Report of the Final Results Workshop for the Project "Management of Mercury and Mercury-Containing Waste"

Aberdeen University, TESLA, Scotland, U.K.
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United Nations Environment Programme (UNEP)
Mercury Waste Project Final Results Workshop

Content

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1 OPENING AND WELCOME

The final results workshop took place at Aberdeen University at Linklater on Regent Walk from 21 to 23 June 2010. This workshop was the concluding activity in the UNEP Chemicals coordinated 5-counrty project on Mercury Waste Management. The objectives of the workshop were that participating countries, the mercury expert laboratory, the International consultant and UNEP Chemicals to come together to:

- Present the results of the project from each country
- Provide an overview and summary on the analysis and the analytical data that were obtained from the national samples sent to Aberdeen University
- Present the national mercury management plans
- Prepare for the writing of the final project report
- Discuss cross-cutting issues and possible next steps
- Attend a hands-on course on mercury analysis.

On behalf of the University of Aberdeen, the participants were welcomed by Dr. Jörg Feldmann, TESLA. Although invited, the two representatives from Burkina Faso were not able to attend due to internal approval processes for travel, which was not obtained in-time. .The participants introduced themselves and their role in this project. The list of participants is included in this report as Annex I. The workshop proceeded as planned; the agenda is attached to this report as Annex II.

Dr. Heidi Fiedler of UNEP Chemicals gave the first technical talk to present the context of this project and the progress made since the inception workshop in March 2009 in Siem Reap, Cambodia. She mentioned the strong linkage of all mercury projects to the negotiation of the legally binding instrument on mercury that has started in June 2010 with the first session of the intergovernmental negotiation committee. She also presented the outline of the final report for this project that will conclude on 30 June 2010.

The presentation can be viewed as Annex 1.

2 COUNTRY PRESENTATIONS

2.1 Cambodia

Mr. Sarun Sambo presented the activities in his country. In June 2009, the National Inception Workshop had gathered information already available in the country and identified priority issues related to waste management for developing a “National action plan and technical guidelines”. Dr. Mario Yarto, the International Consultant attended the workshop. From Sep 2009 to Jan 2010, the national action plan and technical guidelines for Hg Waste management

were developed. The drafts were sent for review to the International Consultant. In Jan 2010, 60 samples were taken from different sites, *e.g.*, ASGM (29 samples; of these 23 were nails and hair, 6 soil/sludge), sludge from public sewage systems, hospitals, dental clinics, dump sites and sent for analysis to Aberdeen University. The Final workshop was held 10-11 June 2010. Hg-Waste Management Action Plan includes the period 2011-2015 and contains five components. Conclusions and recommendation include: Strengthening capacity of officers for effectively implement Hg Waste management instruments, need for demonstration activities.

The presentation can be viewed as Annex 2.

2.2 Chile

CONAMA will become a ministry on 1 August 2010. The general project objective: to identify concentrations of Hg in soil (Andacollo project), study economic feasibility for tailings, develop waste management plan. Methodology: review inventory. Expected outcomes:

Andacollo project: Application of ESM Basel guidelines, assessment and database of laboratory, risk assessment and remediation options in tailings/mines. Specific comments of the SBC guidelines were made. RA of Andocollo – risk assessment and remediation options. Andocollo – hazardous waste regulation does not contain hazardous mining waste; need to revise the national regulation to include the mining waste.

Objective 1: review and revise the mercury inventory. Objective 2: encourage generation and application. Objective 3: promote studies to identify sites with the presence of waste containing mercury, the risk and environmentally sound management.

The presentation can be viewed as Annexes 3a and 3b.

2.3 Pakistan

The project followed the project implementation plan as developed at the international inception WS. A large number of national stakeholders were identified and participated. Site visits were undertaken by the international consultant: Chlor-alkali company wishes to phase out mercury cell and install membrane. National inception WS with 168 participants was held on 30 July 2009 at Lahore. Three working groups met and presented their outcomes. Human hair samples were collected from four groups (22 samples from Ittahad Chemicals Limited; 10 samples from Sittara Chemicals Industries, 22 samples from Punjab dental hospital, 18 samples from control groups) according to the protocol from Aberdeen University and shipped to Aberdeen. In Pakistan the levels were much higher than elsewhere. Further products were collected and are under analysis at national labs such as sun-screens, soaps, button cell and cylindrical batteries; cement – total 61 samples collected.

