

Chapter 7.

Summary of the Results of the Follow-up Survey of the Situation of Pollution by Unintentionally Formed Chemical Substances (Fiscal Year 1998)

Chapter 7. Summary of the Results of the Follow-up Survey of the Situation of Pollution by Unintentionally Formed Chemical Substances (Fiscal Year 1998)

1. Purpose of the survey

Since the environmental pollution caused by chemical substances which are formed in the process of synthesis of chemical substances and in combustion became a problem, the Environment Agency has been conducting the Follow-up Survey of the Situation of Pollution by Harmful Chemical Substances since the fiscal year 1985, for the purpose of grasping the persistence in the general environment of the chemical substances unintentionally formed. And in the fiscal year 1993, the survey was renamed as the Follow-up Survey of the Situation of Pollution by Unintentionally Formed Chemical Substances and has been conducted since then.

Until the fiscal year 1997 polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and coplanar PCBs were subjected to the survey. And in the fiscal year 1998, it was interrupted to handle dioxins as the target substances of this survey, in order to avoid duplication with the National Overall Urgent Survey for Dioxins which was introduced for the purpose of grasping more detailed environmental pollution situation in the year.

In compensation, in the fiscal year 1998 the environmental survey was conducted on brominated dioxins (general name for polybrominated dibenzo-p-dioxins[PBDD] and polybrominated dibenzofurans[PBDF]). Summary of the results are as follows.

2. Summary of the survey

(1) Surveyed substances

PBDD (5 kinds): 2,3,7,8-T₄BrDD, 1,2,3,7,8-P₅BrDD, 1,2,3,4,7,8-H₆BrDD,
1,2,3,6,7,8-H₆BrDD, 1,2,3,7,8,9-H₆BrDD
PBDF (4 kinds): 2,3,7,8-T₄BrDF, 1,2,3,7,8-P₅BrDF, 2,3,4,7,8-P₅BrDF,
1,2,3,4,7,8-H₆BrDF

(2) Surveyed media

Bottom sediments, wildlife (fishes)

(3) Surveyed areas

Rivers, lakes and marshes and seas (ports and bays) from all over Japan: 29 areas

(4) Analytical method

Quantitative analysis by the SIM method using gas chromatography/mass spectrometer (GC/MS).

3. Survey results

The results are indicated in Table 7-1 and 7-2 and summarized as follows.

(1) PBDD: PBDD were not detected in bottom sediments and wildlife in all areas.

(2) PBDF: PBDF were not detected in bottom sediments and wildlife in all areas.

4. Evaluation of survey results

Although pollution of the general environment by brominated dioxins was not observed by the present survey/analytical method, it is necessary in future to develop more sensitive analytical method and to grasp the situation of persistence in the environment by surveys using the method.

Besides, since there is few information related to brominated dioxins, it is necessary in future to collect the related information and to endeavor to elucidate the pollution mechanism such as sources and environmental fate and to use effort to gather toxicology related knowledge.

Fig.7-1 Locations of the Follow-up Survey of the Situation of Pollution by Unintentionally Formed Chemical Substances (Fiscal Year 1998)

