

ACAP PROGRESS REPORT  
TO SENIOR ARCTIC OFFICIALS

극지연구소

16-17 March, 2011  
Kopenhagen, Denmark

## REPORT TO SENIOR ARCTIC OFFICIALS

According to ACAP Work Plan 2009-2011, ACAP will continue to implement projects approved by the Ministers to:

- Review progress in reducing contaminants the Arctic, including the impact of ACAP projects and capacity built through ACAP as well as complementary national actions of Arctic Council member states.
- Cooperate with other Working Groups, in particular PAME and AMAP, and the Short-Lived Climate Forcers Task Force (SLCF TF) to exchange information on contamination in the Arctic and progress in making reductions.
- Cooperate with Barents Euro Arctic Council (BEAC) on hot spot exclusion from the BEAC HS list.
- Develop an Integrated Hazardous Waste Management Strategy (IHWMS) focusing on the Northern Regions of the Russian Federation that will address, among other items, disposition and destruction of collected contaminants, mercury containing wastes, brominated flame retardants (BFR), POPs including PCBs and obsolete pesticides. A report presenting a strategy for at least one region will be delivered to the Ministerial meeting in 2013.
- Prepare demonstration project on diesel black carbon reductions in the Arctic, taking into account needs of indigenous populations, and identify additional projects on short-lived climate forcers (SLCFs) that ACAP may wish to undertake as part of its new SLCF contaminants project steering group.
- Complete obsolete pesticides inventory and safe storage project in the remaining Russian Arctic priority regions.
- Assess together with the Russian experts and Ministry of Natural Resources and Environment the environmental performance of Russian hazardous waste destruction facilities for destruction of hazardous waste, including obsolete pesticides, PCBs and other POPs as soon as such capacity becomes available. Implement at least one demonstration projects on environmentally sound destruction of obsolete pesticides and PCBs according to the Stockholm Convention. A report on the results from the assessment and demonstration project will be delivered to the Ministerial meeting in 2013.

- To further identify important point sources and to implement control technologies for reduction/elimination of dioxin/furan releases at such point sources e.g. pulp and paper mills, metal industries, cement kilns and waste incineration plants in the Russian Arctic. A report summarizing the results from the work will be delivered to the Ministerial meeting in 2013.
- As contribution to UNEP Global Mercury Partnership, prepare strategy for further mercury reductions in the Arctic including Terms of References and business plan for a demonstration projects in one or two regions of Northwest Russia on demonstration projects to address additional mercury-release sectors in Russia (products, coal-fired power plants, non-ferrous metal production and mining).
- Continue to seek possibilities to reduce brominated flame retardant (BFR) releases to the Arctic.
- Identify areas of ACAP activity that are relevant to reducing indigenous communities' exposure to contaminants in remote areas of the Arctic in co-operation with the indigenous people organizations (IPCAP) and explore synergies between the priorities identified by ACAP and indigenous peoples' organizations.
- Implement model projects on safe handling, storage and treatment of hazardous chemicals present as local sources of contamination on remote arctic areas incl. Franz Josef Land (FJL).
- Continue cooperation with the Barents Euro-Arctic Council and NEFCO to address "hot spots" in the Arctic.
- Continue cooperation with NEFCO to finance and facilitate implementation of ACAP projects and mobilize the Project Support Instrument (PSI) and define project eligibility requirements.
- Initiate co-operation to address the contamination issues arising from the oil, gas, mining, and shipping sectors in the Arctic based on the findings and recommendations of the Assessment of Oil and Gas Activities in the Arctic by AMAP and the PAME Arctic Ocean Review and related Arctic Council initiatives in these areas.
- Enhance outreach and information exchange to promote successful projects of ACAP, including among relevant international organizations.

