers. The distance between the upper layer of the condensers and the cover concrete block amounts to 0.6 – 1 meter. The filling density inside the facility is 52% of the overall volume. Cavities were filled with 50 tones of polluted soil from the Ekibastuz sub-station.

The second cover layer consisting of 150 millimeter road blocks was placed on top of the available rooftop blocks. The second layer in turn was covered with 80 millimeters thick asphalt-concrete hydroisolation layer and 4 millimeters of bitumen insulation. 500 millimeters of reinforced clay serve as the clay lock. Soil ramps and barbed wire fences surround the facility. Water drainage channels and underground waters monitoring wells were created along the perimeter.

The centralized PCDs database

Currently the PCDs-containing equipment database is being created. The database will detail the quantities and types of condensers and transformers, their locations, owners of the equipment, its dimensions, mass, volume and the names of PCDs liquids, manufacturers' names, production and expiration dates as well as other relevant data.

The database will be built using ACCESS software package enabling easy access and timely updates.

Health conditions of the population on the PCDs polluted territories

The Ust-Kamenogorsk Condenser Plant operates in Eastern Kazakhstan region. Since 1959 and until 1990 the plant was producing condensers using polychlorinated diphenyls as dielectrics. The production documentation indicates that industrial wastes alone accounted for 188 to 127 tones of TCBs per year. The ventilation systems removed 12-14 tones of TCBs per year (6–7%), the remaining quantity - over 85% (mass-wise) – consisted of liquid and semi-liquid wastes.

The plant's production processes resulted in widespread pollution on the territory of the plant and the adjacent region. In 1990s a series of decontamination procedures were undertaken on the territory of the plant. A portion of the polluted soil was removed. However, wastes remained in the plant's bodies of water. The plant is located close to the residential area of the Ablaketka village on the Irtysh river bank. The key challenge encompasses the remaining pollution of the territory, used equipment as well as condensers with passed expiration dates. Currently the plant plans no further decontamination actions.

The International Cancer Research Agency added PCDs to the list of cancer-inducing substances leading to human cancers development. Acting as pseudohormones, PCDs mimic behavior of the reproductive steroid hormones thus determining the interest towards identifying relationships between persistent organic pollutants and malignant reproductive organs cancers. Upon entering a human body they can lead to cancer development in the same way as free estrogens not tied to the blood's transporting proteins. It is important to consider a scientifically proven fact that chlorine organic substances leave human bodies for example being contained in the breast milk which suggests the possibility of a direct impact on the tissue cells.

Malignant cancers epidemiological studies conducted among people living at Ablaketka village in Eastern Kazakhstan serve as decisive arguments proving cancer-inducing nature of the chlorine organic substances. Since 1999 and until 2003 researchers registered 165 cases of various cancers.

Male patients demonstrated relatively high frequency of skin cancers – 32%, malignant intestine cancers – 22% and urinal system cancers –12%.

Among female patients, high frequency of occurrence was detected for malignant reproductive system cancers – 27%, skin, including melanoma – 21%.

Among malignant reproductive organs cancers, the most prevalent include: uterus cancers (22%) and ovary cancers (5%) *(Mrs. N. Dusembaeva, National Technical Expert, Ecotoxicology and Environmental hygiene).*

WAYS TO ADDRESS ISSUES RELATED TO PCDS-CONTAINING EQUIPMENT:

It is necessary to:

- obtain technologies for PCDs-containing equipment decommissioning.

- procure facilities for temporary storage of disassembled and decommissioned PCDs-containing equipment.

- conduct rehabilitation and reconstruction projects on PCDs-contaminated territories: Ust-Kamenogorsk, Ekibastuz, Pavlodar.

In accordance with the recommendations formulated by a group of Russian scientists (experts – Dr. U. Treger, Professor, Director General of JSC Scientific Research Center "Sintez", Dr. V. Rozanov, Sector Head of JSC Scientific Research Center "Sintez"), to ensure complete inventory development and subsequent resolution of PCBs-related issues in Kazakhstan it is advisable to develop additional equipment inventories (including imported equipment), for units with unknown dielectric liquid types and possible PCBs presence. Dielectric liquid type can be determined based on some basic tests recommended in the UNEP Chemicals Manual.

"Greenwomen" Environmental News Agency, Kazakhstan

Since 2004, non-governmental organizations, members of the international POPs elimination network have been working to implement The International POPs Elimination Project (IPEP). The project's main idea is to facilitate the Stockholm Convention implementation and support actions aimed at fostering the exchange of information and coordination of activities related to obligations under the Basle and Rotterdam Conventions. (A Russian NGO "Eko-Soglasie" serves as the IPEP Coordinating Center for Eastern Europe, Caucuses and Central Asia, Olga Speranskaya: speransk2004@mail.ru).

In the framework of the IPEP non-governmental organizations have implemented scores of initiatives in Eastern Europe, Caucuses and Central Asia. Among the notable projects is " polychlorinated biphenyls pollution in the regions of the Republic of Kazakhstan: territorial monitoring and inventory development – solutions for the problem". The project provides for PCBs-related issues review and promotion of public awareness about sources of POPs throughout the territory of Kazakhstan, fostering public participation in PCBs stockpiles identification, storage and decommissioning, as well as analysis of their negative impacts on public health and the environment.

Since 2003, as an IPEN member and as a non-governmental organization based out of Kazakhstan, "Greenwomen" ecological news agency consistently urges for Kazakhstan to ratify and implement the Stockholm Convention on POPs.

«Greenwomen» expresses its concern over POPs influence on public health and the environment. Consequently, we believe that for Kazakhstan the Stockholm Convention ratification represents and issue of utmost importance.

The Government of Kazakhstan has to take urgent measures aimed at POPs elimination. If Kazakhstan ratifies the Convention, the move will allow the country to attract domestic and international investments to implement programs aimed at elimination of the currently existing stockpiles of POPs, to improve the environmental situation and have a positive impact on public health. We call upon the state-level decision-makers to:

- ratify the Stockholm Convention in the near future;
- guarantee effective public participation in actions related to the Stockholm Convention implementation and development of policies, legislative acts, plans and projects;
- ensure that the general public has access to complete information in a timely manner
- account for public opinions in the decision-making process related to POPs and other toxic substances impacting the environmental conditions and public health
- guarantee transparency of financial flows funding POPs elimination projects.