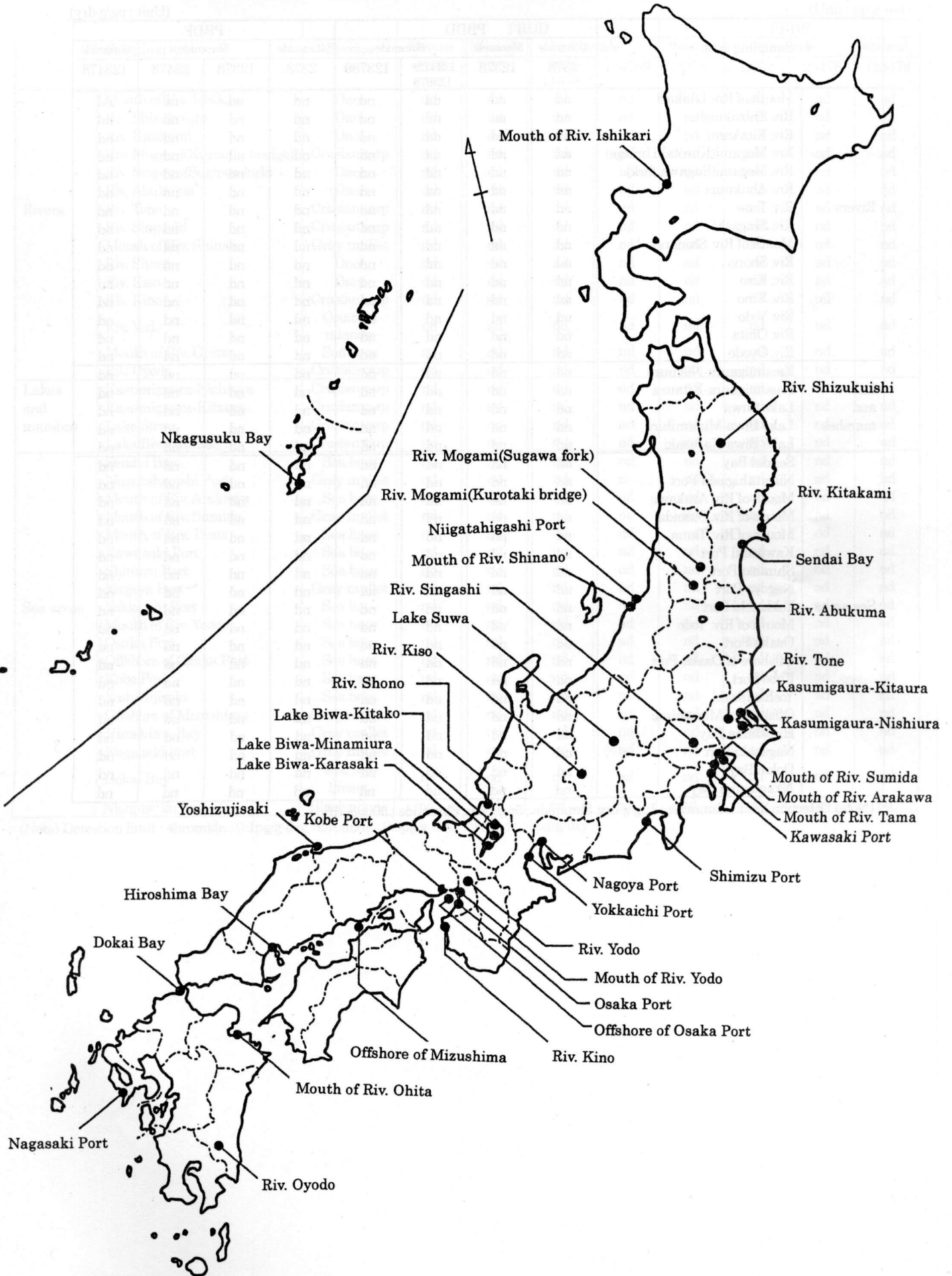


Table 7-1 Survey Results of Fiscal Year 1998 for Brominated Dioxins (Bottom sediments)

(Unit : pg/g-dry)