## ACAP PROGRESS SINCE SENIOR ARCTIC OFFICIALS MEETING

OF OCTOBER 2010

### **INTEGRATED HAZARDOUS WASTE MANAGEMENT STRATEGY (IHWMS)**

**(CHAIR: RUSSIA)**

The IHWMS Project Steering Group (PSG) was created by the ACAP Working Group to develop an IHWMS in the Northern Regions of the Russian Federation. Project Steering Group (PSG) chaired by Russia, co-chaired by USA and Norway has finished development of Terms of Reference (TOR), which was finally approved on 3 September 2010 at the regular ACAP working group meeting in Oslo.

The IHWMS goal is to address selected Northern regions of the Russian Federation and focus on promoting the environmentally sound management of the 1st and 2<sup>nd</sup> categories of hazardous wastes (Russian National Waste Classifier) to be determined by the PSG (e.g., obsolete pesticides, mercury-containing wastes, PCB-containing wastes, waste oils, batteries, solvents and medical waste or others. Attention may also be paid to household hazardous waste management).

The overall objective of this Project is to develop an IHWMS for selected Northern regions of the Russian Federation, aimed at improving waste management practices in order to decrease the negative impact on the Arctic environment from hazardous waste streams.

Other objectives include:

- facilitating the development of environmentally sound hazardous waste management in Russia;
- sharing knowledge and lessons-learned regarding the development and operation of hazardous waste management systems in the other areas of the Arctic; and
- leveraging expertise of relevant ACAP PSGs.

The IHWMS should focus on Russian 1 and 2 hazard waste categories (Russian National Waste Classifier), and the regional hazardous waste management system for such wastes.

The IHWMS should be developed for selected Northern regions of the Russian Federation and introduced to the ACAP WG for its consideration. The IHWMS should set-forth recommendations for a future waste management

system(s) for the selected region(s), based on a few selected waste streams, including identification of the waste producer(s) (industry) and other stakeholders, storage, collection, transportation and environmentally sound management (e.g., treatment, destruction, or disposal) of the waste. The IHWMS projects should identify existing gaps and barriers in the current waste management system(s). The IHWMS projects should include an action plan recommending possible needs for technical, administrative, legislative and financial incentive development.

Projects under the scope of this Project Description should be developed according to the AC Rules of procedures and ACAP Project Development Process Description as appropriate, and are expected to involve seven phases:

- description of HWM elements;
- selection of region(s);
- development of Baseline study of the selected region(s);
- selection of waste streams;
- analysis of existing regulations;
- development of the IHWMS;
- implementation.

The ACAP WG is then to provide its advice to SAOs on how to move forward on implementing the strategy. Nothing in this paragraph is meant to delay ongoing or upcoming project activities in this subject area.

The IHWMS should be implemented by the selected region(s) based on the recommendation from the SAOs.

It is anticipated that the IHWMS will be developed within two years of initial implementation activities.

Funding for this project has been contributed by Russia.

## ENVIRONMENTALLY SAFE MANAGEMENT OF STOCKS OF OBSOLETE AND PROHIBITED PESTICIDES IN RUSSIA

(CHAIR: FINLAND)

ACAP has completed inventory and repackaging activities in 9 priority districts, resulting at improved storage for 6500 t solid and liquid pesticides. Inventory activities have continued in Krasnoyarsk Krai with the aim of completing it in 2010. Finland, Russian Federation, Sweden and Norway have supported the project financially.

The project continues to seek opportunities to implement Phase III - environmentally sound destruction demonstration of 100 t obsolete pesticides. No suitable technology within the territory of Russia is available.

By the end of 2010 under UNEP/GEF project “Creating a System of Obsolete and Prohibited Pesticides Destruction in the Russian Federation” with participation of USEPA and NEFCO selection of innovative methodologies and best available technologies has been completed in Russia. The outcome of the project was the creation of organizational and legal system of pesticides management and destruction as a mandatory requirement for transition to the practical stage of eliminating pesticides, which are obsolete and prohibited in the Russian Arctic.

