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## International POPs Elimination Project

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

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# Analysis and assessment of POPs in the Kochkorskiy District of the Kyrgyz Republic

Unison Civic Environmental Foundation

Kyrgyzstan  
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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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## Abbreviations

POPs - persistent organic pollutants  
PHP - primary hide processing  
PRTR - pollutant release and transfer register  
MoEE - the Ministry of Environment and Emergency Response  
MoER - the Ministry of Emergency Response  
NGO - non-governmental organisation  
CA - citizens' association  
KR - the Kyrgyz Republic  
GEF - the Global Environmental Facility  
UNEP - the UN Environment Programme  
DDT - dichlorodiphenyltrichloroethane  
HCCH - hexachlorocyclohexane

## Introduction

The international community is seriously concerned about the problem of POPs which became fairly well known in late 20th century. Countries seek to co-ordinate their joint actions to address global environmental problems caused by POPs and to prevent their further health and environmental impacts. Unfortunately enough, our country was also affected by the problem. The problem of POPs is of particular importance due to health impacts, long-range migration, toxicity and bioaccumulation of these chemicals.

For many decades, Kyrgyzstan had well developed agriculture and relied on intensive application of diverse plant protection chemicals, including POPs. In order to increase crop yields of cotton, tobacco, lucerne (alfalfa), corn, etc. and to protect plants from different diseases, pesticides were intensively applied in the republic from 1970 - 1994. Later on, these pesticides became known as POPs - DDT, aldrin, heptachlor and others. As a result, now there are storage facilities for obsolete pesticides in different regions of the country, as well as burial sites of similar toxic substances. The soil is polluted and residents of the country suffer many chronic diseases.

We encountered a major problem in the course of the project implementation; it was extremely hard to get access to information on storage/burial facilities for obsolete pesticides. On the one hand, such access limitations are associated with the need to prevent illicit use of such burials for terrorism or other anti-social purposes. On the other hand, every citizen has right to know, whether such burials cause adverse effects on his/her health and the environment (according to the right for health, fixed in Art. 16 of the Constitution of KR).

According to the results of GEF/UNEP project "Provision of Assistance to the Kyrgyz Republic for Development of the National Plan of Implementation of the Stockholm Convention on POPs", there are 1971.8 tons of obsolete pesticides in the Republic, including 1876.8 tons of pesticides buried in sites nearby Kochkor village and in Suzakskiy district, plus 94.9 tons of pesticides that are stored in half-destroyed or inadequately equipped storage facilities without necessary control and protection. From the latter amount of 94.9 tons, 73.3 tons of pesticides were identified (including 22.1 tons of DDT and 111 litres of toxaphene). As for the time being, there is no information on POPs pesticides among the 21.65 tons of unidentified stored pesticide preparations.

In the course of the project implementation we identified so called Site No. 1 that is referred to in archive files as a burial site for banned pesticides, including different DDT preparations. The hazards of DDT and other pesticides are associated with the fact that besides target pests they also kill many other useful insects. Research results suggest that DDT adversely affects all living organisms. DDT accumulates in tissues of mammals; it generates carcinogenic, mutagenic, fetotoxic and hormone-disruption effects, suppresses nervous and immune systems, and induces anaemia and kidney diseases. In the photos, made in the course of visual examination of the burial site, one can easily see that buried chemicals are easily accessible and there are visible signs of the presence of cattle at the burial site (manure).

Pesticides are generally considered as substances that do not affect soil properties substantially. However, it is necessary to remember that some pesticides bioaccumulate in trophic chains that affect plants, insects, predators, and human beings. As a result, soil is a major recipient media for accumulation of different industrial chemicals, including organochlorine pesticides. The presence of pesticides is generally revealed by a strong smell that causes headaches. In fact, we encountered similar symptoms in the course of our field visit to the site. In the Republic, some cases were registered, when people developed health problems after staying in areas of polluted air. Levels of pesticides were found to increase in dust releases. While in air DDT levels reach 0.000004 mg/l, in dust its level increases to 0.04 mg/l (compare to relevant regulatory limits of 0.003 -  $51.6 \times 10^{-6}$  and 1 -  $102 \times 10^{-6}$  respectively.)

