International POPs Elimination Project

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

Country Situation Report on POPs in Kyrgyzstan
English Summary

NGO "For Civil Society"
Igor Hadjamberdiev
igorho@mail.ru, igorho2000@yahoo.com
Suvakuk Begaliev
begalsuv@mail.ru

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

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;

- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;

- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

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

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

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This report is available in the following languages: English summary and Russian full report

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What are POPs?

"Persistent organic pollutants" (POPs) incorporate 16 individual pollutants and groups of pollutants as defined in the Protocol on POPs to the Convention on Long-range Transboundary Air Pollution (signed in Aarhus, Denmark, on June 24, 1998). POPs incorporate different classes of chemical substances that share some common characteristics, particularly in terms of associated environmental hazards. Substances with the following common features cause the most serious concerns:

- Persistence in environmental media
- High resistance to degradation
- Acute/chronic toxic effects
- Bioaccumulation
- Long-range transboundary migration with air/water flows or with migrating species.

According to recommendations of the International Chemical Security Forum, in February 1997, the UNEP Board approved decision No. 19/13 C to initiate urgent international actions for protection of human health and environment, including reduction and/or elimination of emissions and discharges of the initial group of 12 POPs. Pursuant to the decision, the Intergovernmental Negotiation Committee was established with the mandate to draft a legally binding international instrument on international actions on some POPs. In 2001, the negotiations resulted in signature of the Stockholm Convention. The list of 12 chemicals, regulated by the Convention, incorporates: aldrin, endrin**,** dieldrin, chlordane, DDT, toxaphene, mirex, heptachlor, hexachlorobenzene (HCB), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-dioxins (PCDDs) and dibenzo-furans (PCDFs). The list is not exclusive since the Convention stipulates potential incorporation of other substances to the list after accumulation of necessary information on other substances that meet the five key POPs classification criteria above.

Parties of the Convention agreed to implement actions in order to reduce or eliminate pollution caused by deliberate production and application of POPs, as well as to reduce/eliminate their unintentional releases.

Under the Convention, procedures and criteria for selection of POPs were developed, including, *inter alia* criteria of persistence and bioaccumulation. For example, in order to categorise a chemical substance as a persistent organic pollutant it is necessary to prove that its half-life in water exceeds 2 months or its half-life in soil exceeds 6 months; its bioconcentration/bioaccumulation factor for aquatic species exceeds 5000 or (if bioaccumulation data are not available) its log K_{ow} exceeds 5.

Now, the Convention regulates flows of 12 substances, including 9 pesticides, 1 group of industrial chemicals (PCBs), and by-products (dioxins and furans) of thermal processing of organic substances and chlorine in different forms.

Besides the above instruments, POPs in waste flows are also regulated by the Basel Convention on Transboundary Movement and Disposal of Hazardous Waste (1989). The Basel Convention does not refer to POPs directly, but refers to some substances that were later incorporated to the group of POPs. In particular, in Annex 1 to the Convention, the range of controlled waste incorporates materials containing polychlorinated dibenzo-dioxins and dibenzo-furans, waste chemicals and products containing PCBs, polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs) or their mixtures. Later on, bodies of the Basel Convention paid closer attention to POPs-containing waste (in particular, in the course of development of their technical guidelines on principles of environmentally sound disposal of POPs-containing waste).

In 1998, under auspices of UNEP and UN Food and Agriculture Organisation (FAO), the Rotterdam Convention on Procedures of Prior Informed Consent for International Trade in Hazardous Chemicals and Pesticides was approved, in response to growing international recognition of environmental and health hazards, associated with application of hazardous chemicals. The Convention controls 26 pesticides, including POPs-pesticides.

Several regional agreements (e.g. AMAP, HELCOM, OSPARCOM) also pay major attention to POPs.

It is necessary to note, that PCDDs/PCDFs, polycyclic aromatic hydrocarbons and (to some extent) PCBs and HCB are released with emissions, while other POPs are applied as pesticides, i.e. are released deliberately or unintentionally as components of products or waste. After their initial environmental release, these substances undergo further redistribution.

In order to regulate POPs levels in different media, food, industrial products and emissions, CIS countries apply Maximal Permissible Concentrations, Tentative Permissible Concentrations and Tentative Safe Impact Levels. As POPs impacts are mainly associated with their food intake, Tolerable Daily Intake (TDI) parameters are also used (estimated per 1 kg of body weight).