Funding expenditures in 2010: 46 827 EUR

## REDUCTION OF DIOXINS/FURANS RELEASES INTO THE ENVIRONMENT

(CHAIR: SWEDEN)

The ACAP project “Reduction/Elimination of Emissions of Dioxins and Furans in the Russian Federation with Focus on the Arctic and Northern Regions Impacting the Arctic” has entered into phase III activities i.e. identification and promoting implementation of control technologies in order to reduce/eliminate releases of dioxins and furans to the environment from point sources e.g. pulp and paper mills, metal industries, cement kilns and waste incineration plants affecting the Arctic. The project steering group has continued the search for possible additional II activities i.e. to identify projects to reduce emissions of dioxins and furans in the Arctic with special focus on waste incineration plants e.g. the one in Murmansk.

The PSG has focused on its three priority Arctic Regions, Arkhangelsk, Komi and Murmansk. The project is working to initiate Phase III demonstration projects decreasing the dioxin and furan emissions from the following facilities:

- Kotlas Pulp & Paper facility (Arkhangelsk Region)
- Vorkutinskiy cement plant (Komi Republic)
- Syktyvkar Timber Mill (Komi Republic) (Cleaner Production program only)
- Murmansk Municipal Waste Incineration Plant

The project also investigates the possibilities to link Phase III activities to the Integrated Hazardous Waste Management Strategy.

## **REDUCTION OF ATMOSPHERIC MERCURY RELEASES FROM ARCTIC STATES (CHAIR: DENMARK)**

### **MERCURY-CONTAINING WASTE IN NW RUSSIA**

The mercury containing waste demonstration project was initiated in 2006 with a feasibility study on mercury containing waste with the aim to describe an improved system for collection, transport, storage and treatment of mercury containing waste in the territories of North West Russia (Archangelsk, Nenets Autonomous Okrug, Murmansk, Komi, Karelia and St. Petersburg City). The project is funded by Denmark, Finland, Norway, Russia and NEFCO. Based on the existing system for the North West region specific components for a Demonstration Project is to be proposed for an optimised system for management and handling of MCW in the NW Region, replicable for implementation within other regions in Russian Federation and in the Arctic.

The outcome of the project includes an Inception report, a Baseline report and workshop. The feasibility study and ToR for a demonstration project have not yet been prepared since the project has met several obstacles during the feasibility study. One of the main problems encountered was the lack of support by different stakeholders (Oblast & Ministry) on the consultant recommendation on centralisation of the mercury collection and recycling. Based on the Governing Council decision in 2009 on a new global agreement the project was reformulated in March 2009 to include stabilisation and disposal of Mercury Containing Waste. Still with the mentioned changes it has not been possible to get the required support and involvement by the project stakeholders.

The Steering Group decided in August that the continuation of the ACAP mercury containing waste project should build on the positive experiences from a Norwegian – Russian bilateral waste project in Archangelsk. USA was nominated to chair the future work of the steering Group and Denmark resigned as chair. Russian Federation has offered to be the co-chair of the mercury PSG.

The main achievements are as follows:

- Closed out work on a project on the Mercury Containing Waste in NW Russia, which aimed to demonstrate ways to improve the system for collection, transport, storage, and treatment of mercury containing waste in NW Russia.
- Completed a project in the Russian chlor-alkali industry to reduce mercury releases to wastewater and improve mercury monitoring systems in several Russian chlor-alkali facilities. These ongoing efforts have reduced mercury releases to the environment by about 1 ton per year. This project was completed in 2010.



- Developed a proposal for ACAP consideration for collaboration with several Russian research institutes to demonstrate the effectiveness of sorbents for reducing mercury emissions in the coal sector at a coal-fired power plant in the Russian Federation.
- In the northern-western regions of Russia the consultations on the practical implementation of the accumulated experience and results of pilot projects as an integral part of complex IHWMS are taking place.