In the Soviet period, pesticides and herbicides were applied in excessive doses to increase crop yields. Pesticides of more than 100 different brands, including organochlorine ones, were applied to agricultural land. In the late 1980s, more than 5.0 thousand tons of pesticides were applied at dosages of 10 kg/hectare. Intensive application of pesticides resulted in contamination of cultivated land and in accumulation of obsolete pesticides. In the Soviet period, these obsolete pesticides were buried. While in the Soviet period, these burial sites were closely controlled, now, governmental bodies do not monitor the quality of pesticide burial sites. Such facts are described in our materials.

In order to address these problems by re-burial or by application of other environmentally sound methods it is necessary to consolidate different forces and interests at the national and international levels. Lack of finance levers, information resources and inadequate knowledge - all represent obstacles for neutralisation of environmental hazards in the territory of the region.

## **Project summary**

Implementation of the project "Analysis and Assessment of POPs in Kochkorskiy District of the Kyrgyz Republic" was launched in February 2006 in the framework of the International POPs Elimination Project (IPEP). The project seeks to assess public awareness of POPs and specific POPs-related hazards in Kochkorskiy District of the Kyrgyz Republic. The range of project priorities incorporates pesticide burials and awareness of stakeholders (farmers, local authorities, public health workers, veterinarians, NGO representatives), who work in agriculture and local residents in locations nearby pollution hot spots.

Until recently, persistent organic pollutants were not paid adequate attention as priority pollutants, particularly in remote rural areas, where agriculture is the key economic sector.

Kochkorskiy District (Narynkiy Oblast) is a remote rural district in the Eastern part of the Kyrgyz Republic with well-developed agriculture. Agriculture is a major economic sector for the whole country, but in Kochkorskiy District it is the main economic sector. According to data from 2002, there were 56.2 thousand residents in the district. The district residents are mainly employed in agriculture (including both crop cultivation and livestock farming). Private farming facilities prevail and they cultivate potatoes, wheat and barley, and breed cattle and sheep. Statistical reporting from 2002 suggests 9720 registered private farms in the district, as well as 4 collective farms and 3 state-run ones.

Kochkorskiy district is a typical agricultural district of the Kyrgyz Republic. They are located far away from major cities, lack adequate environmental control and have rather limited information on hazardous chemicals, including pesticides, other agrochemicals, etc. Implementation of the project "Analysis and Assessment of POPs in Kochkorskiy District of the Kyrgyz Republic" would allow us to ascertain the actual situation there and assess real POPs-related developments in the remote agricultural districts of the country.

According to the project proposal, the project incorporates 4 objectives: to review available information on POPs sources in Kochkorskiy district, to conduct a roundtable discussion with local specialists, to assess awareness of POPs, and to identify specific cases, survey local residents and disseminate information.

## 1. Objective 1: To review available information on POPs sources in Kochkorskiy district.

**Aims:** to analyse the reliability of available information and assess real POPs-related developments in the district.

**Methods:** Review of relevant statistical data and publications, a field visit to the pilot district, interviewing local stakeholders.

**Results:** we closely reviewed published data and information on POPs in Kochkorskiy district. In order to assess accessibility and reliability of the data we submitted information requests on POPs to the following governmental bodies:

1. The Department of Agrochemicals and Plant Protection
2. The State Committee for Statistics
3. The Ministry of Agriculture
4. The Ministry of Public Health
5. The State Inspectorate for Supervision of Industrial Safety and Mining
6. The Ministry of Emergency Response
7. The State Agency for Environment and Forestry.

In the course of the project implementation we encountered a problem, as data on POPs sources are scarcely available due to lack of an integrated and easily accessible register of POPs or another information source, that could integrate all relevant information from different agencies. Available sources of information, including the web-site of the GEF/UNEP project contain outdated general information for the national level only.

The State Committee for Statistics maintains registers of economic activities, areas of land under cultivation and private farming facilities. Statistical sources do not contain information on application of different types of pesticides.

Access to agency-specific information is complicated by bureaucratic obstacles. In addition, due to lack of inter-agency cooperation, the data of different agencies differ.

According to preliminary assessments of GEF/UNEP project "Provision of Assistance to the Kyrgyz Republic for Development of the National Plan of Implementation of the Stockholm Convention on POPs", the Kyrgyz Republic lacks a specialised system for state environmental control and monitoring of POPs. Existing pesticide burial sites and storage facilities often do not meet applicable sanitary standards, and pesticides infiltrate to soil and water due to damaged packaging. Banned POPs-pesticides are sold at marketplaces in the country. These pesticides are illegally delivered from other countries or are stolen from old pesticide burial sites. Many toxic agrochemicals are sold at marketplaces without accompanying documents on their producers and chemical composition.