POPs sources

Obsolete POPs in the last decade

Before establishment of the National Committee for Implementation of the Stockholm Convention by the Kyrgyz Republic, obsolete pesticides had not been monitored in the country for 15 years. As a result, there are only limited data on locations of pesticide burial sites and amounts of pesticides buried. According to estimates of former officials of Agricultural Chemicals Facility (now they are employees of "Azamat-Oil" Corporation) [Pak V.A., Shakirov K. 2002], these sites were prone to leakages, while at inadequately equipped sites pesticides were exposed to air. In the early 1980s, some actions were implemented to store banned pesticides in underground storage facilities (trenches and reinforced concrete bunkers). According to UN reference documents (developed at the base of official reporting of Kyrgyz ministries), in the 1960s - 1970s, aldrin and DDT were banned in Kyrgyzstan. At the same time, reports of the Ministry of Agriculture of 1990 suggest that in two storage facilities in the area of Kungeiskiy contain more than 1 thousand tons of

banned pesticides (including 70 tons of aldrin). In other districts of Kyrgyzstan, up to 230 tons of banned and obsolete pesticides were stored. These data suggest that the overall amount of inventoried stockpiles of pesticides (aggregate figures for 1989-1996) is close to 2000 tons. [Shakirov K., Bekkoenov M., 2002]. Different sources suggest radically different estimates of DDT stockpiles (more than 300 tons in 1980).

Application of POPs in 2003-2004

Now, in Kyrgyzstan, DDT and HCCH are officially replaced by pyrethroids. Annual registered application of these pesticides is about 33 tons, suggesting about 75% degree of replacement of organochlorine pesticides [official information of the country in UNEP documents, 2002]. At the same time, such factors as poor customs control and independent farmers (land in Kyrgyzstan was privatised 4 years ago) allow one to assume that obsolete pesticides are applied without control and pesticide loads may exceed applicable standards.

Field survey data of 2004

In Chuiskaya Oblast (geographically it covers Chuiskaya valley and Suusamyrskaya valley), 95 storage facilities of obsolete and unidentified pesticides were found (moreover, only 38 of them were equipped by concrete bunkers or trenches).

In the most densely populated area of Dzalal-Abadskaya, Oshskaya, and Batkenskaya oblasts (geographically, that crescent-shaped area is located in the South-western Kyrgyzstan, adjacent to Uzbekistan border, in terms of physical geography the area is called Osh-Karasuutinskiy oasis), there are 41 storage facilities and 27 of them meet applicable standards (two looted ones were not taken into consideration).

In Issyk-Kulskaya zone (incorporating Issyk-Kulskaya depression and adjacent mountain ranges); there are 48 storage facilities, while only five of them meet applicable standards. It is worth noting that 31 facilities are located nearby rivers (flowing into Issyk-Kul lake) or in landslide-prone zones - as a result, these facilities pose potential risks of poisoning of the largest recreational lake of the Central Asia.

Several high-altitude mountain districts of the country (about 17% of the country's land area) were inaccessible for our studies due to lack of physical access or due to security reasons - Sary-Dzaz zone (to the East from Issyk-Kul lake, nearby the China border), Tonskiy district (the part of Internal Tian-Shan under control of the Security Service of Kum-Tor Canadian Gold Company) and Alaiyskya valley.

Imported POPs

The reduction of registered amounts of imported pesticides (7063 tons in 1970, 8418 tons in 1980, 4213 tons in 1990, 1500 tons in 2002) does not allow us to suggest any actual reduction of pesticide imports, if we account for 5 to 10-fold contradictions in reported amounts of other substances and materials, imported to the country. At marketplaces, one can easily buy pre-packaged preparations "against bugs", "against melons' bugs", etc. - these preparations are either of unknown origin or produced in China, Pakistan, or

India. In the southern areas of the country, obsolete POPs were illegally delivered from a storage facility in Dzergatalskiy district of Tajikistan - the one looted in the course of the civil war there (1994-98).

NGOs believe that large amounts of banned pesticides are delivered or have been already delivered to Kyrgyzstan due to poor controls.

PCBs and furans

A large number (106) of transformers have been identified with dielectric liquids containing up to 2% PCBs. Dielectric liquids are produced by Chirkikskiy plant nearby Tashkent, while two plants (in Bishkek and Belovodsk) serve as maintenance facilities. Large industrial facilities are commonly allowed to use spent oil (and plastic packaging) for household applications and as fuel (the practice facilitates generation of dioxins).

PCBs are released to air in the course of uncontrolled burning of solid municipal waste in Osh and Bishkek, particularly at low-wind and foggy weather (winter and spring seasons).

POPs contamination levels

According to research studies of 1975 - 1986 [Abylgaziev B.; Genis; Khadjamberdiev B., Khadjamberdiev I.] - HCCH levels exceeded MACs in Jety Oguz river (South-eastern area of Issyk-Kul depression (by 59 fold), and in the downstream areas of Aravan, Ak Buura, Kara Darya and Yassy rivers (all these rivers are located in Oshskaya zone of Fergana depression) by 30-60 fold.

