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RADIOACTIVITY SURVEY DATA in Japan

Part 2
=Dietary Materials=

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Radioactivity Survey Data in Japan

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Contents

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Environmental and Dietary Materials*

(Japan Chemical Analysis Center)

1. Collection and pretreatment of samples

(1) Rain and dry fallout

Rain and dry fallout was collected monthly on a sampling tray, approximately 5000 cm^2 in area, which was filled with water to a depth of 1 cm at the beginning of every month.

Strontium and cesium carrier solutions were added after the sample was filtered. The tray was washed with 5 ℓ of distilled water and the washing was combined to the filtrate.

The sample was passed through a cation exchange column (500 mℓ of Dowex 50W X8, 50～100 mesh, Na form) at a rate flow of 80 mℓ/min.

(2) Airborne dust

Airborne dust was collected by an electrostatic precipitator or a filter air sampler for every three months at a rate of more than 3000 m^3 per month. The sampling was done 1 to 1.5 meters above the ground.

(3) Service water and freshwater

Service water, 100 ℓ each, was collected at the intake of the water-treatment plant and at the tap after water was left running for five minutes. Strontium and cesium carriers were added to the filtered water sample. The subsequent process was the same as that described in the section (1). Freshwater was treated in the same way as the service water.

(4) Soil

Soil was collected from the location in the spacious and flat area without past surface disturbance caused by duststorms, inflow and outflow due to precipitation, etc.. Any places located under trees in a forest, in a stony area or inside of river banks were avoided. Soil was taken from two layers of different depths, 0-5cm and 5-20cm. The soil lumps were crushed by hands and dried in a drying oven regulated 105 ℃. The soil was then passed through a 2 mm sieve to remove plant roots and pebbles.

(5) Sea water

Sea water was collected at the fixed stations where the effect of terrestrial fresh water from rivers was expected to be negligibly small. A special consideration was also given to weather conditions. The sampling was carried out when there was no rainfall for the last few days. To prevent contamination, water samples were collected at the bow of a sampling boat just before she stood still by scooping surface water using a polyethylene bucket. Immediately after the collection, the samples were acidified to a pH lower than 3 by adding concentrated hydrochloric acid in a ratio of 1 mℓ to 1 ℓ of sea water, and then stored in 20 ℓ polyethylene containers. The sampling equipments as well as containers were thoroughly rinsed with dilute hydrochloric acid and then with distilled water before use. Two hundred milliliters of sea water was also collected at the same stations for the determination of chlorinity.

(6) Sea sediments

Sediment was collected in the same area as that for the sea water sample, taking the following criteria into account:

a. The depth of water exceeds 1 m at low tide.
b. No significant sedimental movement is observed in the vicinity of concern.
c. Mud, silt and fine sand are preferable.

A conventional sediment sampling device was used for collecting the top few centimeters of surface sediment. Approximately 4kg of the sample in wet weight was spread on a stenless steel dish after removed of the pebbles, shells and other foreign materials, and dried in a drying oven regulated at 105℃.

(7) Total diet

A full one day ordinary diet including three meals, water, tea and other in-between snacks for five persons was collected as a sample of "total diet". The sample in a large stainless steel pan was carbonized carefully by direct application of gas flame, and was transfered to a porcelain dish and then ashed at 450 ℃ in an electric muffle furnace.

(8) Rice

Polished rice was collected in producing districts at the harvest and in consuming areas when new crops were first put on sale. The sample was carbonized and ashed in a porcelain dish.

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* Samples were sent to the Center from 32 contracted prefectures.

(9) Milk

Raw milk was collected in producing districts and commercial milk was purchased in consuming districts. Milk in a stainless steel pan or a porcelain dish was evaporated to dryness followed by carbonization and ashing.

(10) Vegetables

Spinach and Japanese radish were selected as the representatives for leaf vegetables and for non-starch roots, respectively. After removing soil, the edible part of vegetable sample was dried and carbonized in a stainless steel pan or a porcelain dish.

(11) Tea

Five hundred grams of manufactured green tea was collected, carbonized and ashed in a stainless steel pan or a porcelain dish.

(12) Fish, shellfish and seaweeds

a. Sea fish and freshwater fish

Fish was rinsed with water and blotted with a filter paper. Only the edible part was used in case of larger sized fish, and the whole part was used in case of smaller ones. Each sample was weighed and placed in a stainless steel pan or a porcelain dish. After carbonized, the sample was ashed in an electric muffle furnace.

b. Shellfish

Approximately 4 kg of shellfish including the shells was collected or purchased. After removing the shells, it was treated in the same way as that for the sea fish.

c. Seaweeds

Edible seaweeds were collected and rinsed with water to remove sand and other adhering matters on the surface. These were removed of excess water, weighed dried and ashed.

Table 1 shows detailes of sample collection.

Table 1 Details of sample collection

Sample	Frequency of sampling	Quantity of sample
=Environmental materials=		
(1) Rain and dry fallout		
1. For domestic program	monthly	
2. For WHO program	monthly	
(2) Airborne dust	quarterly	>3000 m^3/month
(3) Service water and freshwater		
1. Service water (source water)	semiyearly	100 ℓ
2. Service water (tap water)	semiyearly	100 ℓ
3. Freshwater	yearly (fishing season)	100 ℓ
(4) Soil		
1. 0～5 cm	yearly	4 kg
2. 5～20cm	yearly	4 kg
(5) Sea water	yearly	40 ℓ
(6) Sea sediments	yearly	4 kg
=Dietary materials=		
(7) Total diet	semiyearly	daily amount for 5 persons
(8) Rice		
1. Producing districts	yearly (harvesting season)	5 kg (polished rice)
2. Consuming districts	yearly (harvesting season)	5 kg (polished rice)
(9) Milk		
1. Producing districts for WHO program	quarterly (February, May, August and November)	3 ℓ
2. Producing districts for domestic program	semiyearly (February and August)	3 ℓ

Sample	Frequency of sampling	Quantity of sample
3. Consuming districts	semiyearly (February and August)	3 ℓ
4. Powdered milk	semiyearly (April and October)	2～3 kg
(10) Vegetables		
1. Producing districts	yearly (harvesting season)	4 kg
2. Consuming districts	yearly (harvesting season)	4 kg
(11) Tea	yearly (the first harvesting season)	500g (manufactured tea)
(12) Fish, shellfish and seaweeds		
1. Sea fish	yearly (fishing season)	4 kg
2. Freshwater fish	yearly (fishing season)	4 kg
3. Shellfish	yearly (fishing season)	4 kg
4. Seaweeds	yearly (fishing season)	2～3 kg

2. Preparation of samples for analysis

(1) Rain, service water and freshwater

Strontium and cesium were eluted with hydrochloric acid from the cation exchange column. The residue of rain sample on the filter paper was ashed in an electric muffle furnace and the ash was dissolved in hydrochloric acid. The insoluble part was filtered and washed. The filtrate and the washings were combined to the previous eluate and used for radiochemical analysis.

