



## International POPs Elimination Project

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

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# Identification of Sources of Dioxins, Furans, PCBs and the Campaign Against POPs in Central Asia

**For Civil Society NGO, Kyrgyzstan**

**For Environmentally Clean Fergana, Uzbekistan**

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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

# Identification of Sources of Dioxins, Furans, PCBs and the Campaign Against POPs in Central Asia

In the framework of the International POPs Elimination Project, we assessed releases of polychlorinated biphenyls (PCBs), dioxins and furans in the Central Asia region. The project results suggest high POPs-related health risks for residents of our countries.

## **The range of PCDDs/PCDFs sources in the territories of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan incorporates:**

A) Industrial facilities, including:

Metallurgy (the aluminium plant in Tajikistan, complex ore processing plants in Kadamjai (Kyrgyzstan) and Navoi 1 and 2 (Uzbekistan); Balkhash Copper Smelter and Ust-Kamenogorsk Steel Plant in Kazakhstan;

Chemical facilities (a pesticide-production facility in Kazakhstan, ready for operation);

Petrochemical plants (petrochemical facilities in Atyrau, Kazakhstan); a paper and pulp plant in Chuiskiy Oblast of Kyrgyzstan); and power industry facilities.

B) Waste incinerators (these facilities are scattered in large and medium-sized cities of the region);

C) Open uncontrolled burning of un-separated waste (everywhere);

D) Fossil fuel-fired utility and industrial boilers (everywhere);

E) Motor vehicles, particularly those burning leaded gasoline (everywhere);

F) Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction in textile and leather processing facilities) - (textile and leather processing facilities in Dushanbe, Osh, Namangan, Fergana, Tashkent, Bishkek, Taraz);

G) Smouldering of copper cables (everywhere);

## **Unofficial assessment of PCDDs/PCDFs releases at the territory of Kazakhstan, Kyrgyzstan, Uzbekistan and Tajikistan (in g TEQ/year)**

The most potentially hazardous facilities that will be commissioned in 2006 are also shown.

Quantitative assessment of annual average POPs emissions for every identified individual process are based on the standard methodology for quantification of releases in the UNEP Standardised Toolkit (2001), accounting for the comments of Pat Costner, IPEN Senior Science Consultant (2005).

## **Types of equipment/activities - sources of PCDDs/PCDFs**

### **Waste incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge.**

Karaganda (the plant is expected to be commissioned in 2007, anticipated emissions 96.00 g TEQ/year);  
Minor hazardous waste incinerators of different agencies in Dushanbe and Tashkent  
(their performance indicators were not found)

### **Cement kilns firing hazardous waste**

They have not been identified.

### **Production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching**

Waste paper processing with application of pulp bleaching operations (g TEQ/year):

Almaty - 0.023;

Tashkent - 0.086

Other types of such processing:

in Kazakhstan - 0.093;

Kyrgyzstan- 0.017;

no data were obtained in Uzbekistan and Tajikistan.

### **Thermal processes in the metallurgical industry**

Secondary smelting of non-ferrous metals (inc. aluminium) (g TEQ/year):

Kazakhstan - 8.189;

Kyrgyzstan - none;

Uzbekistan - 6.095;

Tajikistan - 0.063

Secondary smelting of iron and steel:

Kazakhstan - 6.526;

Kyrgyzstan - none;

Uzbekistan - 2.032;

Tajikistan - none.

### **Open burning of waste, including burning of landfill sites (only major cities and important irrigated land areas) (g TEQ/year)**

Nearby cities of:

Kazakhstan - 56.257;

Kyrgyzstan - 7.141;

Uzbekistan - 25.435;

Tajikistan - 4.056;

and in rural irrigated zones of Fergana valley (Kyrgyzstan и Uzbekistan) - 15.746.

### **Permanently burning sources (g TEQ/year)**

Kazakhstan - 13.348;

Kyrgyzstan - none;

Uzbekistan - 3.373;

Tajikistan - none.

**Fossil fuel-fired utility and industrial boilers (g TEQ/year):**

(including fossil fuel-fired power plants and boilers in residential houses):

Kazakhstan - 35.240,

Kyrgyzstan - 7.161,

Uzbekistan - 49.054;

Tajikistan - 4.393.

**Production of inorganic materials (g TEQ/year):**

Kazakhstan - 28.375;

Kyrgyzstan - 2.977;

Uzbekistan - 9.058;

Tajikistan - less than 0.001.

**Firing installations for wood and other biomass fuels (g TEQ/year):**

(heating and cooking)

Kazakhstan - 5.584;

Kyrgyzstan - 2.012;

Uzbekistan - 3.088;

Tajikistan - 0.093

**Uncontrolled burning:**

Kazakhstan - 16.467;

Kyrgyzstan - 2.497;

Uzbekistan - 9.956;

Tajikistan - 1.370

**Specific chemical production processes releasing unintentionally formed persistent organic pollutants, especially production of chlorophenols and chloranil.**

So far, there are no such operational facilities in Central Asia. However, in Aktau (Kazakhstan) in late 2006, a chemical plant will be commissioned. The plant will produce nitrogen and phosphorous fertilisers and organochlorine chemicals.

**Crematoria (g TEQ/year):**

Officially, no crematoria operate; however, there are some in different agencies (in public health facilities, defence and MoI facilities). An approximate estimate for all 4 countries suggests releases of 0.290.