## **OTHER DEMONSTRATION MERCURY PROJECTS:**

### **COAL-FIRED POWER PLANT MERCURY CONTROL PROJECT**

#### **(USA, UNEP & SWEDEN)**

The U.S. Environmental Protection Agency (EPA) is collaborating with several Russian research institutes on a mercury control project to demonstrate, under various operating conditions, the effectiveness of two types of sorbents (standard activated carbon and halogenated activated carbon) in reducing mercury emissions at a coal-fired power plant in the Russian Federation. This project, a two-year project initiated on June 1, 2010, is being funded by the United States (\$317,000); it is moving forward under the financial and management authority of the International Science and Technology Center (ISTC). The United Nations Environment Programme (UNEP) also is providing funding for the work addressing leaching of wastes. Other collaborators in the project include the Arctic Council.

Standard activated carbon injection, currently used at many plants in the U.S., has shown mercury removal efficiencies up to 70-90 percent when injected upstream of a particle control device, e.g., an electrostatic precipitator or fabric filter. Removal efficiencies that greater than 90 percent have been demonstrated with halogenated activated carbon. This demonstration project will determine whether the technologies will achieve similar effectiveness with Russian coals. The project will also investigate the leaching potential of the associated waste residues (expected to be disposed of in a landfill). It is expected that the project results will be available in mid-to-late 2011.

Coal-fired power plants are a major source of global mercury emissions. Fossil fuel combustion (in particular coal) emissions are estimated to comprise about 46 percent of the global anthropogenic emission inventory. Power plants are the largest coal burning source, although industrial boilers and, in the case of some countries including China, home heating may also be significant. It is the long range transport of these (and other) emissions that led UNEP's Governing Council

(GC) to conclude in 2003 that mercury is a global problem requiring the establishment of the UNEP Global Mercury Programme.

Building on its earlier mercury decisions, the UNEP GC decided in February 2009 to convene an Intergovernmental Negotiating Committee that would lead to a global legally binding mercury instrument. The committee negotiations, which commenced in 2010, are expected to be completed in 2013.

In addition to providing information directly for consideration by the major coal-burning (and, thus, mercury emitting) nations, including India and China, the project results are expected to inform deliberations of the UNEP Intergovernmental Negotiating Committee as it addresses whether:

- Activated carbon is a technology that can be used with “co-benefit technologies,” e.g. Black Carbon, SO<sub>x</sub> controls, when greater reductions are desired than the latter alone can provide.
- Activated carbon is a technology that can be used alone, e.g., in areas which utilize low sulfur coal and may not install sulfur controls, e.g., Russian Federation.
- Activated carbon provides a greater reduction in mercury emissions from power plants than other currently available technologies.

#### **REDUCTION OF USE AND DISCHARGES OF MERCURY IN THE CHLOR-ALKALI INDUSTRY IN RUSSIA (USA)**

EPA and the Russian chlor-alkali industry have partnered to reduce mercury releases in wastewater and improve mercury monitoring systems. These on-going efforts have reduced releases to the environment by about 1 ton per year. Details of this work is as follows:

- The waste-water treatment facility at Volgograd “Caustic” will allow extracting 850-900 kg of mercury from waste water. Extracted mercury will not be returned to the surplus mercury market, but will be reused in the production cycle. (The waste-water sent for treatment contains 30 mg of mercury per liter. After the treatment process the amount of mercury in the waste is reduced to 0.0002-0.0004 mg per liter.)
- Mercury Monitoring System, MMS-16 at Volgograd “Caustic” facility, to measure mercury discharges into the air at multiple sampling points, is still undergoing the clearance process at the Russian customs. Equipment has up to 16 sampling points and will allow quick identification of mercury leaks and spillages. Use of this equipment will allow the facility to reduce mercury losses by up to 200 kg per year.
- The facility completed assembly and is in the process of test-operation of two state-of-the-art electrolyzers. These new electrolyzers require minimum

maintenance. Since January 2009, the facility already achieved reduction of 1.3 kg of mercury releases. The scheduled upgrade of the entire facility will allow reduction of mercury releases by 300 kg per year.