(2) Soil and Sea sediment

Dried soil was crushed to smaller ones than 0.25 mm in size by a crusher. The sieved sample was ashed in an electric muffle furnace regulated at 450℃ . The sample was then heated with hydrochloric acid, strontium and cesium carrier solutions and the mixture was heated. The insoluble constituent was filtered off and washed with water.

The dried sample was crushed to smaller ones than 0.25 mm by a crushing machine. The further preparation of the sample was the same as that described in the section 2-(2).

(3) Rice

The ashed sample was pulverized with a porcelain mortar and passed through a 0.35 mm sieve. The sieved sample to which both strontium and cesium carriers were added, was digested with nitric acid by heating. After the sample was heated again with nitric acid to dryness, strontium and cesium were extracted with hydrochloric acid and water. The insoluble constituent was filtered and washed. The filtrate and washings were combined for subsequent radiochemical analysis.

(4) Airborne dust, diet, milk, vegetables, fish and shellfish, seaweeds, tea and others

These ashed samples were treated with the same procedure as that described in the section 2-(4).

3. Separation of strontium-90 and cesium-137

(1) Strontium-90

Sample solutions, prepared as in the foregoing sections 2-(1) through 2-(4), were neutralized with sodium hydroxide. After sodium carbonate was added, the precipitate of strontium and calcium carbonates was separated. The supernatant solution was retained for cesium-137 determination. The carbonates were dissolved in hydrochloric acid and strontium and calcium were precipitated as oxalates. The precipitate was dissolved in nitric acid and strontium was separated from calcium by successive fuming nitric acid separation. Iron scavenge was made after addition of ferric iron carrier followed by barium chromate separation after addition of barium carrier to remove radium, its daughters and lead. Strontium was recovered as carbonate, and the precipitate was dried and weighed to determine strontium recovery. The strontium carbonate was dissolved in hydrochloric acid and iron carrier was added. The solution was allowed to stand for two weeks for strontium-90 and yttrium-90 to attain equilibrium. Yttrium-90 was coprecipitated with ferric hydroxide and the precipitate was filtered off, washed and counted.

(2) Cesium-137

The supernatant separated from the strontium fraction was acidified with hydrochloric acid. While stirring, cesium was adsorbed on the ammonium molyb-

dophosphate added.

After filtered off and washed with hydrochlotric acid the precipitate was dissolved in 2.5N sodium hydroxide solution. The solution was adjusted to pH 8.2 with hydrochloric acid and allowed to cool. Resultant molybdenum hydroxide which separated out in the solution, was filtered off and washed with water. EDTA was added to the filtrate and washings. Cesium and rubidium were adsorbed on a cation exchange column and cesium was separated from rubidium by eluting with hydrochloric acid.

The eluate was evaporated to dryness and was dissolved. The solution was filtered. Chloroplatinic acid was added to precipitate cesium. The precipitate was filtered onto a tared paper using a demountable filter and washed with water and then ethanol. After drying, the chemical yield of cesium was determined by weighing the precipitate. Cesium-137 radioactivity was measured for this precipitate.

4. Determination of stable strontium, calcium and potassium

A weighed amount of soil or sea sediment was heated in a electric muffle furnace at 450 ℃ and then treated with hydrochloric acid for extraction. A weighed aliquot of ashed samples of total diet, vegetables, milk, fish, shellfish or seaweeds was digested with hydrofluoric acid and nitric acid.
The extract was made up to an appropriate volume with dilute hydrochloric acid. The sample solution was analyzed for calcium by titration with standard potassium permanganate solution after separating calcium as oxalate. Atomic absorption spectroscopy was applied when appropriate. Stable strontium and potassium were determined by atomic absorption and flame emission spectrometry, respectively.

5. Counting

After the radiochemical separation the mounted precipitates were counted for activity using low background beta counters normally for 60 to 90 min. Net sample counting rates were corrected for counter efficiency, recovery, self-absorption and decay to obtain the content of strontium-90 and cesium-137 per sample aliquot. From the results, concentrations of these nuclides in the original samples were calculated.

6. Results

(1) Strontium-90 and Cesium-137 in Total Diet
(from Jun. 1987 to Dec. 1987)

-continued from NO. 81 of this publication-

Table (1): Strontium-90 and Cesium-137 in Total Diet

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	(g/p·d)	(mg/p·d)	(mg/p·d)	(pCi/p·d)	S.U.	(pCi/p·d)	C.U.
June, 1987							
Aomori, AOMORI	16.8	569	1960	3.2±0.33	5.6±0.58	5.6±0.35	2.9±0.18
Kanazawa, ISHIKAWA	20.8	880	2320	2.3±0.32	2.6±0.37	5.4±0.39	2.3±0.17
Nagano, NAGANO	18.9	730	2500	1.7±0.31	2.3±0.43	24 ±0.8	9.7±0.32
Matsue, SHIMANE	17.2	884	2470	3.1±0.34	3.5±0.39	5.1±0.36	2.1±0.15
Yamaguchi, YAMAGUCHI	12.3	395	1480	1.5±0.26	3.8±0.65	3.2±0.27	2.2±0.18
July, 1987							
Ishinomaki, MIYAGI	14.7	466	1780	1.4±0.23	3.0±0.50	3.2±0.26	1.8±0.15
Akita, AKITA	16.9	393	2180	2.7±0.36	6.9±0.91	8.7±0.45	4.0±0.21
Hiratsuka, KANAGAWA	15.8	551	2320	2.5±0.30	4.5±0.54	5.4±0.35	2.3±0.15
August, 1987							
Hiroshima, HIROSHIMA	11.2	583	1410	1.5±0.26	2.6±0.44	2.3±0.22	1.6±0.16
November, 1987							
Onagawa-machi, MIYAGI	17.4	690	2440	4.9±0.37	7.1±0.53	7.6±0.60	3.1±0.25
Akita, AKITA	14.4	447	2220	6.2±0.38	14 ±0.8	14 ±0.7	6.2±0.32
Yamagata, YAMAGATA	15.7	556	1860	4.6±0.35	8.3±0.63	5.0±0.49	2.7±0.26
Nishikawa-machi, NIIGATA	19.5	1000	2790	6.5±0.48	6.5±0.48	7.4±0.64	2.6±0.23
Fukui, FUKUI	12.9	963	1660	4.2±0.30	4.3±0.31	3.9±0.38	2.3±0.23
Shizuoka, SHIZUOKA	18.3	850	2940	4.9±0.39	5.7±0.46	11 ±0.7	3.8±0.25
Fukube-mura, TOTTORI	16.9	731	2600	7.7±0.71	10 ±1.0	9.1±0.60	3.5±0.23
Matsue, SHIMANE	18.9	1460	2480	6.6±0.68	4.5±0.47	6.8±0.57	2.8±0.23
Okayama, OKAYAMA	15.2	626	1930	3.8±0.53	6.1±0.85	4.8±0.43	2.5±0.22
Matsuyama, EHIME	12.0	505	1670	2.0±0.26	4.0±0.51	4.0±0.38	2.4±0.23
Kochi, KOCHI	16.2	742	2160	6.0±0.65	8.1±0.88	7.0±0.52	3.3±0.24
Dazaifu, FUKUOKA	13.2	529	2130	5.6±0.58	11 ±1.1	12 ±0.6	5.8±0.28
Saga, SAGA	11.6	404	1550	2.6±0.24	6.4±0.60	4.4±0.35	2.8±0.23
Nagasaki, NAGASAKI	14.0	496	1510	3.0±0.29	6.1±0.59	7.3±0.48	4.8±0.32
Ookuchi, KAGOSHIMA	11.6	330	1560	1.7±0.22	5.2±0.68	2.5±0.31	1.6±0.20
December, 1987							
Sapporo, HOKKAIDO	18.2	741	2690	5.9±0.41	8.0±0.55	10 ±0.7	3.8±0.26
Fukushima, FUKUSHIMA	17.6	536	2280	2.3±0.32	4.3±0.60	2.8±0.41	1.2±0.18
Mito, IBARAGI	18.5	859	2430	2.9±0.37	3.4±0.43	3.3±0.46	1.4±0.19