Agriculture is an important economic sector for Kyrgyzstan. In Kochkorskiy district of Narynskiy Oblast it is the dominant economic sector and the key employer, as local residents predominantly work in plant cultivation and animal husbandry.

Table 1. Agricultural facilities of Kochkorskiy district

Agricultural facilities	2000	2001	2002
State-run farms	4	4	3
Collective farms	4	14	4
Private farms	657	676	9720

Sources: "Socio-economic development of Kochkorskiy district", Naryn, 2003.

The National Committee for Statistics of KR, the Ministry of Environment and Emergency Response

Table 2. Areas of agricultural land (hectares) in Kochkorskiy district

<b>Total</b>	<b>441.9</b>	<b>441.9</b>	<b>441.9</b>
Plough land	34.3	30.8	30.8
Perennial crops	59	59	59
Hayfields	0.6	0.6	0.6
Pastures	410.3	410	410

Sources: "Socio-economic development of Kochkorskiy district", Naryn, 2003.  
The National Committee for Statistics of KR

Main sources of releases of toxic chemicals in the region are associated with old storages of pesticides and fertilisers as well as the Chinese mini-plant of primary wool/hide processing and broadly used household ovens. From the above range of sources, old pesticide storage facilities belong to sources of POPs. However, residents of the region use pesticides of unknown origin, that are sold there (mainly illegally imported herbicides, pesticides and veterinary drugs).

According to the Department of Agrochemicals and Plant Protection, there are 12 pesticide storage facilities in Kochkorskiy district that contain 28 tons of banned pesticides. These storage facilities are not repaired by village self-government bodies and do not meet applicable sanitary standards. For example, after flooding of a pesticide storage facility in Kochkorskiy district in 1976, fish were completely poisoned in the second largest mountainous lake of the country (the Son Kel Lake).

Archive files of the Department of Agrochemicals and Plant Protection suggest that a burial site of banned pesticides is located nearby Kurgak Ukok outskirts of Kochkor village. Pesticides were buried there in two stages.

Initial pesticide burials were made there in 1973. At the first stage of burial work, 272.58 tons of 33 different pesticides were buried there, including 39.2 tons of different DDT preparations.

The second stage was completed in 1979 – 1980. At that time, 3085 tons of pesticides of 15 different brands were buried there, including 82% of DDT-based preparations of different composition and concentrations. In addition, reports suggest that 12% HCCH dust was buried there (4.5 tons).

According to information from the above source, pesticides were buried without accounting for their different physical and chemical properties, toxicity, specific properties of pesticide preparations and environmental conditions at the site. In the course of visual examination of the burial site, at least 8 hills were identified. Laboratory studies revealed that a large part of the site is contaminated by residual pesticides, including DDT, DDE, DDD and HCCH.

Local specialists believe that the Ministry of Emergency Response does not have complete information on all burial sites. Available information is scattered and fragmentary and at the local level it is almost inaccessible.

## **2. Objective 2: To conduct a roundtable with local specialists and assess their awareness of POPs.**

**Aims:** to assess the local situation with assistance of local specialists and stakeholders, as official sources may be limited.

**Methods:** an open roundtable discussion, interviewing of stakeholders, questioning of the roundtable participants.

**Results:** the roundtable was held on February 17, 2006 in the Office of the Information Centre for Democracy of Kochkorskiy district. All participants of the roundtable were registered at the beginning of the discussion and were issued relevant handouts (the roundtable agenda, booklets and questionnaires).

The range of the roundtable participants included representatives of *Akimiat* of Kochkorskiy district, the district Administration, Kochkorskiy *Aiyl Okmotu*, the Sanitary and Epidemiological Facility, the district Veterinary Service, citizens' associations, NGOs, etc. (see the list of participants, the roundtable agenda and the protocol of the meeting in the annexes).