Sampling spot		PBDD				PBDF			
		4bromide	5bromide	6bromide		4bromide	5bromide		6bromide
		2378	12378	123478+	123789	2378	12378	23478	123478
Rivers	Mouth of Riv. Ishikari	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Shizukuishi	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Kitakami	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Mogami(Kurotaki bridge)	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Mogami(Sugawa fork)	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Abukuma	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Tone	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Singashi	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Shinano	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Shono	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Kiso	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Kino	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Yodo	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Ohita	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Oyodo	nd	nd	nd	nd	nd	nd	nd	nd
Lakes and marshes	Kasumigaura-Nishiura	nd	nd	nd	nd	nd	nd	nd	nd
	Kasumigaura-Kitaura	nd	nd	nd	nd	nd	nd	nd	nd
	Lake Suwa	nd	nd	nd	nd	nd	nd	nd	nd
	Lake Biwa-Minamihira	nd	nd	nd	nd	nd	nd	nd	nd
	Lake Biwa-Karasaki	nd	nd	nd	nd	nd	nd	nd	nd
Sea areas	Sendai Bay	nd	nd	nd	nd	nd	nd	nd	nd
	Niigatahigashi Port	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Arakawa	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Sumida	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Tama	nd	nd	nd	nd	nd	nd	nd	nd
	Kawasaki Port	nd	nd	nd	nd	nd	nd	nd	nd
	Shimizu Port	nd	nd	nd	nd	nd	nd	nd	nd
	Nagoya Port	nd	nd	nd	nd	nd	nd	nd	nd
	Yokkaichi Port	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Yodo	nd	nd	nd	nd	nd	nd	nd	nd
	Osaka Port	nd	nd	nd	nd	nd	nd	nd	nd
	Offshore of Osaka Port	nd	nd	nd	nd	nd	nd	nd	nd
	Kobe Port	nd	nd	nd	nd	nd	nd	nd	nd
	Yoshizujisaki	nd	nd	nd	nd	nd	nd	nd	nd
	Offshore of Mizushima	nd	nd	nd	nd	nd	nd	nd	nd
	Hiroshima Bay	nd	nd	nd	nd	nd	nd	nd	nd
	Nagasaki Port	nd	nd	nd	nd	nd	nd	nd	nd
Dokai Bay	nd	nd	nd	nd	nd	nd	nd	nd	
Nkagusuku Bay	nd	nd	nd	nd	nd	nd	nd	nd	

(Note) Detection limit : 4bromide ; 1pg/g-dry, 5bromide ; 5pg/g-dry, 6bromide ; 50pg/g-dry

Table 7-2 Survey Results of Fiscal Year 1998 for Brominated Dioxins (Wildlife)

(Unit : pg/g-wet)

Sampling spot		Species	PBDD				PBDF			
			4bromide	5bromide	6bromide		4bromide	5bromide		6bromide
			2378	12378	123478+	123789	2378	12378	23478	123478
Rivers	Mouth of Riv. Ishikari	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Shizukuishi	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Kitakami	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Mogami(Kurotaki bridge)	Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Mogami(Sugawa fork)	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Abukuma	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Tone	Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Singashi	Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Shinano	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Shono	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Kiso	Dace	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Kino	Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Yodo	Common minnow	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Ohita	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Riv. Oyodo	Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
	Lakes and marshes	Kasumigaura-Nishiura	Crusian carp	nd	nd	nd	nd	nd	nd	nd
Kasumigaura-Kitaura		Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
Lake Suwa		Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
Lake Biwa-Kitako		Crusian carp	nd	nd	nd	nd	nd	nd	nd	nd
Sea areas	Sendai Bay	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Niigatahigashi Port	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Arakawa	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Sumida	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Tama	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Kawasaki Port	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Shimizu Port	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Nagoya Port	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Yokkaichi Port	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Mouth of Riv. Yodo	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Osaka Port	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Offshore of Osaka Port	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Kobe Port	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Yoshizujisaki	Sea bass	nd	nd	nd	nd	nd	nd	nd	nd
	Offshore of Mizushima	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Hiroshima Bay	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Nagasaki Port	Gray mullet	nd	nd	nd	nd	nd	nd	nd	nd
	Dokai Bay	Red sea-bream	nd	nd	nd	nd	nd	nd	nd	nd
Nkagusuku Bay	Black porgy	nd	nd	nd	nd	nd	nd	nd	nd	

(Note) Detection limit : 4bromide ; 0.1pg/g-dry, 5bromide ; 0.5pg/g-dry, 6bromide ; 5pg/g-dry