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	(g/p·d)	(mg/p·d)	(mg/p·d)	(pCi/p·d)	S.U.	(pCi/p·d)	C.U.
Kanazawa, ISHIKAWA	21.4	1000	3010	3.6 ± 0.43	3.6 ± 0.42	4.8 ± 0.57	1.6 ± 0.19
Neyagawa, OSAKA	15.2	622	2070	1.7 ± 0.29	2.8 ± 0.47	13 ± 0.7	6.1 ± 0.34
Kakogawa, HYOGO	13.4	691	1920	2.3 ± 0.26	3.3 ± 0.38	3.2 ± 0.37	1.7 ± 0.19
Wakayama, WAKAYAMA	10.2	425	1550	2.5 ± 0.23	5.8 ± 0.55	3.8 ± 0.34	2.4 ± 0.22
Hiroshima, HIROSHIMA	14.6	1340	1730	4.3 ± 0.54	3.2 ± 0.41	4.5 ± 0.43	2.6 ± 0.25
Yamaguchi, YAMAGUCHI	14.3	570	2230	2.1 ± 0.32	3.6 ± 0.57	3.8 ± 0.43	1.7 ± 0.19

(2)-1 Strontium-90 and Cesium-137 in Rice(producing districts)
(from Oct. 1987 to Dec. 1987)

-continued from NO. 81 of this publication-

Table (2)-1: Strontium-90 and Cesium-137 in Rice

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
October, 1987							
Mito, IBARAGI	0.558	0.032	0.636	0.3 ±0.14	9± 4.3	2.0 ±0.18	3.2 ±0.29
Maki-machi, NIIGATA	0.484	0.037	0.774	0.7 ±0.15	20± 4.1	0.6 ±0.13	0.7 ±0.17
Hodaka-machi, NAGANO	0.585	0.032	0.994	0.1 ±0.09	2± 2.7	0.0 ±0.10	0.01±0.10
Usa, OOITA	0.627	0.037	1.15	0.3 ±0.20	9± 5.5	0.1 ±0.14	0.1 ±0.12
November, 1987							
Ishikari-machi, HOKKAIDO	0.612	0.032	1.16	0.3 ±0.18	8± 5.4	0.1 ±0.10	0.1 ±0.09
Tajiri-machi, MIYAGI	0.583	0.031	1.17	0.2 ±0.16	6± 5.1	1.7 ±0.17	1.5 ±0.15
Fukushima, FUKUSHIMA	0.729	0.033	1.28	0.1 ±0.22	4± 6.6	0.6 ±0.16	0.5 ±0.13
December, 1987							
Kasai, HYOGO	0.518	0.039	0.979	0.4 ±0.16	11± 4.0	0.2 ±0.09	0.2 ±0.10
Yamaguchi, YAMAGUCHI	0.573	0.022	0.756	0.3 ±0.18	12± 8.2	0.9 ±0.15	1.2 ±0.20
Chikushino, FUKUOKA	0.674	0.040	1.43	0.3 ±0.19	8± 4.6	0.3 ±0.15	0.2 ±0.10

(2)-2 Strontium-90 and Cesium-137 in Rice(consuming districts)
(from Sep. 1987 to Jan. 1988)