- In July 2009, the Kirovo-Chepetsky Joint Stock Company “Zavod Polimerov” began reconstruction and modernization of the brine conditioning unit. This unit is a major source of mercury losses in solid waste. Completion is scheduled for the end of 1010. When the reconstruction and modernization is completed, the facility will achieve annual reductions of 10 tons of mercury.
- Sterlitamak Caustic began implementation of their plan to reduce releases of mercury. The main activities include: stabilization of electrical current in the shop; reduction of maintenance activities which require opening of electrolyzers, use of temporary covers of electrolyzers which are under maintenance; modernization of electrolyzers. Since 2005, Sterlitamak “Caustic” facility achieved total reductions of mercury releases into the air by 212 kg and into the solid waste by 1.4 metric tons.

## **PROPOSED MULTI-POLLUTANT CONTROL PROJECT AT A RUSSIAN NON-FERROUS SMELTER**

### **(USA & NEFCO)**

USA and NEFCO will be developing, together with interested parties and owners, a demonstration project for non-ferrous smelters (including zinc smelters) where appropriate mercury and other pollutant mitigation technologies will be used.

## **PHASE-OUT OF PCBs IN RUSSIA**

### **(CHAIRS: RUSSIA, USA AND NEFCO) NEFCO-FUNDED PROJECT**

Project aims demonstrate destruction of 250 tones of liquid PCBs as well as cleaning and decontaminating PCB equipment. The PSG in cooperation with USEPA and NEFCO put forward a proposal on how to find a suitable sites and obtain the necessary permits and initiated the pilot project “Elaboration of technological and logistic options for implementation of a system for collection and utilization of PCB wastes and PCB-containing equipment in the Arctic regions of the Russian Federation” which was completed in 2010 as well as activities on inventory of the PCB-polluting objects belonging to Gazprom were completed too.

Volumes of PCBs in PCB containing equipment, currently being in use and stored at the facilities of chemical and petrochemical industry, ferrous and nonferrous metallurgy, machinery, timber processing complex located within Northern and North-Western Federal Districts, exceed 4,000 t. Setting up specific requirements to the system of collection, transport, storage and destruction of PCBs and PCB-containing equipment constitutes an extremely important component for the deactivation of PCB. The elaboration of such regulations was a part of the activities performed under the project. Currently no special environmental requirements to collection, transport and destruction of PCB and PCB-containing equipment exist in the Russian Federation.

Obsolete PCB-containing equipment and PCBs management by the owner, including their storage and utilization, is to be provided in compliance with legal requirements, which envisages the responsibility for non-performance or improper execution. Such non-compliance with Russian Federation legal requirements in the area of waste management demonstrated by public servants and individuals leads to disciplinary, administrative, criminal or civil liability under Russian legislation.

Direct processing of such toxic chemicals such as PCBs is carried out using high-temperature processes which will not provide for generation of secondary dioxins.

At the next meeting, the steering group may also wish to consider merging this PSG with the IHWMS or another PSG to facilitate progress. Successful completion of this project is also largely dependent on the implementation of the ACAP Integrated Hazardous Waste Management Strategy in Russia. The NEFCO PCB Project funds have been earmarked for PCB project(s) under the Project Support Instrument (PSI) and are expected to be mobilized once the PSI is up and running.

## **REDUCTION/ELIMINATION OF SOURCES AND RELEASES OF BROMINATED FLAME RETARDANTS (BFR`S)**

**(CHAIR: NORWAY)**

The ACAP project steering group on brominated flame retardants (BFR) has operated as an information exchange network in 2009 and 2010. The group has continued the search for phase II activities (identify projects to reduce emissions of BFRs in the Arctic).

Waste management in smaller settlements in the Arctic has been identified as a possible topic for a phase II activity and the group has considered co-operation with other groups under ACAP on this. There has been preliminary contact with the project steering group on Integrated Hazardous Waste Management Strategy (IHWMS) and the Indigenous Peoples Contaminants Action Program (IPCAP) to encourage them to include BFRs in their scope of work and to identify possible projects for collaboration.

