

## **POPs Monitoring and Related Activities by the Ministry of the Environment, Japan**

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In Article 16 of Stockholm Convention for the global elimination of Persistent Organic Pollutants (POPs), it is written that "comparable monitoring data" reported by the Parties will be used for the "effectiveness evaluation of the Convention". A detailed evaluation scheme will be decided by the Conference of the Parties, but various technical aspects of this POPs monitoring were discussed by the international experts at UNEP Chemical's workshop on the development of Global POPs Monitoring held in Geneva in March 2003, and the guidance documents for the monitoring are now being prepared based on the results of the workshop.

The Ministry of the Environment (MoE), Japan, has been conducting environmental monitoring of various pollutants including major POPs in Japan for more than two decades, and reported the results every year in a report "Chemicals in the Environment" (or KUROHON, meaning "black book" in Japanese). Originally a conventional GC/ECD method had been employed for the analysis of organochlorine chemicals (OCs) in biological samples. Then a GC/MS (low resolution) was introduced for OCs analysis in sediments and water, and GC/high resolution(HR)-MS method was introduced for dioxins analysis from around 1990. Due to general decline of POPs levels in the environment, the number of ND (not detected = less than detection limits) data had been increasing in recent years, and consequently it became difficult to extract temporal trends from the monitoring data. In 2002, MoE decided to reorganize the environmental monitoring framework in order to respond to the request of POPs convention, and re-started POPs monitoring by using more sensitive GC/HR-MS method for the analysis of nine POPs chemicals (dioxins and furans have already been monitored by the method; toxaphene is analyzed by GC/negative ionization-MS). The primary purpose of this reorganization is to reveal present POPs levels in Japan as a basis to judge the effectiveness of the measures/countermeasures taken by the Government for POPs convention. Detailed explanation of the new monitoring methods and the results of the first year (FY2002) will be presented separately.

Briefly the results of the previous POPs monitoring for more than two decades are summarized as follows;

- 1) Dioxin levels (including furans and co-PCBs) in the air decreased to one fifth in average from 1997 to 2001. The decrease coincides well with the decrease of estimated national emission inventory (one fourth from 1997 to 2001).
- 2) The dioxin levels in the air tend to be higher in densely populated areas than rural / remote areas.
- 3) The dioxin levels in water decreased to half from 1998 to 2001, while the estimated emission inventory decreased to one third during the period.
- 4) The dioxin levels in sediments and soils did not show clear decreasing trends during the period between 1998 and 2001.
- 5) PCB levels in fishes in Tokyo Bay and Osaka Bay tended to be higher than fishes in other places. They showed no clear temporal trends during a quarter of century.
- 6) HCB, Aldrin and Endrin were not detected in many of the biological samples in recent years. Dieldrin was detected only in limited numbers of samples, including mussels and sediments.
- 7) DDTs were detected in many biological samples. The dominant compound, *p,p'*-DDE, showed general decreasing trends in fishes and bivalves in Western Part of Japan while the clear temporal trends could not be observed in those in Eastern Japan.
- 8) Chlordane levels were relatively higher in fishes caught in Tokyo and Osaka Bays than in other coastal region. They showed general decreasing trends in recent years. Their levels in sediments also tend to be higher in coastal environment in densely populated areas.
- 9) Heptachlor was detected in only limited number of samples while mirex and toxaphene were not detected.

MoE also conducted efforts to support implementation of POPs convention and establishment of regional framework for the convention. MoE hosted the 1<sup>st</sup> and the 2<sup>nd</sup> Workshops on POPs monitoring in East Asian countries in December 2002 and 2003, respectively. The workshop was intended as a forum for the discussion and information exchange on POPs monitoring among countries in the region, and the proceedings of the 1<sup>st</sup> workshop was distributed at the UNEP Chemicals workshop in Geneva, and also at INC-7 in Geneva.

## Regulation of POPs Chemicals in Japan

Name	Banned as Industrial Chemicals	Banned as Pesticides
DDT	1981	1971
Aldrin	1981	1975
Dieldrin	1981	1975
Endrin	1981	1975
Chlordane*	1986	1968
Heptachlor**	1986	1975
Mirex	2002	***
Toxaphene	2002	***
PCB	1974	***
HCB	1979	***

\*: used mainly for termiticides (other than agricultural purposes); between 1979~1986.

\*\*: Heptachlor was also included in technical chlordane as impurity (~10 %).

\*\*\*: never registered as agrochemicals in Japan

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## Chlordanes in Sediments (FY2001)

*Usage for terminte control  
in Southern Japan*

