

# **The problems and the difficulties in understanding the texts of the last three protocols of Convention on Long Range Transboundary Air Pollution**

Andrei Pilipchuk  
Republic of Belarus  
an.pilipchuk@gmail.com

# Persistent organics pollutants

---

Dioksins/furans and PCB by manufacture of metals (metallurgy), the industry of building materials and at burning of a waste

PAH and HCB at fuel burning in power sector, especially in low-power boiler installations and at burning of a waste and the chemical and petrochemical industry

## **In order to meet the requirements of the Protocol on POPs, the following was done**

---

determined by the accounting, inventory of obsolete pesticides, the requirements for their storage, transportation

carried out the inventory of equipment containing PCBs

established the procedure for repacking, order and methods of identification of obsolete pesticides

established the requirements for storage and handling equipment and waste containing PCBs

determined the procedure for organizing and conducting environmental monitoring in the vicinity of the special objects

established the requirements to work on the disposal of obsolete pesticides

prepared the technical regulations on the inventory and accounting of emissions of POPs and HM into the air

## List of main categories in EECCA countries, that need to be regulated in accordance with the Protocol on POPs

---

**Category 1:** Solid fuel combustion in stationary boilers

**Category 2:** Installations for the production of pig-iron or steel (primary or secondary fusion, including electric arc furnaces), production of secondary non-ferrous metals in metallurgical and engineering sectors

**Category 3:** Installations for the production of cement clinker in rotary kilns production lime, brick in the construction industry

**Category 4:** Incineration of chemical and municipal waste

## Problems that prevent EECCA countries to ratify of the Protocol on POPs

(1)

contains requirements for the base year, ie it needs to be selected and then reach that level

protocol has emission limits (restrictions) for specific sources such as waste incineration

POPs emissions are sufficiently small value in comparison with standard substances, and accordingly, the accuracy of their determination is low

the specific emissions of POPs have a fairly high uncertainty (100%), and, accordingly, their application leads to the fact that one year you will run out in the emission ceiling for the second year does not fit, at this very difficult instrument measurements confirm the calculated (estimated, specific), the quantity of emissions

## Problems that prevent EECCA countries to ratify the ratification of the Protocol on POPs

(2)

the large uncertainty resulting emissions of POPs have a fairly low accuracy but because of their small value it can lead to a breach of ceilings

POPs tend to "peak", ie strong dependence on the fuel used, for example, the use of tires very seriously increase the emissions of dioxins, and because emissions themselves have little value, the use of tires will do dioxin emissions in a given year is much greater than in the previous year, and is likely to be exceeded the base year emissions

Implementation of BAT requires substantial time and financial resources

lack of modern equipment allows the control and monitoring of emissions of POPs from major enterprises and the quality of the air in the whole country

the absence of clear accounting rules POPs during the initial inventory of the enterprises, and reporting on emissions of POPs for both enterprises and for the whole country

## A variety of scenarios and set targets to reduce emissions of POPs until 2020

Sector	% to 2015		% to 2020	
	respect level in 2010	respect level in 1990	respect level in 2010	respect level in 1990
<b>Altogether</b>	<b>20</b>	<b>5</b>	<b>30</b>	<b>15</b>
Waste incineration	10-15	1-5	20-30	5-10
Stationary combustion of solid fuels	15-20	1-5	20-30	10-15
Fuel combustion in the household sector	5-10	1-5	10-20	5-10
Steel production	20-25	5-10	30-40	15-20
Production of iron	25-30	10-15	30-40	15-20
Cement production	20-25	10-15	40-50	10-20

## Mechanisms for achieving the targets

---

further improvement of the legislative framework to reduce unintentional releases of POPs

creating a regulatory basis of accounting, valuation and monitoring of POPs

improving inventory of POPs at the enterprise level

economic incentives for the reduction of POPs

## Monitoring and inventory of POPs

---

- to improve the accuracy of estimates of POPs at different levels (national, sectoral, point sources);
- to identify previously unrecorded sources of POPs;
- provide information for assessment (specification) of the specific emission of POPs;
- clarify the priorities for reducing the emissions of POPs;
- to create a data base development of measures to reduce emissions of POPs in accordance with obligations under the Stockholm Convention on POPs;
- establish a base cost estimates for reducing the emissions of POPs and benefits due to the reduction of emissions;
- to create an information base for risk assessment for human health and ecosystems due to unintentional releases of POPs;
- to create a data base assessment of the transport and dispersion of POPs

# Heavy metals

---

Manufacturing industry and building (first of all cement and glass industry) – main source of mercury (86 %), lead (53 %), cadmium and arsenic (52 %)

Stationary oil firing is the main source of nickel emission (63 %)

The production of metals is the main source of copper emission (69 %), chromium (72 %) and zinc (83 %)

## **In order to meet the requirements of the Protocol on HM, the following was done**

---

the government provides tax remissions and financial support for the introduction of the modern technologies and cleaning systems

the manufacture of fuel with the concentration of lead that exceeds 0.013 gram/square decimeter has been forbidden (EN 228:1993)

the recommendations for the inventorization of the heavy metals were given

## List of categories in EECCA countries, that need to be regulated in accordance with the Annex II of the Protocol on Heavy Metals

---

**Category 1:** Combustion installations with a net rated thermal input exceeding 50 MW

**Category 2:** Installations for the production of pig-iron or steel (primary or secondary fusion, including electric arc furnaces) including continuous casting, with a capacity exceeding 2.5 tonnes per hour

**Category 3:** Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day

**Category 4:** Installations for the manufacture of glass using lead in the process with a melting capacity exceeding 20 tonnes per day