-continued from NO. 81 of this publication-

Table (2)-2: Strontium-90 and Cesium-137 in Rice

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
September, 1987							
Kanazawa, ISHIKAWA	0.557	0.037	0.997	0.5 ±0.18	14± 5.0	0.9 ±0.15	0.9 ±0.15
October, 1987							
Akita, AKITA	0.506	0.032	0.895	0.5 ±0.09	16± 2.7	1.6 ±0.16	1.8 ±0.17
Mito, IBARAGI	0.567	0.031	0.765	0.3 ±0.14	11± 4.6	0.8 ±0.14	1.0 ±0.18
Shinjuku, TOKYO	0.498	0.027	0.652	0.1 ±0.12	5± 4.4	1.3 ±0.15	1.9 ±0.23
Niigata, NIIGATA	0.464	0.030	0.677	0.3 ±0.14	10± 4.7	0.6 ±0.12	0.9 ±0.18
Wakayama, WAKAYAMA	0.562	0.037	0.837	0.3 ±0.17	9± 4.7	1.1 ±0.14	1.3 ±0.17
Hiroshima, HIROSHIMA	0.437	0.032	0.795	0.3 ±0.13	8± 4.0	0.6 ±0.13	0.8 ±0.16
Matsuyama, EHIME	0.521	0.034	0.682	0.3 ±0.16	10± 4.7	0.05±0.12	0.1 ±0.17
November, 1987							
Sapporo, HOKKAIDO	0.597	0.035	1.11	0.5 ±0.19	14± 5.4	0.0 ±0.09	0.0 ±0.08
Yamagata, YAMAGATA	0.635	0.034	1.03	0.1 ±0.07	2± 2.2	0.8 ±0.14	0.8 ±0.14
Yokohama, KANAGAWA	0.519	0.031	0.820	0.4 ±0.09	13± 2.9	0.7 ±0.12	0.9 ±0.14
Fukui, FUKUI	0.528	0.030	0.960	0.1 ±0.08	5± 2.5	0.4 ±0.11	0.5 ±0.11
Shizuoka, SHIZUOKA	0.574	0.032	0.809	0.5 ±0.17	14± 5.2	1.7 ±0.17	2.2 ±0.21
Osaka, OSAKA	0.587	0.050	1.06	0.1 ±0.17	2± 3.3	1.8 ±0.18	1.7 ±0.17
Saga, SAGA	0.575	0.038	1.24	0.0 ±0.15	0± 3.9	0.1 ±0.08	0.1 ±0.07
Kagoshima, KAGOSHIMA	0.553	0.033	1.10	0.0 ±0.16	0± 5.0	0.4 ±0.14	0.3 ±0.12
Yonagusuku-mura, OKINAWA	0.441	0.027	1.76	0.2 ±0.14	7± 5.1	0.8 ±0.11	0.4 ±0.06
December, 1987							
Nagoya, AICHI	0.530	0.038	1.04	0.1 ±0.14	3± 3.8	0.4 ±0.12	0.4 ±0.11
Kobe, HYOGO	0.564	0.054	1.08	0.2 ±0.15	4± 2.8	1.2 ±0.15	1.1 ±0.14
Tottori, TOTTORI	0.539	0.035	1.04	0.3 ±0.15	7± 4.3	1.7 ±0.17	1.7 ±0.17
Matsue, SHIMANE	0.461	0.032	0.871	0.3 ±0.14	10± 4.5	3.7 ±0.21	4.2 ±0.24
Seto-machi, OKAYAMA	0.507	0.032	1.34	0.0 ±0.14	0± 4.2	0.2 ±0.11	0.2 ±0.08
Kochi, KOCHI	0.549	0.034	1.20	0.2 ±0.17	5± 4.9	0.9 ±0.13	0.7 ±0.11
Kasuga, FUKUOKA	0.511	0.035	1.10	0.4 ±0.15	10± 4.3	0.6 ±0.12	0.5 ±0.11
January, 1988							
Hirosaki, AOMORI	0.581	0.054	1.22	0.1 ±0.15	3± 2.9	0.4 ±0.14	0.4 ±0.11

(3)-1 Strontium-90 and Cesium-137 in Milk(producing districts for domestic program)
(from Aug. 1987 to Oct. 1987)

-continued from NO. 81 of this publication-

Table (3)-1: Strontium-90 and Cesium-137 in Milk

Location	Component			^{90}Sr		^{137}Cs	
	Ash(g/ℓ)	Ca(g/ℓ)	K(g/ℓ)	pCi/ℓ	S.U.	pCi/ℓ	C.U.
August, 1987							
Aomori, AOMORI	7.09	1.12	1.71	7.5±0.40	6.7±0.35	11 ±0.4	6.7±0.26
Mito, IBARAGI	7.51	1.10	1.64	0.7±0.22	0.7±0.20	0.5±0.13	0.3±0.08
Oshimizu-machi, ISHIKAWA	6.99	1.06	1.81	1.0±0.20	0.9±0.19	1.6±0.19	0.9±0.10
Mihara-machi, HYOGO	7.07	1.20	1.66	0.7±0.20	0.6±0.16	1.0±0.17	0.6±0.10
Matsuyama, EHIME	7.29	1.15	1.65	0.5±0.21	0.4±0.18	1.4±0.19	0.8±0.11
October, 1987							
Yamato-machi, SAGA	6.98	1.05	1.45	1.2±0.23	1.2±0.21	1.2±0.15	0.8±0.10

(3)-2 Strontium-90 and Cesium-137 in Milk(producing districts for WHO program) (from Aug. 1987 to Jan. 1988)

-continued from NO. 81 of this publication-

Table (3)-2: Strontium-90 and Cesium-137 in Milk

Location	Component			^{90}Sr		^{137}Cs	
	Ash(g/ℓ)	Ca(g/ℓ)	K(g/ℓ)	pCi/ℓ	S.U.	pCi/ℓ	C.U.
August, 1987							
Sapporo, HOKKAIDO	7.30	1.12	1.82	1.8±0.23	1.6±0.20	7.8±0.38	4.3±0.21
Hachijo-Island, TOKYO	7.39	1.12	1.74	1.5±0.22	1.3±0.20	4.7±0.30	2.7±0.17
Nishikawa-machi, NIIGATA	7.34	1.15	1.81	1.1±0.21	1.0±0.19	1.9±0.21	1.1±0.11
Katsuyama, FUKUI	7.07	1.05	1.58	1.5±0.24	1.4±0.22	7.3±0.36	4.6±0.23
Nose-machi, OSAKA	7.48	1.17	1.68	1.0±0.22	0.9±0.19	2.2±0.23	1.3±0.14
Yakumo-mura, SHIMANE	7.34	1.14	1.76	2.1±0.26	1.8±0.23	1.9±0.21	1.1±0.12
Takamiya-machi, HIROSHIMA	6.71	1.03	1.56	1.3±0.21	1.2±0.21	1.1±0.17	0.7±0.11
Kochi, KOCHI	7.19	1.08	1.65	1.9±0.22	1.7±0.20	2.0±0.21	1.2±0.13
Fukuma-machi, FUKUOKA	7.78	1.31	1.85	1.2±0.23	0.9±0.17	4.2±0.35	2.3±0.19
Kajiki-machi, KAGOSHIMA	8.08	1.09	1.66	0.6±0.20	0.6±0.18	2.0±0.23	1.2±0.14
November, 1987							
Sapporo, HOKKAIDO	7.31	1.10	1.52	1.9±0.24	1.7±0.22	9.0±0.36	6.0±0.24
Hachijo-Island, TOKYO	7.24	1.15	1.55	5.6±0.39	4.9±0.34	18 ±0.5	11 ±0.3
Nishikawa-machi, NIIGATA	7.50	1.16	1.61	1.1±0.33	0.9±0.28	2.8±0.23	1.8±0.15
Katsuyama, FUKUI	7.13	1.13	1.43	1.1±0.22	1.0±0.19	8.7±0.36	6.1±0.25
Nose-machi, OSAKA	7.79	1.16	1.58	0.9±0.25	0.8±0.21	1.7±0.19	1.1±0.12
Takamiya-machi, HIROSHIMA	6.99	1.06	1.42	0.7±0.20	0.7±0.19	1.0±0.15	0.7±0.10
Kochi, KOCHI	7.48	1.21	1.58	1.6±0.29	1.4±0.24	1.8±0.21	1.1±0.14
Fukuma-machi, FUKUOKA	7.74	1.06	1.72	1.0±0.24	1.0±0.22	4.8±0.28	2.8±0.16
December, 1987							
Yakumo-mura, SHIMANE	7.56	1.33	1.59	1.3±0.17	1.0±0.13	1.4±0.24	0.9±0.15
January, 1988							
Nose-machi, OSAKA	7.70	1.16	1.68	1.0±0.15	0.8±0.13	1.4±0.22	0.8±0.13
Takamiya-machi, HIROSHIMA	6.88	1.03	1.53	0.7±0.13	0.7±0.12	0.9±0.18	0.6±0.11