In the course of the roundtable proceedings, local NGOs were particularly active. For example, Salbar Kozhaliev, the leader of "Baitup" NGO told us about burials of pesticides and other chemicals in the territory of Tendik village and provided other valuable information for the project. Associated matters were discussed - earlier, they applied to competent bodies but in vain. He suspects that there are pesticide burials in Ak-Zhar, Kochkor, Kurgak Ukok, Zhany Zhol, Kara Suu and Tendik villages. In addition, he stressed that environmental quality in Kochkorskiy district is critical. Representatives of NGOs noted that local residents use residual DDT to combat different plant diseases and sell packs with banned DDT dust without any official control. Answering questions of participants, Mr. Sadybakas Ubaliev, the Chief of Kochkorskiy Territorial Inspectorate, who also participated in the roundtable discussion, said that the Inspectorate does not have documents on burials of chemicals, pesticides or other POPs sources.

Ainazhamal Akimkanova, a public health specialist and a representative of the Sanitary and Epidemiological Facility, informed participants of the roundtable discussion on priority problems of Kochkor residents. First, she noted the problem, associated with lack of a local landfill. Many local residents complain about problems of household waste. Hospital waste, including used plastic syringes and rubber gloves from the obstetrics ward, are simply burned to avoid waste accumulation. In other words, trying to address one problem, people generate another, even more serious one, i.e. the problem of hazardous releases to air and resulting toxic residues.

Second, she noted problems, associated with the primary hide processing plant (PHP Plant). She was not the first person who referred to the facility. All participants complained about the plant, some attempts were made to settle associated matters with the plant managers but in vain. Local residents even filed a lawsuit, but the plant won the court process.

At the final stage of the roundtable, Mr. Solbar Kozhaev, the leader of "Baitup" NGO, said: "We applied many times to different governmental bodies and agencies that, as we assumed, must be interested in our problems, but our problems remain largely the same. We applied to the Ministry of Emergency Response but they recommended us to resolve our problems ourselves. We ask you to help us. Your visit is rather timely and I value your initiative very high. Let's work together and we will provide you any support you need. You will get support of *Akimiat* and *Aiyl Okmotu*. We hope very much that you will go through with your initiative!"

Rakhmanov Kenesh said, "It was our first roundtable with you. I would like to ask you to conduct trainings, discussion clubs, to communicate with ordinary citizens, to bring information to the remotest areas of every district. There are many talks about environmental problems, but we do not see constructive decisions. We need help of such associations as yours, alone we cannot attract attention of authorities, and it is simply impossible, as we tried many times but failed. Help us to find a solution!"

We got many positive responses and our local partners valued our initiative of the POPs project very high. The roundtable participants formulated the following conclusions:

1. To provide information and methodological support to local NGO representatives who deal with environmental problems.
3. To look for potential options to address the problems of ruptured old pesticide burial site, in close cooperation with local partners.

## **2.1. To assess awareness of local specialists of POPs.**

**Aims:** to assess and analyse awareness of local specialists of POPs, their sources and agricultural applications of pesticides.



**Methods:** interviewing the survey participants with application of questionnaires.

**Results:** overall, we surveyed 12 persons (local specialists, who participated in the roundtable). The roundtable was attended by representatives of *Akimi* of Kochkorskiy district, the district Administration, Kochkorskiy *Aiyl Okmotu*, the Sanitary and Epidemiological Facility, the district Veterinary Service, citizens' associations, the district Territorial Inspectorate, etc.

The questionnaire included seven questions and two of them dealt with contact information of a respondent and his/her professional activities.

Five other questions were posed to assess respondents' awareness of POPs, agricultural applications of pesticides, relevant local environmental problems, further information dissemination and specific locations of old pesticide burial sites. Responses to the above questions reflected respondents' awareness of environmental problems (including problems of POPs pollution) and their willingness to disseminate such information further.

Answering the question, whether they were aware of POPs earlier, 58% of our respondents responded negatively. At the same time, the other 42% who had some prior awareness, specified mass media outlets, the local NGO and their professional activities as the main sources of relevant information. Therefore, we may conclude that some stakeholders are aware of the problem, but they form a minority. Further discussion of the problem of POPs pollution in the course of the roundtable proceedings revealed that the respondents have rather general information on the problem, as they were not aware of specific hazard classes of POPs and their health impacts.

In addition, the survey results revealed also that the respondents themselves or their relatives generally did not have personal experience of application of pesticides and fertilisers. Approximately 75% of the respondents said that they do not use pesticides and fertilisers, while 16% of respondents said that they use fertilisers. However, it is necessary to note that our respondents are residents of the district centre, who are not involved in plant cultivation or cattle breeding. A large share of positive responses might be attributed to the fact that they simply do not participate in agricultural activities.