Draft national mercury waste management plans were developed for chlor-alkali sector, health sector, and light products sector Final national WS was held on 19 May 2010 with 130 participants at Islamabad. Group I chlor-alkali: phase out plan shut down 30 MT of mercury cell within 2 months, remaining 65 MT by 2015; demolition plan for Hg disposal. Group II Health Sector: replacement of mercury amalgam with composite, *etc.* Group III-Light

sources/products.

Future plans and proposal: Phasing out mercury and mercury-containing products in country,

The presentation can be viewed as Annex 4.

2.4 Philippines

Have been the last country to get into contact with UNEP; were not able to collect and send samples. National Action Plan. Sources and flow of mercury and mercury-containing waste. No operating chlor-alkali plant in the Philippines; stock of accumulated mercury exists. In products: batteries, lamps, dental applications, measuring and control devices, chemicals in laboratories; Waste: partly recycled, diffusion to water, soil, air. Toxic waste in landfill, storage, thermal treatment, dumpsites, basically found everywhere. No centralized database or information network on the types and quantities of mercury; data on other uses of crude oil are not considered; data on mercury emissions due to mining of metals are limited to gold, silver, copper, lead; calculation for thermometers needs refinement because the initial calculation was based only on the number of hospitals and schools (have to be phased out by the end of this year by law). Double accounting of Hg emission from pulp and paper sector. Quite a large list of sources of mercury not contained in the inventory (many are folk uses but also limestone quarrying, coal mining, *etc.*). Regulatory framework exist, some orders are already quite old; enforcement harmonization of laws and regulation needs to be undertaken. Not all generators of waste have registered, not all sources of mercury and mercury-containing waste are reported; performance standards on handling, storage and treatment/disposal are generally not followed; interfaced among concerned government agencies. Monitoring program and activities: no monitoring programs on source and applications, wastes are monitored under the clean air act, workplace is regulated by rule 1077; in cement industry is monitoring but not all since not all use waste as alternative fuel. Legally monitored are effluents. Ongoing project on identification of contaminated sites. Major fishing grounds monitored especially bottom feeder fish and seafood. There are no monitoring programs in products and in solid/hazardous waste, ambient air, soil, groundwater, people, biota (only because of incidents, complaints or investigative studies). However, EMB has monitoring in fish.

Summary of workshop: lack of cohesive legal instruments for the management of mercury and mercury-containing waste in the Philippines (lack at local government units), lack of national information on the types and quantities of mercury containing waste. Initial Toolkit did not generate the results on the types and quantitative of Hg; lack of institution controls and infrastructure to manage the end-o-life of products containing Hg. (TSD-treatment, storage, disposal). No program for assessment of levels of Hg in products, lack of monitoring program and releases from mercury and mercury-containing wastes. Lack of monitoring program for releases from Hg-containing waste, no program on... Lack in public participation and IEC-insufficient efforts for public education and awareness. Soil or clean-up standards not yet done but EMB will take the lead on this.

The presentation can be viewed as Annex 5.

3 SUMMARY PRESENTATION OF ANALYTICAL RESULTS

3.1 Mercury analysis and national results

Samples were received from Cambodia, Chile, Pakistan, Philippines. Quality controls such as CRMs, spiked soil and sludge samples were applied. For all samples, total mercury was analyzed.

The presentation can be viewed as Annex 6. Some highlights include the following:

3.1.1 Burkina Faso

Main interest in gold mining. Question: exposed only when working at the gold mine or also when they live close to such mining information. 31 hair samples sent, but mass was limited. Washing followed by oxidative acid digestion. Control group: 1 against 10 was above the WHO limit of 2 mg T-Hg kg^{-1}. About 70% of the hair samples of the AGM miners were above the WHO limit, although the range was quite large; they were significantly different from the control group. The highest was 7 mg T-Hg kg^{-1}.

3.1.2 Pakistan

Pakistan had developed detailed questionnaires that were provided; interesting to note that no marine fish consumed. The hair concentration is up to 20-times higher than anything that has been reported before; highest were close to 10,000 mg T-Hg kg^{-1}. The control group was like in BKF; one was above the WHO limit. In the Dental Group, the people were higher as well as the chlor-alkali plant that phased out Hg five years ago. The results of Kala Shah Kaku chlor-alkali industry was extremely high; the manager has the lowest of this group but was still elevated. Only speciation will give an answer if the Hg came from adsorption or if metabolized through inhalation. In the control group, the dental fillings do not influence the hair concentrations. On the other hand, the dental group had higher concentrations.

3.1.3 Chile