In food products of the Oshskaya zone DDT+DDE levels reached 0.25-0.30 mg/kg in vegetables and meat, and 0.06-0.24 mg/kg in milk [Abylgaziev B., p.147]), while levels of organochlorine pesticides were found to exceed MACs by 3 to 6 fold in some surveyed locations of Oshskaya zone (Suzak, Kok-Yangak, Gelal-Abad, etc.). Annual average indices of pesticide load (kg of active agent per 1 hectare of cultivated land) varied from 1.02 to 3.62 in different districts of Chuiskaya valley (nearby the country's capital city) [Shpirt et. al, 1990].

Due to transition to application of more safe pesticides, about 33 tons of pyrethroids have been already used in the country.

According to the most recent selective studies, pesticide concentrations in water and soils somehow decreased (up to 0.5-2 kg per hectare), but still remain high [Hadjamberdiev I., Tuhvatshin R., 2002; Hadjamberdiev I., Begalieva G., 2002]. Attempts were made to identify spatial distribution of chemical loads at the territory of the country [Hadjamberdiev I., 1996]. In terms of geographic and regional zoning, pesticide loads in South-western valleys of Kyrgyzstan nearby Fergana valley were always high, due to cotton and rice production farms there (up to 10-15 kg in 1970s - 1980), and now pesticide loads are 3 to 5 times higher there comparatively to other areas of the country.

Dioxins

Dioxin levels were not measured due to the high costs of analysis, while indirect indicators (soil and air levels of benzpyrene and polycyclic aromatic hydrocarbons) suggest high levels of dioxins due to use of low quality oil products and uncontrolled burning of PVC waste. In 2001, a group of NGOs succeded in preventing construction of a waste incineration plant in Bishlkek by an Italian ITI company (the plant design stipulated use of outdated technologies, moreover, the city waste contains a high share of organic waste).

Examples of adverse impacts of POPs

A) In 1976, a major fish poisoning occurred in Son-Kel Lake (the second largest lake in the country) due to a flood that destroyed a pesticide storage facility;

B) In 1960s, 1970s and 1980s, open sources and particularly internal publications of different agencies disclosed information on residual levels of DDT and HCCH in fruits, vegetables and animal food (meat, fat, oil, etc.) in different districts of Kyrgyzstan [V. M. Perelygin, A.B.Zotova and B.M.Shapiro, 1968]. In the territory of Kyrgyzstan, cases of poisoning by dirty fruits after application of DDT and organophosphorous pesticides [V.E. Lyubomudrov et al, 1972]. Research studies in these districts demonstrated that broad application of pesticides caused increase of incidence of cardiovascular diseases by 2.6 fold, a 5.8 fold increase in skin diseases; a 2.1 fold increase in nervous disorders (in the case of children of school age); and a 2.5 fold increase in respiratory diseases (in the age group over 50 years) [Shpirt et al. 1990]. DDT was applied in the country for a long time, as a result, now, DDT traces are still found in almost all physiological liquids of the human body. In Kyrgyzstan (and in Kazakhstan, in parallel), research studies were conducted to measure pesticide levels (DDT and HCCH) in different physiological liquids: gastric juice, blood, breast milk. Results of these studies demonstrated high pesticide levels (particularly DDT, DDE, HCCH) in blood serum of pregnant women. These levels were 20 to 100 times higher than levels observed in similar studies, conducted in Sweden [Samuratova R.B. et al, 2002].

Comparative analysis of health indicators of rural residents in 1990s (pregnancy complications, infant health, birth defects) and pesticide loads in districts of residence demonstrated substantial adverse impacts of pesticide contamination [Hadjamberdiev I., Tuhvatshin R., 2002, Hadjamberdiev I., Begalieva G., 2002].

C) In 2004, local residents destroyed the concrete wall of a storage facility in Gelal-Abad zone and looted the facility which contained aldrin. Agricultural lands were seriously polluted and more than twenty local residents were poisoned and one child died.

Legislative acts on POPs management

By 1970, in the country, the following toxic pesticides had been banned: chlordane, isadrin, dieldrin, mercaptophos, phosdrin, phosphamide, dimephox, timet, pyrophos, endrin, M-74, etc.

In order to meet international commitments of the country under the Rotterdam Convention (signed by Kyrgyzstan in 1999) and in response to several requests of public health organisations and NGOs, a Governmental Decree on the list of particularly hazardous substances was approved [2001] - the list incorporates aldrin, heptachlor, DDT, dildrin, lindan, and chlordane.

Status of ratification of the Stockholm Convention

The Convention has been ratified and it is supported by the relevant parliamentary committees and ministries (environment, agriculture, water management), the Customs Service, and some NGOs.

Since early 2004, the National Committee for Implementation of the Stockholm Convention has been operating (National Co-ordinator - M. Bekkoyunov). Representatives of "For Civil Society" NGO participate in the Committee.