The survey results suggest that 75% of respondents consider household waste as the most relevant problem of the region. In the course of the roundtable, participants also referred to problems, caused by lack of a landfill. 50% of respondents considered burning of plastic and rubber waste, as well as the old pesticide burial site as relevant problems of their region. Only 16% of respondents (2 persons) specified application of chemicals as one of the most relevant problems.

All the respondents expressed their willingness to disseminate further the information they received. Besides that, in the course of discussions, participants noted lack of information and the need to conduct information campaigns, training sessions, dissemination of information materials, etc.

We found that some respondents do not have information of existing storages of obsolete pesticides. Completing questionnaires, half of respondents specified suspected pesticide burial sites. Some of these sites are registered by the Ministry of Emergency Response, while some other sites were unknown earlier.

### **3. Objective 3: To identify specific cases and survey local residents**

**Aims:** to identify specific cases (including pesticide burial sites in the territory of Kochkorskiy district, and other sources of chemical pollution), to assess their quality by a visual examination and to survey local residents who live in close proximity to such pollution sources;

**Methods:** field visits of selected sites, visual examination and review of pesticide burial sites, surveying local residents with application of questionnaires.

**Results:** in the framework of these activities we identified so called **Site No. 1** - the pesticide burial site nearby Kurgak-Ukok, Oro Bashy, Kochkor village (Kochkorskiy district). The site is referred to in archive files of the Department of Agrochemicals and Plant Protection as a burial site of banned

pesticides. Pesticides were buried there in two stages. Initial pesticide burials were made there in 1973. At the first stage of burial works, 272.58 tons of 33 different pesticides were buried there, including 39.2 tons of different DDT preparations. The second stage was completed in 1979 - 1980, at that time 3085 tons of pesticides of 15 different brands were buried there, including 82% of DDT-based preparations of different composition and concentrations. In addition, reports suggest that 12% HCH dust was buried there (4.5 tons).

The burial site is located to the South from the district centre (Kochkor village of Narynskiy Oblast), at a distance of about 10 km from the mountainous settlement. The site is located about 20 m above the ground level and includes nine small artificial hills (see Photo 1). The burial site covers a land area of about 0.9 hectare (dimensions: 60 m x 150 m). Near the site, a strong smell of chemicals may be felt and the smell gets stronger as one goes nearer to the site. After 30 minutes of stay there, we felt throat tickling, headaches and weakness.

The site includes nine hills, about 3 - 4 m in height (dimensions: 11 m x 20 m). Distances between the hills reach about 3 - 4 m. In the course of visual examination we found that 7 hills look intact, without visible damage and ruptures in land embankments. The hills have a cylinder-like shape with a rather stable base.

In the course of visual examination of the eighth hill we found that it was lower comparatively to other ones - 1 m in height (dimensions: 15 m x 20 m). Besides that, some soil depressions were found, as well as small cracks on the surface of the hill.

The ninth hill is ruptured and has clearly visible gaps, there was a strong chemical smell there and soil was covered by "wet" spots and yellow-green deposits (see Photo 2). Besides that, there were damaged metal containers with residual amounts of a yellow-green powder (see photos 3.1, 3.2). Cavities under the soil surface may be easily found (see Photo 4). When strong winds blow, the smell becomes stronger, and the winds blow dust and residual yellow-green chemicals into the air.

At the southern side of the burial we found a trench, 3 - 3.5 m in dept, 20 m in length and 5 m in width (see Photo 5). Besides that, at a distance of 20 m from the last hill, we found an operational sandpit. Local residents said that they do not know about the burial site near the settlement. However, they told us about the smell that becomes stronger after a strong wind or a rain. Strong winds blow dust and residual chemicals to the air which settle afterwards in the territories of nearby settlements.

A farm is located at a distance of about 3 - 3.5 km from the site. A farm worker told us that, in addition to respiratory problems, he observed a serious increase of skin spots.

The site is surrounded by concrete poles (distances between poles reach about 2.5 m) and damaged barbed wire. However, now the fence is almost completely destroyed. Any person can easily access the site and buried pesticides. Besides that, we found traces of the presence of grazing animals at the site (sheep, goats, and cows).