(3)-3 Strontium-90 and Cesium-137 in Milk(consuming districts)
(from Jul. 1987 to Jan. 1988)

-continued from NO. 81 of this publication-

Table (3)-3: Strontium-90 and Cesium-137 in Milk

Location	Component			^{90}Sr		^{137}Cs	
	Ash(g/ℓ)	Ca(g/ℓ)	K(g/ℓ)	pCi/ℓ	S.U.	pCi/ℓ	C.U.
July, 1987							
Yonagusuku-mura, OKINAWA	7.13	1.16	1.59	0.3±0.21	0.3±0.18	1.1±0.18	0.7±0.11
August, 1987							
Sapporo, HOKKAIDO	7.21	1.11	1.47	2.2±0.26	2.0±0.23	4.6±0.27	3.1±0.18
Akita, AKITA	6.71	1.00	1.53	1.3±0.20	1.3±0.20	4.3±0.28	2.8±0.18
Yamagata, YAMAGATA	6.60	1.01	1.59	1.1±0.19	1.1±0.19	3.2±0.24	2.0±0.15
Shinjuku, TOKYO	6.75	1.01	1.47	0.7±0.18	0.7±0.18	1.6±0.15	1.1±0.10
Yokohama, KANAGAWA	7.44	1.09	1.57	0.8±0.22	0.7±0.20	2.0±0.19	1.3±0.12
Niigata, NIIGATA	7.57	1.11	1.58	1.6±0.24	1.4±0.22	5.0±0.29	3.2±0.19
Fukui, FUKUI	6.80	1.02	1.66	2.1±0.25	2.1±0.24	4.4±0.29	2.7±0.17
Nagano, NAGANO	7.15	1.09	1.73	1.5±0.23	1.4±0.21	1.5±0.19	0.9±0.11
Shizuoka, SHIZUOKA	7.32	1.07	1.52	1.1±0.23	1.0±0.22	3.1±0.24	2.0±0.16
Nagoya, AICHI	6.67	1.05	1.49	0.9±0.20	0.9±0.19	2.1±0.20	1.4±0.14
Osaka, OSAKA	7.29	1.19	1.55	0.8±0.21	0.7±0.17	3.3±0.26	2.1±0.17
Wakayama, WAKAYAMA	6.99	1.17	1.60	1.1±0.22	1.0±0.18	2.2±0.22	1.4±0.14
Yonago, TOTTORI	7.01	1.14	1.54	1.0±0.22	0.9±0.19	2.4±0.23	1.6±0.15
Okayama, OKAYAMA	6.93	0.831	1.52	1.1±0.21	1.3±0.26	3.7±0.26	2.4±0.17
Hiroshima, HIROSHIMA	6.91	1.09	1.49	1.1±0.21	1.0±0.19	1.2±0.17	0.8±0.11
Yamaguchi, YAMAGUCHI	7.29	1.16	1.61	1.1±0.24	0.9±0.21	1.6±0.21	1.0±0.13
Matsuyama, EHIME	7.99	1.21	1.60	1.6±0.28	1.3±0.23	6.0±0.35	3.8±0.22
Kochi, KOCHI	7.33	1.17	1.66	1.0±0.25	0.9±0.21	3.1±0.25	1.9±0.15
Chikushino, FUKUOKA	7.36	1.23	1.61	0.9±0.25	0.8±0.20	1.9±0.20	1.2±0.13
Nagasaki, NAGASAKI	6.48	1.05	1.54	0.5±0.20	0.5±0.19	1.2±0.16	0.8±0.10
Kagoshima, KAGOSHIMA	7.41	1.19	1.65	0.3±0.23	0.2±0.19	2.1±0.23	1.3±0.14
September, 1987							
Sendai, MIYAGI	7.32	1.08	1.55	0.4±0.19	0.4±0.17	1.7±0.18	1.1±0.12
October, 1987							
Kyoto, KYOTO	7.32	1.08	1.49	1.1±0.23	1.0±0.22	2.2±0.20	1.5±0.14
December, 1987							
Akita, AKITA	5.56	0.814	1.20	1.3±0.13	1.6±0.16	5.8±0.31	4.8±0.26
Matsue, SHIMANE	7.26	1.09	1.55	1.2±0.16	1.1±0.15	2.9±0.27	1.9±0.17
January, 1988							
Osaka, OSAKA	7.49	1.11	1.62	1.1±0.15	1.0±0.14	0.5±0.18	0.3±0.11

Location	Component			^{90}Sr		^{137}Cs	
	Ash(g/ℓ)	Ca(g/ℓ)	K(g/ℓ)	pCi/ℓ	S.U.	pCi/ℓ	C.U.
Hiroshima, HIROSHIMA	6.99	1.05	1.56	0.7±0.15	0.7±0.14	1.1±0.20	0.7±0.13

(3)-4 Strontium-90 and Cesium-137 in Milk(powderd milk)

-continued from NO. 81 of this publication-

Table (3)-4: Strontium-90 and Cesium-137 in Milk

Market Milk	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
December, 1987							
Sample A	2.51	4.67	5.50	3.8 ± 0.41	0.8 ± 0.09	31 ± 0.8	5.6 ± 0.14
Sample B	2.59	4.40	5.78	3.2 ± 0.41	0.7 ± 0.09	51 ± 1.0	8.8 ± 0.18
Sample C	2.60	4.99	5.62	4.8 ± 0.50	1.0 ± 0.10	84 ± 1.3	15 ± 0.2
Sample D	2.52	4.56	6.48	3.3 ± 0.44	0.7 ± 0.10	27 ± 0.7	4.2 ± 0.12
Sample *A	8.15	13.0	19.0	25 ± 1.2	2.0 ± 0.09	200 ± 3	11 ± 0.1
Sample *D	8.14	16.8	17.7	19 ± 1.0	1.1 ± 0.06	27 ± 1.0	1.5 ± 0.06

*Skim milk

(4)-1 Strontium-90 and Cesium-137 in Vegetables(producing districts)
(from May 1987 to Dec. 1987)

