

## **Chapter 6.**

### **Summary of the Survey Results for Organotin Compounds (Fiscal Year 1995)**

## Chapter 6. Summary of the Survey Results for Organotin Compounds (Fiscal Year 1995)

### 1. Purpose of the survey

As a result of the General Inspection Survey of Chemical Substances on Environmental Safety, environmental pollution all over Japan caused by organotin compounds became apparent, so environmental pollution has been monitored in wildlife (fishes and shellfishes and birds) in wildlife monitoring since fiscal year 1985 for tributyltin compounds and fiscal year 1989 for triphenyltin compounds. Taking the results of this survey in consideration, 13 tributyltin compounds and 7 triphenyltin compounds were designated as Designated Chemical Substances based on the Chemical Substances Control Law between April, 1988 and March, 1989. For this reason, bottom sediments and water have been surveyed in the Study and Survey of Designated Chemical Substances etc., as of fiscal year 1988.

In 1990, bis(tributyltin) oxide (TBTO), which is a tributyltin compound among organotin compounds, was designated as a Class 1 Specified Chemical Substance based on the Chemical Substances Control Law, and the former Designated Chemical Substances of 7 triphenyltin compounds and 13 tributyltin compounds excluding TBTO were designated as Class 2 Specified Chemical Substances based on the said Law.

### 2. Summary of the survey

#### (1) Outline of the fiscal year 1995 Wildlife Monitoring Results (Concerning Organotin Compounds)

##### Particulars leading to the survey

Among organotin compounds, tributyltin compounds were detected with relatively high concentration in the fiscal year 1984 Detailed Environmental Survey in bottom sediments and fishes in wide areas, so it became subject to wildlife monitoring since fiscal year 1985.

Triphenyltin compounds were also detected in wide areas in the fiscal year 1988 chemical substances environmental survey. Some of the detected concentration levels in bottom sediments were high in some points (inside ports). A high detected concentration level was observed in the mouth of rivers and inner bays in fishes, so wildlife monitoring was initiated for triphenyltin compounds since fiscal year 1989.

##### Survey results (Table 6-1 ~ 6-4)

Tributyltin compounds were detected in fishes and shellfishes and triphenyltin compounds were detected in fishes only.

(2) Outline of the fiscal year 1995 Study and Survey of Designated Chemical Substances etc.  
(concerning organotin compounds)

Particulars leading to the survey

The Environmental Persistence Survey in the Study and Survey of Designated Chemical Substances etc. was initiated in fiscal year 1988 for the purpose of grasping the situation of persistence in the general environment of Designated Chemical Substances and Class 2 Specified Chemical Substances based on the Chemical Substances Control Law. Tributyltin compounds and triphenyltin compounds have been subject to this survey since fiscal year 1988 and 1989, respectively, in the media of water and bottom sediments. In the Study of the Exposure Route (investigation of the quantity of the chemical substances humans are exposed to in daily life via multi-media) which was added to the Study and Survey of Designated Chemical Substances etc. in fiscal year 1990, both substances have been surveyed since fiscal year 1990 in the medium of meals. Since it was found that both substances had an extremely low exposure level from meals, the survey was not conducted in fiscal year 1995.

Survey Results(Table 6-5 ~ 6-8)

Tributyltin compounds were detected in water and bottom sediments and triphenyltin compounds were detected in bottom sediments only.

### 3. Evaluation of survey results

Survey results have been evaluated by the Expert Committee on Chemical Substances of the Central Environment Council held on December 10, 1996, as follows.

(Tributyltin compounds)

Tributyltin compounds persist widely in the environment and their pollution levels have shown no marked changes in wildlife and bottom sediments, and have shown an improving trend or no marked changes in water. Although the pollution level does not seem to be at a harmful level at present immediately, some of the detected concentration levels are high and ecological effects to aquatic animals are concerned, so measures for solving environmental pollution should be promoted and their environmental pollution should be monitored continuously.

(Triphenyltin compounds)

Triphenyltin compounds persist widely in the environment, but the persistence in water, bottom sediments and wildlife shows a tendency to improve. Although the detected concentration level in wildlife is high in some areas, their pollution levels have shown no marked changes in wildlife and bottom sediments, and have shown an improving trend in water. They were not detected in water in any of the areas in the fiscal year 1995 survey for the first time

since this survey started. Considering the manufacture volume of triphenyltin compounds, pollution by these substances could be improved in the future, but measures for solving environmental pollution should be continued and their environmental pollution should be monitored continuously.