For **Site No. 2** we selected the open chemical storage facility. Local residents said that the facility contains residual chemicals, left after application of chemicals at nearby fields.

The site is located in Ak-Zhar village of Kochkorskiy district. The storage facility is out in the open, without any fencing or covers (see Photo 6). At a distance of about 1 km from the site, residential houses are located. Cultivated fields and a river are located nearby. It is clear, that chemicals from the site can easily contaminate the river. Local residents use water from the river on their fields. The site covers a land area of 10 m x 20 m. There are pieces of solid white chemicals on the land surface and there is rather slight smell. The site is not fenced and there are no covers. Pieces of white chemicals are mixed with residues of paper and plastic packaging. The packaging materials are almost completely destroyed (see Photo 7). Melt water and rainfall wash these chemicals from the site to the river. According to a local resident, the open storage was operational in the Soviet era. At that time, obsolete fertilisers were stored there, while excessive amounts were simply discharged to the river.

As environmentally hazardous **Site No. 3** we selected Kyrgyz-China PHP Plant "Chakmak-Daria" (see [Photo 8](#)). According to local activists, the plant belongs to "Naryn" Free Economic Zone - as a result, it is rather difficult to get adequate information on the facility. However, it is known, that earlier the facility was located in Chuiskiy Oblast of Kazakhstan. At that time, local residents realised that the plant pollutes the environment and poses a major hazard. They demanded to close the facility, but its owners had managed to relocate the plant. Now, the plant operates nearby in Karatoo village of Kochkorskiy district. At a distance of about 100 m from the plant itself, three large pits are located. Overall, they cover about seven hectares. On the day of visual examination, two pits were filled by dirty greenish water (see [Photo 9](#)) with an absolutely unbearable smell. Water from the plant comes to the pit through pipes. One pit is dry now and its bottom is covered by grey sediments that are blown by winds to adjacent areas (see [Photo 10](#)). Near these pits, cultivated fields are located. It is worth noting that these fields show rather high crop yields and unusually large fruits.

In the course of our survey, local residents associated negative environmental changes with operations of the PHP Plant (dry trees, foam dropping from tree leaves, numerous cases of plant diseases) (see [Photo 11](#)). In addition, they reported a higher incidence of allergies (including skin rashes), intensive loss of hair, poorly healable skin sores. However, there are no official medical statistics on such ailments. The lack of relevant public health statistics should be attributed primarily to social problems, as many people do not have the necessary money for treatment or even diagnosis and often do not apply for medical assistance. Besides that, in the course of our survey, we found that workers of the PHP Plant were reluctant to contact us because they feared losing their jobs and earnings. It is worth noting that local residents have different views on the need to close the facility. Some of them categorically demanded to close the PHP Plant, while others feared losing their jobs.

Household waste represents another problem of the Kochkorskiy district. Many local residents simply burn their waste without prior separation. They mainly burn agricultural residues, waste paper, plastic bottles, etc. They apply residual ash to cultivated fields and gardens or discharge it into special pits.

### **Results of the survey of local residents**

The average age of respondents was 47.8 years. They included 46.7%, men and 53.3% women. Answering the question whether they "know about burial sites near the region", 73% of respondents responded positively, while 13% of them were able to specify particular locations and others said that they heard about such burial sites but do not know specific locations. Approximately 20% of the respondents reported knowing about POPs-associated hazards. All (100%) the respondents said that they burn agricultural residues and household waste, and apply residual ash to the fields or bury it in the ground. About 6% of respondents had no idea about the presence of processing industries in their region and their health and environmental impacts. The rest (94%) knew about the Kyrgyz-China PHP Plant operating in the region. About 53% of respondents noted its adverse health impacts, while 33% of respondents noted its adverse impacts on nearby trees.

About 53.3% of respondents proposed closing the plant, and 6.6% of respondents proposed payment of compensation. About 6.6% of respondents argued for continuation of operations of the plant but without environmental damage, and 26.6% of respondents proposed burying open POPs sources. All (100%) the respondents argued for broad dissemination of information on POPs burials, health and environmental impacts of toxic chemicals. Besides that, they noted the need to apply different forms of information dissemination, including seminars, discussions, and media publications.