-continued from NO. 81 of this publication-

Table (4)-1: Strontium-90 and Cesium-137 in Vegetables

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Japanese radish)							
May, 1987							
Tahara-machi, AICHI	0.655	0.214	2.75	1.2±0.27	6 ±1.2	0.05±0.11	0.02±0.04
July, 1987							
Oota, SHIMANE	0.472	0.192	1.89	7.4±0.40	38 ±2.1	3.4 ±0.20	1.8 ±0.11
August, 1987							
Ishikari-machi, HOKKAIDO	0.574	0.146	2.58	13 ±0.5	89 ±3.7	0.3 ±0.09	0.1 ±0.03
October, 1987							
Saku, NAGANO	0.542	0.278	2.16	1.5±0.23	5.5±0.83	0.0 ±0.08	0.0 ±0.04
November, 1987							
Sannohe-machi, AOMORI	0.539	0.290	2.19	4.2±0.22	14 ±0.8	0.5 ±0.13	0.3 ±0.06
Fukushima, FUKUSHIMA	0.570	0.277	2.37	2.1±0.36	8 ±1.3	0.05±0.19	0.02±0.08
Ashiwara-Machi, FUKUI	0.515	0.202	1.92	1.9±0.43	9 ±2.1	0.1 ±0.21	0.1 ±0.11
Gotenba, SHIZUOKA	0.536	0.284	2.26	7.6±0.30	27 ±1.0	2.3 ±0.20	1.0 ±0.09
Kasai, HYOGO	0.457	0.183	1.77	2.8±0.29	15 ±1.6	0.5 ±0.12	0.3 ±0.07
Shime-machi, FUKUOKA	0.815	0.516	3.44	2.8±0.32	5.4±0.61	0.5 ±0.13	0.1 ±0.04
December, 1987							
Wakayama, WAKAYAMA	0.529	0.170	2.51	1.9±0.32	11 ±1.9	0.0 ±0.18	0.0 ±0.07
Kokufu-machi, TOTTORI	0.554	0.250	2.51	5.1±0.33	20 ±1.3	0.2 ±0.07	0.1 ±0.03
Kaimon-machi, KAGOSHIMA	0.637	0.405	2.52	4.2±0.34	10 ±0.8	0.3 ±0.10	0.1 ±0.04
(Onion)							
July, 1987							
Kumatori-machi, OSAKA	0.347	0.127	1.47	2.3±0.36	18 ±2.8	0.6 ±0.20	0.4 ±0.14
(Cabbage)							
November, 1987							
Sannohe-machi, AOMORI	0.625	0.507	2.38	9.2±0.33	18 ±0.6	1.8 ±0.19	0.7 ±0.08
(Spinach)							
May, 1987							
Tahara-machi, AICHI	1.65	0.707	6.58	0.9±0.29	1.3±0.41	0.2 ±0.14	0.04±0.02

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
August, 1987							
Ishikari-machi, HOKKAIDO	1.76	0.302	7.93	1.8 ± 0.37	6 ± 1.2	0.04 ± 0.13	0.0 ± 0.02
October, 1987							
Saku, NAGANO	2.29	0.643	9.98	2.0 ± 0.39	3.0 ± 0.61	1.0 ± 0.21	0.1 ± 0.02
November, 1987							
Fukushima, FUKUSHIMA	1.81	1.09	7.64	5.6 ± 0.47	5.2 ± 0.43	0.4 ± 0.23	0.05 ± 0.03
Fukui, FUKUI	1.57	0.510	7.31	7.2 ± 0.51	14 ± 1.0	0.5 ± 0.24	0.1 ± 0.03
Gotenba, SHIZUOKA	1.41	0.714	6.10	7.8 ± 0.37	11 ± 0.5	3.6 ± 0.31	0.6 ± 0.05
Kasai, HYOGO	1.57	0.460	6.01	3.6 ± 0.40	7.8 ± 0.87	0.6 ± 0.16	0.1 ± 0.03
Kurayoshi, TOTTORI	1.45	0.687	5.03	3.7 ± 0.43	5.4 ± 0.63	2.9 ± 0.26	0.6 ± 0.05
Matsuyama, EHIME	1.83	1.18	7.22	1.1 ± 0.28	0.9 ± 0.24	0.2 ± 0.16	0.03 ± 0.02
Shime-machi, FUKUOKA	1.38	1.22	4.54	6.1 ± 0.45	5.0 ± 0.37	1.5 ± 0.20	0.3 ± 0.04
December, 1987							
Kaimon-machi, KAGOSHIMA	1.89	0.790	7.53	4.8 ± 0.44	6.1 ± 0.56	1.0 ± 0.18	0.1 ± 0.02
(Chinese cabbage)							
July, 1987							
Oota, SHIMANE	0.752	0.722	2.52	19 ± 0.7	26 ± 1.0	22 ± 0.6	8.7 ± 0.25
December, 1987							
Wakayama, WAKAYAMA	0.504	0.426	1.97	1.5 ± 0.28	3.4 ± 0.65	0.0 ± 0.17	0.0 ± 0.09

(4)-2 Strontium-90 and Cesium-137 in Vegetables(consuming districts)
(from May 1987 to Dec. 1987)