**Motor vehicles, particularly those burning leaded gasoline (g TEQ/year):**

Kazakhstan - 1.431;

Kyrgyzstan - 0.121;

Uzbekistan - 0.672;

Tajikistan - 0.033

**Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction) (g TEQ/year):**

Kazakhstan - 0.035;

Kyrgyzstan - 0.002;

Uzbekistan - 0.007;

Tajikistan - 0.001

**Oil waste treatment (g TEQ/year):**

Kazakhstan - 12.357;

Uzbekistan - 1.104

**Miscellaneous sources (g TEQ/year):**

**Smokehouses**

Kazakhstan - 0.033;  
Kyrgyzstan - 0.002;  
Uzbekistan - 0.021;  
Tajikistan - 0.001

**Waste storages (g TEQ/year):**

Kazakhstan - 48.683;  
Kyrgyzstan - 26.028;  
Uzbekistan - 14.045;  
Tajikistan - 39.749.

**Total for Kazakhstan, Kyrgyzstan, Uzbekistan and Tajikistan:** 471.454 g TEQ/year

**Sites with large numbers of industrial transformers and capacitors, filled by PCBs-containing oil (up to 1-2% vol.).**

The Stockholm Convention (ratified by Kazakhstan, Kyrgyzstan and Uzbekistan) classifies PCBs as especially hazardous chemicals that must be completely banned by 2020.

Cities, countries	Facilities	
Bishkek, Kyrgyzstan	The Wool Cloth Plant	70 capacitors KS-2-0 and 38-50-zu3 3 capacitors KS-2-04-67-zu3
Chui-Tokmok, Kyrgyzstan	"Interglass" facility	2 transformers TNZ
Karakol, Kyrgyzstan	High voltage substation	348 capacitors KS-2-1 and 05-60-1u1
Osh, Kyrgyzstan	High voltage substation	324 capacitors KS-2A-0, 66-40-Zu3
Chirchik, Uzbekistan	Transformers repair facility	Different capacitors (30-50 units) and transformers (3-20 units)

Estimated volumes of dielectric liquids in TNZ transformers and capacitors: 25 tons in Kyrgyzstan, 65 tons in Uzbekistan and 78 tons in Kazakhstan.

**Public awareness-raising**

In the framework of the project we conducted a seminar "Hazardous Chemicals in Central Asia".

The seminar was attended by 24 representatives of NGOs from Kyrgyzstan, Kazakhstan and Uzbekistan, by officials of the Ministry of Agriculture and the Ministry of Water Management of Kyrgyzstan, representatives of oblast-level authorities and 2 MPs - members of relevant parliamentary committees of the Parliament of Kyrgyzstan.

The seminar participants discussed assessments of pollution of the Central Asia region by obsolete pesticides, dioxins, furans and PCBs, made by "For Civil Society" NGO.

They also discussed the contemporary situation in Kazakhstan, Kyrgyzstan, Uzbekistan and Tajikistan, associated with signature of several international conventions on pollution and transboundary transfer of pollutants. Experts provided explanations on specific features of bio-transformation of organic pollutants, their health impacts, national security risks and available preventive measures.

The seminar participants particularly focused on the following pollution sources:

- unorganised burning of plastic films after their agricultural use in summer-autumn seasons;
- waste incineration plants (one incinerator is being commissioned in Karaganda and there are plans to construct one in Bishkek);
- PE bags producing plants in Chuiskiy valley and the transformer-producing plant in Chirchik.

The seminar participants proposed:

- to initiate parliamentary discussions in the Parliament of Kazakhstan on:
  - signature and ratification of the Protocol on Pollution Release and Transfer Registers to the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice on Environmental Matters;
  - enacting additional regulations on measures to prevent POPs pollution,
- environmental NGOs of the Central Asia region to intensify awareness raising activities for rural residents, to publish posters and brochures on POPs-related risks at national languages and involve other NGOs into joint activities (unions of drinking water consumers, pensioners, consumer rights groups, women's groups in rural areas, etc.).

## Annex

Methodology:

Releases were estimated, according to data on similar sources from the UNEP Toolkit and relevant reports of the European WHO Centre for Health and Environment with jurisdiction in the Central Asia countries.

As for discussed approaches, we assumed factor of 2/3 for agricultural wastes that were "affected" or "burned in poor conditions" as such agricultural residues often contain substantial amounts of pesticides or calcium hypochlorite that is often used for waste disinfection, i.e. we used the emission factor of 30 ng TEQ/kg. In the case of uncontrolled burning of household waste (open burning or waste burning in ovens), we used the emission factor from the UNEP Toolkit (300 ng TEQ/kg), while in the case of landfill fires (officially they are registered as solid municipal waste dumps, but actually they represent mixed waste dumps, where "deratisation" is often used - i.e. killing rats by potent and often obsolete pesticides), we applied the emission factor of 1,000 hg TEQ/kg.

If the data will be used for comparative analysis, it is worth to note that in English language publications (inc. the UNEP Toolkit), emission factors are measured in µg/metric ton or µg TEQ/t. We recalculated emission factors into TEQ.

## References

UNEP Chemicals, 2001. Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases. Draft, January 2001. Geneva.

Pat Costner. Assessment of Emissions and Main Sources of Dioxins in the Context of the Stockholm Convention. IPEN, 2005 (translation of Eco-Accord Centre) 34 pp.