Recommendations on elimination of POPs

NGO proposals

Implement an independent a special study of health impacts of pesticides in the most vulnerable districts (nearby Fergana valley) to produce a reliable proof of adverse health impacts in order to convince local residents.

Produce and disseminate brochures on POPs, to air topical broadcasts on these matters in the Kyrgyz and the Uzbek languages (up to a half of rural residents in the southern districts of the country are Uzbek-speaking people).

Maintain topical awareness raising radio and TV broadcasts; to introduce optional specialised courses on POPs in higher education facilities that train specialists for rural areas (medical, pedagogical, etc.).

Campaign in favour of MPs' requests on sales of unidentified pesticides at marketplaces.

References

1. Abylgaziev B.A. Sanitary Problems of Water Sources of Kyrgyzia and their Protection. //Frunze: Ilim, 1982, 108 pp. (Rus.)
2. Genis V.I. Sanitary Aspects of Pesticide Accumulation in Some Environmental Media.// in: Hydrochemical Aspects of Environmental Studies and Environmental Protection, Proceed. of 26th All-Union Hydrochem. Conference, May 1975. Novocherkassk, 1975, p.25-26. (Rus.)
3. Lyubomudrov V.E., Kitaev M.I. Pesticide Intoxication. Frunze: Kyrgyzstan, 1972. - 141 p. (Rus.)
4. Decree No. 376 of the Government of the Republic of Kyrgyzstan of July 27, 2001 "On Measures to Protect the Environment and Human Health from Adverse Impacts of Certain Hazardous Chemicals and Pesticides".
5. UNEP Chemicals. Regional Assessment of Persistent Toxic Substances. Central and North-East Asia. Regional Report. Geneva. 2002 г.
6. Hadjamberdiev B., Hadjamberdiev I. Medical Geography of Kirgizia. Frunze: Ilim 1986, 284 p. (Rus.)
7. Shpirt M.B., Bektemirova P.M., Ryskeldieva E.F. et al. Health Status of Residents of Chuiskaya Valley of Kirgisia in Zones with Different Pesticide Loads. // in: "Ecologic Pulmanology". Frunze, 1990 (compendium of research papers of R&D Institute of Ecology and Infection Prevention, p.41-45. (Rus.)
8. Hadjamberdiev I., Tukhvatshin R. Health disorder as consequence of environment disorder // Proceed "Ecology of Kyrgyzstan" conf, Bishkek, 2002, p.104-106.
9. Hadjamberdiev I., Begalieva G. //in: Proceed 7-th Forum of HPC, Kiev June 2003.
10. Hadjamberdiev I. Computer-cartography estimation of health-dangerous locus in Tien-Shan. //3-d Intern conf Env Impact Assessment, Prague 23-26 Sept 1996.Prague: Czech Technical univ, 1996, v.4, p.703-705.
11. Pak V.A., Shakirov K. The review of a problem and a plan of action on destruction of the forbidden and unsuitable pesticides in Kyrgyzstan, as potential sources Persistent Organic Pollutants (POPs). The State Department on Chemicalization and Plant Protection of the Ministry Rural and a Water Management and a Process Industry of Kyrgyz Republic. UNEP, the Subroutine on chemical substances. 2002.
12. Samuratova R.B., Ishanculov M., Mazhitova Z.K. Consequence of stable toxic substances influence on the health of the Aral Sea Region population. Presented at the 2nd Technical Workshop of UNEP/GEF Regionally Based Assessment of PTS, Central and North East Asia Region (Region VII) , 14-16 May 2002, Hong Cong SAR, PRChina.
13. Country Report from Kazakhstan. Presented at the First Technical Workshop UNEP/GEF Regionally Base Assessment of PTS, Central North-East Asia Region (Region VII), 18-20 March, Tokyo, Japan.

14. Shakirov K., Bekkoesnov M. Country Report from Kyrgyzstan, presented at the 1st Technical Workshop of UNEP/GEF Regionally Based Assessment of PTS, Central and North East Asia Region (Region VII), 18-20 March 2002, Tokyo, Japan. 2002.
15. Bekkoenov M., Jumaev I., Hadjamberdiev I. Persistent organic pollutants in Tien-Shen: Storages and health /to be published in compendium of the Second Ecological Chemistry Forum, Chisinau, May 2005.
16. Djumaev I., Hadjamberdiev I. Information Resources on Persistent Organic Pollutants. "Murok" Environmental Newsletter (for rural residents in the Kyrgyz language), 2004, No. 1-2, p. 28-34..
17. Djumaev I., Hadjamberdiev I. What are POPs? "Murok" (Medical Ecology) Environmental Newsletter 2004, No. 3-4, p.14-19.