**Table 6-1 Results of Wildlife Monitoring (Tributyltin Compound) (Fiscal Year1995)**

(Unit: mg/g-wet (ppm))

Species	Sampling spot	Samples No.					Max.	Min.	Mean	Median	Detected samples
		1	2	3	4	5					
Chum salmon	Offshore of Kushiro, Hokkaido	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Angry rockfish	Offshore of Nemuro, Hokkaido	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Greenling	Yamada Bay	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Pacific saury	Offshore of Joban	tr	tr	tr	nd	tr	tr	nd	–	tr	0
Cod	Sea of Japan (Offshore of Tohoku)	tr	tr	tr	tr	tr	tr	nd	–	tr	0
Sea bass	Tokyo Bay	tr	0.06	tr	0.06	tr	0.06	tr	–	tr	2
Sea bass	Osaka Bay	0.48	0.35	0.54	0.32	0.37	0.54	0.32	0.41	0.37	5
Sea bass	Seto Inland Sea	tr	tr	0.30	0.14	0.12	0.30	tr	–	0.12	3
Sea bass	Offshore of Sanin	tr	0.05	tr	tr	tr	0.05	tr	–	tr	1
Sea bass	Mouth of Riv. Shimanto	tr	tr	tr	tr	tr	tr	tr	–	tr	0
Sea bass	Surrounding of Shūgen Island	tr	tr	0.07	tr	tr	0.07	tr	–	tr	1
Sea bass	West Coast of Satsuma Peninsula	nd	tr	tr	tr	0.13	0.13	nd	–	tr	1
Black porgy	Nakagusuku Bay, Okinawa Pref.	nd	nd	tr	tr	tr	tr	nd	–	tr	0
Dace	Lake Biwa	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Fishes (Total Samples 70)							0.54	nd	–	tr	13
Common mussel	Yamada Bay	0.12	0.12	0.12	0.15	0.14	0.15	0.12	0.13	0.12	5
Common mussel	Miura Peninsula	tr	tr	0.05	0.05	0.06	0.06	tr	–	tr	3
Common mussel	Noto Peninsula	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Common mussel	Ise Bay	0.06	0.05	tr	tr	tr	0.06	tr	–	tr	2
Common mussel	Shimane Peninsula	0.25	0.28	0.28	0.33	0.35	0.35	0.25	0.30	0.28	5
Asiatic mussel	Naruto	0.07	0.07	0.08	0.07	0.08	0.08	0.07	0.07	0.07	5
Shellfishes (Total Samples 30)							0.35	nd	–	0.06	20
Gray starling	Suburbs of Morioka City	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Black-tailed gull	Kabushima, Aomori Pref.	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Birds (Total Samples 10)							nd	nd	–	nd	0
Total (Total Samples 110)							0.54	nd	–	tr	33

- (Note) 1. The values are the equivalent values to TBTO.  
 2. Detected samples denote the numbers of detected samples in each sampling spot.  
 3. Conduct of the unified detection limit is treated at 0.05mg/g-wet (ppm).  
 4. nd denotes no detection and tr denotes that the detected values are below the unified detection limit.

**Table 6-2 Results of Wildlife Monitoring (Triphenyltin Compound) (Fiscal Year1995)**

(Unit: mg/g-wet (ppm))

Species	Sampling spot	Samples No.					Max.	Min.	Mean	Median	Detected samples
		1	2	3	4	5					
Chum salmon	Offshore of Kushiro, Hokkaido	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Angry rockfish	Offshore of Nemuro, Hokkaido	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Greenling	Yamada Bay	0.06	0.06	0.06	0.06	0.06	0.07	0.06	0.06	0.06	5
Pacific saury	Offshore of Joban	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Cod	Sea of Japan (Offshore of Tohoku)	tr	tr	tr	tr	nd	tr	nd	–	tr	0
Sea bass	Tokyo Bay	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Sea bass	Osaka Bay	0.11	0.09	0.25	0.06	0.11	0.25	0.06	0.12	0.11	5
Sea bass	Seto Inland Sea	0.04	0.11	0.08	0.08	0.19	0.19	0.04	0.10	0.08	5
Sea bass	Offshore of Sanin	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Sea bass	Mouth of Riv. Shimanto	tr	tr	tr	tr	tr	tr	tr	–	tr	0
Sea bass	Surrounding of Shūgen Island	0.18	0.08	0.04	0.08	0.06	0.18	0.04	0.09	0.08	5
Sea bass	West Coast of Satsuma Peninsula	nd	nd	nd	nd	0.03	0.03	nd	–	nd	1
Black porgy	Nakagusuku Bay, Okinawa Pref.	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Dace	Lake Biwa	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Fishes (Total Samples 70)							0.25	nd	–	nd	21
Common mussel	Yamada Bay	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Common mussel	Miura Peninsula	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Common mussel	Noto Peninsula	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Common mussel	Ise Bay	tr	tr	tr	tr	tr	tr	tr	–	tr	0
Common mussel	Shimane Peninsula	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Asiatic mussel	Naruto	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Shellfishes (Total Samples 30)							nd	nd	–	nd	0
Gray starling	Suburbs of Morioka City	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Black-tailed gull	Kabushima, Aomori Pref.	nd	nd	nd	nd	nd	nd	nd	–	nd	0
Birds (Total Samples 10)							nd	nd	–	nd	0
Total (Total Samples 110)							0.25	nd	–	nd	21

- (Note) 1. The values are the equivalent values to TPTCl.  
 2. Detected samples denote the numbers of detected samples in each sampling spot.  
 3. Conduct of the unified detection limit is treated at 0.02mg/g-wet (ppm).  
 4. nd denotes no detection and tr denotes that the detected values are below the unified detection limit.