-continued from NO. 81 of this publication-

Table (4)-2: Strontium-90 and Cesium-137 in Vegetables

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Japanese radish)							
September, 1987							
Sendai, MIYAGI	0.540	0.311	1.73	9.1±0.43	29 ±1.4	4.8 ±0.23	2.8 ±0.13
October, 1987							
Akita, AKITA	0.680	0.358	2.92	12 ±0.6	35 ±1.6	0.4 ±0.11	0.1 ±0.04
Yamagata, YAMAGATA	0.462	0.190	2.05	48 ±1.0	250 ±5	5.2 ±0.26	2.5 ±0.13
Kyoto, KYOTO	0.579	0.201	2.44	4.6±0.25	23 ±1.2	0.5 ±0.12	0.2 ±0.05
November, 1987							
Shinjuku, TOKYO	0.492	0.192	2.26	2.7±0.34	14 ±1.8	0.3 ±0.19	0.1 ±0.08
Niigata, NIIGATA	1.13	0.603	3.97	1.8±0.45	2.9±0.74	1.8 ±0.28	0.5 ±0.07
Kanazawa, ISHIKAWA	0.604	0.306	2.48	7.0±0.27	23 ±0.9	0.5 ±0.12	0.2 ±0.05
Osaka, OSAKA	0.585	0.224	2.71	4.8±0.34	21 ±1.5	0.6 ±0.15	0.2 ±0.05
Ushimado-machi, OKAYAMA	0.514	0.392	2.10	3.6±0.43	9 ±1.1	0.4 ±0.16	0.2 ±0.08
Saga, SAGA	0.619	0.204	2.97	1.4±0.29	7 ±1.4	0.3 ±0.10	0.1 ±0.03
Yonagusuku-mura, OKINAWA	0.878	0.409	3.53	2.9±0.39	7.1±0.96	0.4 ±0.14	0.1 ±0.04
(Cabbage)							
October, 1987							
Akita, AKITA	0.571	0.582	2.00	11 ±0.5	19 ±0.8	5.5 ±0.28	2.7 ±0.14
(Spinach)							
May, 1987							
Sendai, MIYAGI	1.88	1.09	7.07	7.1±0.49	6.5±0.45	0.4 ±0.15	0.1 ±0.02
June, 1987							
Niigata, NIIGATA	1.35	0.946	5.17	2.6±0.23	2.8±0.24	3.0 ±0.31	0.6 ±0.06
October, 1987							
Yamagata, YAMAGATA	1.17	0.282	5.37	1.5±0.29	5.2±1.0	0.2 ±0.13	0.03±0.02
November, 1987							
Shinjuku, TOKYO	1.42	0.354	7.03	2.8±0.36	7.8±1.0	1.0 ±0.23	0.1 ±0.03
Ushimado-machi, OKAYAMA	1.29	0.607	5.45	1.9±0.31	3.2±0.51	0.1 ±0.13	0.02±0.02

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
Matsuyama, EHIME	2.06	0.732	8.98	4.9 ± 0.47	6.7 ± 0.64	0.9 ± 0.19	0.1 ± 0.02
Saga, SAGA	1.35	0.648	5.87	0.2 ± 0.28	0.4 ± 0.43	0.2 ± 0.14	0.04 ± 0.02
Yonagusuku-mura, OKINAWA	1.45	0.834	5.31	1.8 ± 0.34	2.2 ± 0.41	0.1 ± 0.12	0.03 ± 0.02
December, 1987							
Kanazawa, ISHIKAWA	1.75	0.617	7.30	1.7 ± 0.19	2.8 ± 0.31	1.0 ± 0.20	0.1 ± 0.03

(5) Strontium-90 and Cesium-137 in Sea Fish
(from Apr. 1987 to Dec. 1987)

-continued from NO. 81 of this publication-

Table (5): Strontium-90 and Cesium-137 in Sea Fish

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Hexagrammos otakii)							
August, 1987							
Souma, FUKUSHIMA	1.70	2.13	4.03	0.3±0.26	0.2 ±0.12	7.1±0.42	1.8 ±0.11
(Trachurus japonicus)							
July, 1987							
Kobe, HYOGO	3.86	9.44	3.29	0.4±0.26	0.04±0.03	6.4±0.43	1.9 ±0.13
September, 1987							
Wakayama, WAKAYAMA	3.74	8.62	4.10	0.2±0.32	0.0 ±0.04	4.8±0.37	1.2 ±0.09
November, 1987							
Shizuoka, SHIZUOKA	3.37	7.86	3.93	0.3±0.28	0.04±0.04	7.8±0.44	2.0 ±0.11
(Branchiostegus sp.)							
November, 1987							
Nagasaki, NAGASAKI	1.68	0.880	4.77	0.3±0.53	0.3 ±0.60	7.5±0.56	1.6 ±0.12
(Sardinops melanosticta)							
September, 1987							
Yamagata, YAMAGATA	3.36	7.99	2.37	0.0±0.24	0.0 ±0.03	2.5±0.30	1.1 ±0.13
December, 1987							
Nagano, NAGANO	3.29	8.22	3.11	0.6±0.28	0.1 ±0.03	3.6±0.32	1.2 ±0.10
(Sebastiscus marmoratus)							
April, 1987							
Hamada, SHIMANE	5.33	13.4	2.40	1.2±0.34	0.1 ±0.03	4.6±0.40	1.9 ±0.17
(Limanda herzensteini)							
November, 1987							
Mutsu, AOMORI	1.45	0.770	4.28	0.5±0.30	0.6 ±0.39	5.9±0.38	1.4 ±0.09
Niigata, NIIGATA	1.59	1.18	4.11	0.4±0.18	0.4 ±0.15	6.2±0.49	1.5 ±0.12
Mikuni-machi, FUKUI	1.28	1.79	2.73	0.5±0.15	0.3 ±0.08	3.6±0.34	1.3 ±0.12
(Sillago sihama)							
September, 1987							
Minamichita-machi, AICHI	3.87	9.66	4.57	0.0±0.40	0.0 ±0.04	2.1±0.27	0.5 ±0.06
(Spratelloides gracilis)							
December, 1987							
Akune, KAGOSHIMA	3.03	6.29	3.65	0.0±0.27	0.0 ±0.04	5.0±0.37	1.4 ±0.10

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Oncorhynchus keta)							
October, 1987							
Urakawa-machi, HOKKAIDO	1.33	0.532	3.95	0.1±0.32	0.3 ±0.61	5.2±0.40	1.3 ±0.10
(Scomber japonicus)							
August, 1987							
Matsuyama, EHIME	1.35	0.718	4.38	0.0±0.33	0.0 ±0.46	8.6±0.44	2.0 ±0.10
November, 1987							
Osaka, OSAKA	1.09	0.118	2.89	0.6±0.45	5.0 ±3.80	6.8±0.44	2.4 ±0.15
(Chrysophrys major)							
July, 1987							
Fukuoka, FUKUOKA	1.38	0.369	4.81	0.1±0.11	0.4 ±0.29	7.4±0.37	1.5 ±0.08
(Seriola quinqueradiata)							
September, 1987							
Togi-machi, ISHIKAWA	1.43	0.951	4.28	0.0±0.28	0.0 ±0.30	6.9±0.41	1.6 ±0.10
(Mugil cephalus)							
August, 1987							
Morodomi-machi, SAGA	1.04	0.161	3.95	0.1±0.12	0.8 ±0.75	2.9±0.27	0.7 ±0.07
November, 1987							
Ushimado-machi, OKAYAMA	1.52	1.23	4.08	0.4±0.14	0.3 ±0.11	6.3±0.36	1.5 ±0.09
(Decapterus muroadsi)							
October, 1987							
Miyake-Island, TOKYO	1.50	1.88	3.26	0.1±0.24	0.1 ±0.13	4.1±0.32	1.3 ±0.10