## Problems that prevent EECCA countries to ratify of the Protocol on Heavy Metals

---

series of technologies and equipments have higher degree of the heavy metals and particles concentration, then it is defined in the Annex III and V of the Protocol

it is necessary to make changes in the system of inventorization of emissions as annual statistical reports include heavy metals emissions only in case of their usage in the engineering process or in raw materials

financial expenses on the introduction of BAT, systems controlling the heavy metals and particles emission, monitoring of emissions

## To fulfill obligations under the Protocol on Heavy Metals is necessary to implement the next complex of measures

---

development of regulatory and methodological support of the obligations under the Protocol

creating a regulatory basis of accounting and regulation of emissions of heavy metals on the enterprises, monitoring of emissions

improving emission inventories at the national, regional and local levels

predicting the emissions of heavy metals

integral assessment of heavy metals

providing detailed reports on emissions in the EMEP program

control of compliance with emission ceilings of heavy metals

monitoring of emissions of heavy metals

## Measures to reduce emissions of particulate matter and correspondingly HM and POPs

---

technically feasible emission reduction TSP may be about 53.4% to the level of the baseline, 38.6% of the 2005 level, but ... technically feasible emission reduction PM<sub>2,5</sub> could reach 51.4% to the level of the baseline, 2.0% of the 2005 level,

but ... require cost about 220 million euros / year (unit cost 3.2 thousand euro per tonne emission reduction)

needed technical projects in the sectors of the EU - 04: The manufacturing processes 07: motor vehicles, 08: Other mobile sources and machinery;

requires the introduction of best available technology to process the replacement of cast iron open cupola on the installation of closed type, for lime kilns, the transition to the Euro IV standard for diesel trucks and buses with their phased implementation over the period of 15 years with annual foreign investments are not less than 100 million euros

# Gothenburg Protocol

~~Gothenburg Protocol is the most complex in terms of compliance and implementation, given that contains provisions on critical loads and levels, requirements for reducing major pollutants (NO<sub>x</sub>, SO<sub>2</sub>, PM, VOCs, ammonia), the provisions in relation to mobile sources and fuels~~

System of regulation of VOC emissions from stationary sources have a different from the one adhering to the Gothenburg Protocol, but...  
to VOCs in the Gothenburg Protocol provides for a 10-year postponement for the implementation of the most difficult commitment to apply best available techniques and to achieve the emission limit values in the key sectors of the emissions (Annex VI and / or VIII)  
requires the development of documents on regulation of VOC emissions if corresponding to the obligations of the Protocol

practically no programs and measures to control ammonia emissions, but...  
in respect of NH<sub>3</sub> in the Gothenburg Protocol is not adopted new restrictions and size limits emissions in key sectors, and thus the application IX remains unchanged;

# Gothenburg Protocol

---

the Republic of Belarus to perform many of the commitments are available in the current Gothenburg Protocol:

for SO<sub>2</sub> and NO<sub>x</sub> Belarus fulfills all obligations of the Protocol on the reduction of sulfur emissions or their transboundary fluxes by at least 30 percent, the Protocol on the limitation of emissions of nitrogen oxides or their transboundary fluxes;

in respect of PM<sub>2.5</sub> in the Republic of Belarus adopted technical regulations for the process under Annex X of the Gothenburg Protocol.

## **Conclusions: The main activities to be implemented in EECCA countries to join the three most recent protocols**

---

for the fulfillment of the defined plans country of EECCA needs the help and consultation of the international experts for the stating of the efficiency of the planned actions;

allocation of funds from donor countries for the execution of full-scale projects to inventory, monitoring of POPs and HM, the development of the National plan of actions on reduction emissions of pollutants and fulfillment of the obligations of the Protocols on Heavy Metals and POPs (the total cost for the implementation of these measures for the two protocols is estimated at 1.8 million euros)

to set emission reduction targets

to make changes in legislation

introduction of the principles of BAT

establishment of ELV

## Conclusions: The main activities to be implemented in EECCA countries to join the three most recent protocols

---

Need to implement the following projects of international technical assistance to EECCA countries from 2014 to 2020

1. Assessment of transboundary air pollution from sources of emissions, including assessment of major polluting substances in the last three Protocols to the Convention. The preliminary project cost 650 thous \$.
2. Implementation of the provisions of the Guidance document on control techniques for emissions of sulfur, nitrogen oxides, non-methane volatile organic compounds and particulate matter from stationary sources for priority in EECCA industries, taking into account the interests of the UNECE region as a whole with the implementation of pilot projects for each of the sectors. The preliminary project cost 4.5 million \$.
3. The calculation of the cost of achieving the requirements of the Gothenburg Protocol to the largest enterprises which emit into the air a total of more than 5,000 tons of pollutants covered by the Gothenburg Protocol. The preliminary project cost 800 thous \$.

## Conclusions: The main activities to be implemented in EECCA countries to join the three most recent protocols

---

4. Implementation of the best available technology for the sector "non-industrial combustion plants" through the implementation of best available techniques by inefficient fuel combustion plants. The preliminary project cost of 5,4 million \$. For reference: the sector has significant potential to reduce particulate matter 2.5 microns fraction of 17%, but the unit cost of reducing emissions is too high.

5. Implementation of the best available technology to process iron and steel casting with the replacement of the open cupola furnaces, electric arc furnaces to install closed-type furnaces for firing cement and lime. The preliminary project cost of 12,9 million \$. For reference: the processes of cast iron and steel castings have the potential to reduce the total solids content at the level of 19.6%, calcination processes of cement and lime have the potential to reduce the total solids particles at the level of 36%.

6. Implementation of the best available technologies in the livestock sector to reduce ammonia emissions. The preliminary project cost of 7,6 million \$. For reference: The livestock sector is a major contributor to the emissions of ammonia into the environment at the level of 69% of total emissions.