Norway has been the lead country of the BFR group from 2004-2010 and has withdrawn from the leadership as of 2010. The future work on BFRs under ACAP is under consideration.



## **INDIGENOUS PEOPLES CONTAMINANTS ACTION PROGRAM (IPCAP)**

**(CHAIR: RUSSIA)**

The PSG IPCAP Terms of Reference was approved during the ACAP Working Group Meeting in Oslo (Norway, September, 3, 2010).

The PSG will have 2 co-chairs: one from PPs, other from State Members. So far RAIPON, Russia, USA and Finland expressed their wish in participating in the PSG. It will include State Members, PPs and scientists.

The PSG will start to prepare the 1<sup>st</sup> phase of the pilot project according to the Plan contained in the Terms of Reference PSG IPCAP. The IPCAP will co-operate with other ACAP projects, such as IHWMS PSG, BFR PSG, PSG SLCFC. Particularly, BFR PSG and IPCAP PSG will cooperate on circulation of the fact sheet created by BFR PSG and IPS among indigenous peoples of Russian Arctic.

## **PROPOSED PROJECT STEERING GROUP ON SHORT LIVED CLIMATE FORCERS AND CONTAMINANTS (SLCFC) (CHAIR: TO BE DECIDED)**

At its September 2-3 meeting, ACAP developed and agreed upon a terms of reference for a new project steering group (PSG) that would undertake projects on black carbon and other short-lived climate forcers and is seeking SAO endorsement of the concept at the October 2010 meeting.

The PSG would be chaired by the United States and Norway, Sweden and Russia would vice-chair the PSG. In addition, Canada, Finland, RAIPON and, NEFCO have all indicated interest in participating in the PSG and others are invited to express interest in participation as well. The PSG would set its first meeting following endorsement by the SAOs to develop project proposal(s) on black carbon and undertake initial scoping activities so as to provide a meaningful progress report to the next SAO and Ministerial meetings. In addition, the PSG, if approved, will closely coordinate with the Short-Lived Climate Forcers Task Force (SLCF TF) and anticipates that intermediate project deliverables would help provide additional, necessary information to the TF.

### **OTHER ACAP RELATED INFORMATION**

#### **ODS CONTAINING REFRIGERATION / AC EQUIPMENT**

The goal of the Ozone Depleting Substance (ODS) Refrigeration /Air Conditioning (AC) equipment initiative<sup>1</sup> is to address unwanted ODS (and Green House Gases (GHG)) contained in end-of-life electrical equipment (Waste Electrical and Electronic Equipment (WEEE) e.g. refrigerators) and demonstrate management of such waste streams, NEFCO is currently in the process of establishing a relevant terms of reference for a consultant to enable a project for the collection and destruction of an estimated 3 tonnes of ODS in Russia (corresponding to ca 20,000 t CO<sub>2</sub>). The project is financially supported by Finland and Sweden. It is envisaged that the Russian Recycling Association as well as a Nordic company active in the recycling branch in Russia will be engaged in it. Destruction of unwanted ODS may take place in an existing facility authorized to do so. The project aims to leverage the voluntary carbon market in the context of Short Lived Climate Forcers.

A Report on the methodology has been prepared and the project methodology has been shared with the Montreal Protocol institutions (Ozone Secretariat and the Multilateral Fund of the Montreal Protocol) as well as other international institutions, however, the “anchor institution” remains the Arctic Council. NEFCO aims to engage a Russian Consultant to be in charge of managing the project in practice in Russia. Currently the Project is expected to undergo only a rudimentary

verification (for ODS destruction). This because a full fledged verification regime is deemed too expensive for such small demonstration project.

It is expected that NEFCO itself will be the off-taker of the resulting emission reductions in accordance with the customary voluntary schemes. The project will be prepared for listing with the PSI although initially it will proceed with its present funding. The MNRE is expected to submit a statement underlining the importance of the project and its support to it while also nominating a contact person for facilitating its continuation.