Notwithstanding a generally low public awareness, there are some active representatives of residents of the region, who make efforts to address these problems. However, local authorities have no funds to control the burial site or waste dumps. There are numerous unauthorised waste dumps in the district centre now. Besides that, the Kyrgyz-Chinese PHP Plant does not disclose information to the public on chemicals it applies in production processes. So far, local activists failed to make a real difference. The majority of local residents need more detailed information on all sources of environmental risks. Besides that, it is necessary to inform representatives of governmental bodies and local authorities (see [photos 12, 13, 14](#))

#### 4. Objective 4: To disseminate information

**Aims:** to disseminate information on persistent organic pollutants, pesticides, household waste, other pollution sources, their health and environmental impacts.

**Methods:** publications in local printed media outlets in the Kyrgyz language (to make information accessible for local residents, publications in central environmental media outlets (including electronic ones), provision of information on existing burial sites at the territory of Kochkorskiy district to relevant governmental agencies (information letters).

**Results:** articles in the Kyrgyz language are planned in a local newspaper ("Emgek Tuusu"), in printed and electronic versions of ECOIS newsletter (an environmental information service), information on the project was mailed to electronic news services "Eco-Pravda" ([anuta@ecopress.kz](mailto:anuta@ecopress.kz)); the Harvard University ([Central-Eurasia-L@fas.harvard.edu](mailto:Central-Eurasia-L@fas.harvard.edu)); and to sites of international organisations and projects, including UNDP ([vvg@iuk.kg](mailto:vvg@iuk.kg)); information letters were sent to the Ministry of Emergency Response, the State Agency for Environment and Forestry.

Besides that, information on activities of "UNISON" Environmental Non-governmental Fund in the course of implementation of project "Analysis and Assessment of POPs in Kochkorskiy District of the Kyrgyz Republic" is posted at [www.unison.kg](http://www.unison.kg).

Articles in the Kyrgyz language in "Emgek Tuusu" Kochkor newspaper would fill the information gap of local residents, while posting of project materials in the Internet would allow easy access to the project information, as the Internet's global audience is steadily growing.

Objective 4 is particularly important in the framework on this project, because the survey results and our communications with local residents revealed their extremely low awareness of health and environmental impacts of POPs. We found cases of application of obsolete pesticides in agriculture, burning of agricultural residues and household waste (including plastic waste). The project results suggest a rather weak control of governmental territorial bodies, lack of information on chemicals used by local facilities, their health and environmental impacts. Low income levels do not allow local residents to apply for medical diagnostics and treatment services.

In the framework of the project we disseminated information on adverse impacts of POPs on human health, flora and fauna, we explained that the problem of persistent organic pollutants is global, that it is necessary for every individual on the Earth to have a responsible attitude and to make his/her personal contribution to addressing the problem and saving life on the Earth.

Our applications to competent governmental bodies seek to attract their attention to existing threats in the region and the whole country. We expect ministries of agencies of Kyrgyzstan to participate more actively in addressing environmental security problems. They should maintain a close control and monitor burial sites of hazardous toxic chemicals. They should introduce a firm environmental control of facilities that discharge toxic chemicals to the environment. The health of the country's population, quality of its environment, and health of future generations depend now on their professionalism and responsible attitudes.

#### Conclusions

According to results of the survey of local specialists, we may conclude that they are aware about POPs in general but they do not understand specific details of the problem and associated risks. Local NGOs operate actively and attract public attention to environmental impacts of old chemical storage facilities. Results of the survey and the roundtable discussions suggest rather low awareness of POPs. Besides that, it is necessary to note that governmental bodies do not have complete information on these matters. Locations of burial sites, referred to in completed questionnaires, should be examined and incorporated into MoER registers, if necessary.

Summing up, we can say that the Kochkorskiy district faces a complex web of environmental problems: the burial site of toxic chemicals, household waste and operations of the PHP Plant. The majority of our respondents complained about growing numbers of allergic skin diseases, but there are no official statistics of their applications for medical assistance due to low income levels and social vulnerability of rural residents. Notwithstanding a generally low awareness of sources of environmental problems, some public activists make some efforts, caring about the environment and future generations. However, their efforts do not induce competent governmental bodies to assess the situation adequately. Local authorities prefer to remain passive; they prefer to remain dumb and blind. However, the problems do not disappear, they still remain relevant and may transform into a major environmental disaster for Kochkorskiy district and the whole of Kyrgyzstan.

## References

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