

**The Fourth Workshop on Reduction of Unintentional POPs  
in East Asian Countries  
(December 14-15, 2010, *Mitakaigisho*, Tokyo, Japan)**

**Chair's Summary**

The Fourth Workshop on Reduction of Unintentional Persistent Organic Pollutants (POPs) in East Asian Countries was held in Tokyo, Japan, on 14 and 15 December, 2010, organized by the Ministry of the Environment of Japan (MOEJ). The workshop was attended by administrative officers and experts from eleven East Asian countries (the Kingdom of Cambodia, the People's Republic of China, the Republic of Indonesia, Japan, the Republic of Korea, the Lao People's Democratic Republic, Malaysia, Mongolia, the Republic of Singapore, the Kingdom of Thailand, and the Socialist Republic of Vietnam). Participants also joined from the United Nations Environment Programme (UNEP), the United Nations Industrial Development Organization (UNIDO), the United Nations University (UNU), the United States Environmental Protection Agency, and the Federal Republic of Germany, as well as several observers, including the Ministry of Foreign Affairs of Japan, universities, and private companies. Participants expressed their appreciation to the Ministry of the Environment of Japan for hosting the Workshop, which was chaired by Prof. Shinichi Sakai, of Kyoto University, Japan.

The first workshop of this series, held in 2006, was an opportunity for representatives from East Asian countries to meet and share information on the implementation of emission inventories and on Best Available Techniques and Best Environmental Practices (BAT/BEP) to promote continuous efforts for the reduction of emissions of unintentional POPs in each country. In the four years since the first workshop, global circumstances relating to POPs and unintentional POPs have changed significantly. Moreover, nine new chemicals, including pentachlorobenzene (PeCBz), polybromodiphenyl ethers (PBDEs) and perfluorooctane sulfonate (PFOS), were listed as new POPs at the Fourth Conference of the Parties (COP4) to the Stockholm Convention in 2009. Among these chemicals, PeCBz is a new unintentional POP. East Asian countries have made steady progress in capacity building for the analysis of unintentional POPs and have enhanced their monitoring systems. Some countries have tried to monitor new POPs. Many other countries have limited capacity to do so, but have taken measures to reduce the emissions of unintentional POPs from waste treatment. In recent years, electrical and electronic wastes (e-wastes) recycling industries have been expanding in East Asian countries. Brominated flame retardants (BFRs) in e-waste increase risks to human health and ecosystems near e-waste recycling sites.

The fourth workshop mainly discussed the following topics: (1) the need to continue the steady development of emission inventories of unintentional POPs, and to steadily implement emission reduction measures in East Asian countries; (2) the need to develop and apply simple and low-cost analytical methods especially for screening purposes, as highly accurate POPs analyses are costly and time-consuming; and (3) approaches countries have been taking to address new POP issues.

Concerning the first point, discussions in the workshop showed that East Asian countries have made efforts to develop their emission inventories and promote the use of BAT/BEP to reduce emissions of unintentional POPs. In their inventories, the estimation of unintentional POPs emissions to the air in the category 1 (waste incineration) and the Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases (UNEP 2005) is likely to become more important. Some countries (e.g., Korea and Thailand) have made progress with actual measurements, have improved emission factors by replacing those cited in the toolkit with their own data, and have used their own emission factors to estimate emissions for their inventories. Some countries have developed reduction measures using BAT/BEP and their emission inventories. In the field of waste management, many countries have replaced old waste incineration facilities with new ones. It is necessary to steadily update emission inventories in order to quantitatively evaluate the results of reduction measures.

Concerning the second point (analytical techniques), participants found that due to limited budgets and resources, some countries have a challenge to secure enough analytical instruments and specialists to monitor unintentional POPs. Many agreed that the analysis of unintentional POPs requires advanced techniques, so it is realistic to aim for gradual improvements. In principle, the Stockholm Convention does not recommend the use of bioassays for environmental or human bio-monitoring. Each type of POP designated in the Convention has a different chemical structure, so it is important to identify each POP and quantify its concentrations mainly using high-resolution analytical technologies. On the other hand, the development and use of simple and low-cost analytical methods (e.g., bioassay methods) can be practical for establishing comprehensive indicators for similar toxicological mechanisms, for confirming the status of environmental pollutants, and for preventing human exposure. The bioassay method has been adopted for POPs monitoring in food in Europe, and for monitoring releases from sources in Japan. Countries that already have extensive experience with conventional monitoring systems can play a leading role in developing these kinds of simple analytical methods, and in sharing information about these systems with other countries. Bioassays can also be used for screening tests when there are large numbers of samples.

Concerning the third point (new POPs), it was acknowledged that the number of chemicals

categorized as POPs and unintentional POPs under the Stockholm Convention may increase in the future. Participants expressed concern that recycling processes of e-wastes (e.g., end-of-use personal computers and televisions that contain BFRs) have adverse effects on human health and the environment. It is essential to develop substance flow management and common guidelines for recycling processes, in order to prevent the processes from becoming new emission sources. Also, some East Asian countries have serious problems with POPs such as dioxins from pesticides and herbicides (e.g., Agent Orange). These emerging problems should be approached by accumulating information on the actual state of pollution, using appropriate countermeasures and practices.

In conclusion, participants expressed the view that this workshop has played an important role in supporting East Asian countries to share information on emission inventories, the promotion of BAT/BEP, and monitoring techniques, all towards the common goal of reducing unintentional POPs emissions. They pointed out that the outcomes of this workshop should be reflected in discussions at COP5 of the Stockholm Convention.