Sea Fish

Japanese name	English name	Scientific name
Ainame	Greenling	Hexagrammos otakii
Aji	Horse mackerel	Trachurus japonicus
Amadai	Tilefish	Branchiostegus sp.
Iwashi	Sardine	Sardinops melanosticta
Kasago	Scorpion-fish	Sebastiscus marmoratus
Karei	Flatfish	Limanda herzensteini
Kisu	Sillago	Sillago sihama
Kibinago	Banded blue-sprat	Spratelloides gracilis
Sake	Salmon	Oncorhynchus keta
Saba	Common mackerel	Scomber japonicus
Tai	Sea bream	Chrysophrys major
Fukuragi	Yellow-tail	Seriola quinqueradiata
Bora	Gray mullet	Mugil cephalus
Muroaji	Horse-scad mackerel	Decapterus muroadsi

(6) Strontium-90 and Cesium-137 in Freshwater Fish
(from Jul. 1987 to Dec. 1987)

-continued from NO. 81 of this publication-

Table (6): Strontium-90 and Cesium-137 in Freshwater Fish

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Cyprinus carpio)							
August, 1987							
Akita, AKITA	3.45	7.97	2.61	40 ±1.1	5.0 ±0.14	24 ±0.8	9.2 ±0.29
October, 1987							
Fukushima, FUKUSHIMA	3.22	8.82	3.21	27 ±0.7	3.1 ±0.07	6.9±0.40	2.1 ±0.12
November, 1987							
Shobara, HIROSHIMA	0.769	0.532	2.37	2.9±0.28	5.4 ±0.53	6.0±0.42	2.5 ±0.18
(Carassius auratus)							
July, 1987							
Barato-lake, HOKKAIDO	4.70	11.2	2.89	24 ±1.0	2.1 ±0.09	9.3±0.50	3.2 ±0.17
November, 1987							
Toyanogata, NIIGATA	1.17	0.706	3.71	3.1±0.29	4.5 ±0.41	11 ±0.5	2.9 ±0.14
December, 1987							
Mikata-lake, FUKUI	1.82	4.05	2.83	11 ±0.4	2.7 ±0.10	12 ±0.5	4.2 ±0.17
(Hypomesus transpacificus nipponensis)							
December, 1987							
Suwa-lake, NAGANO	2.33	5.40	2.95	3.4±0.27	0.6 ±0.05	5.4±0.38	1.8 ±0.13

Freshwater Fish

Japanese name	English name	Scientific name
Koi	Carp	Cyprinus carpio
Funa	A crucian carp	Carassius auratus
Wakasagi	Pond-smelt	Hypomesus transpacificus nipponensis

(7) Strontium-90 and Cesium-137 in Shellfish
(from Jun. 1987 to Nov. 1987)

-continued from NO. 81 of this publication-

Table (7): Strontium-90 and Cesium-137 in Shellfish

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Saxidomuspurpuratus) September, 1987 Minamichita-machi, AICHI	1.95	1.07	2.88	0.3±0.56	0.3 ±0.52	1.4±0.35	0.5 ±0.12
(Turbo cornutus) August, 1987 Togi-machi, ISHIKAWA	3.22	1.97	2.10	0.6±0.59	0.3 ±0.30	2.3±0.56	1.1 ±0.27
(Pecter Yessoensis) November, 1987 Mutsu, AOMORI	1.88	0.355	3.15	0.0±0.27	0.0 ±0.77	2.2±0.27	0.7 ±0.09
(Mytilus eduls) June, 1987 Mutsu, AOMORI	2.41	0.605	2.46	0.0±0.26	0.0 ±0.43	1.0±0.24	0.4 ±0.10

Shellfish

Japanese name	English name	Scientific name
Ohasari		Saxidomuspurpuratus
Sazae	Wreath shell	Turbo cornutus
Hotategai	Scallop	Pecter Yessoensis
Murasakiigai	Mussuel	Mytilus eduls

(8) Strontium-90 and Cesium-137 in Seaweeds (from May 1987 to Jun. 1987)

-continued from NO. 81 of this publication-

Table (8): Strontium-90 and Cesium-137 in Seaweeds

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/Kg)	K(g/Kg)	pCi/Kg	S.U.	pCi/Kg	C.U.
(Sargassum fulvellum)							
May, 1987							
Mutsu, AOMORI	3.90	1.14	10.8	1.2±0.27	1.0 ±0.24	1.4±0.27	0.1 ±0.02
June, 1987							
Fukaura-machi, AOMORI	4.32	1.94	10.6	2.5±0.35	1.3 ±0.18	2.5±0.30	0.2 ±0.03

Seaweeds

Japanese name	English name	Scientific name
Hondawara	Gulfweed	Sargassum fulvellum

* * * Total Diet * * *

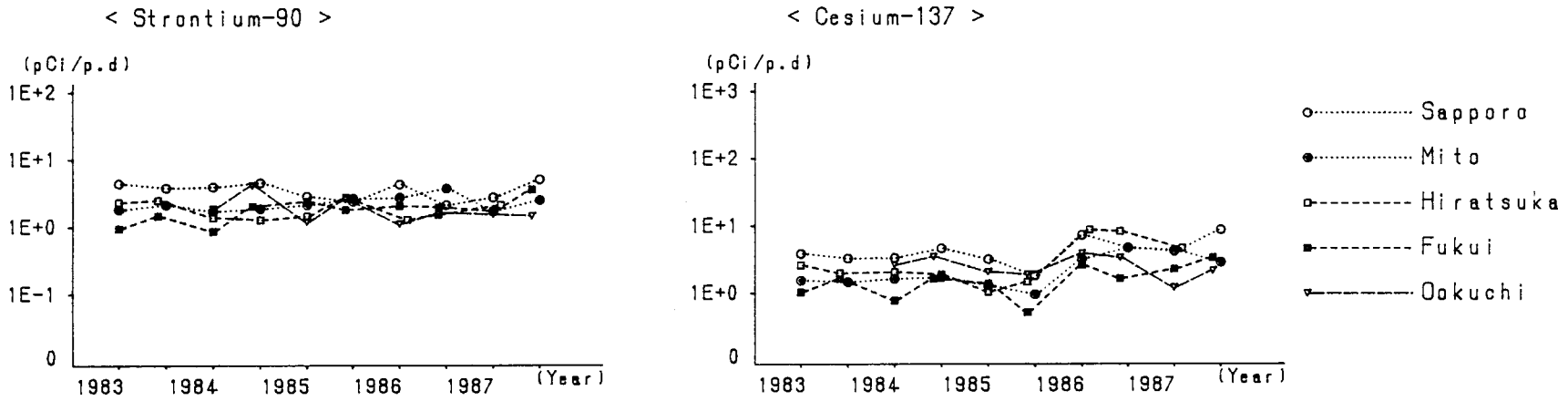

Fig. 1

＊ ＊ ＊　Rice(producing districts)　＊ ＊ ＊

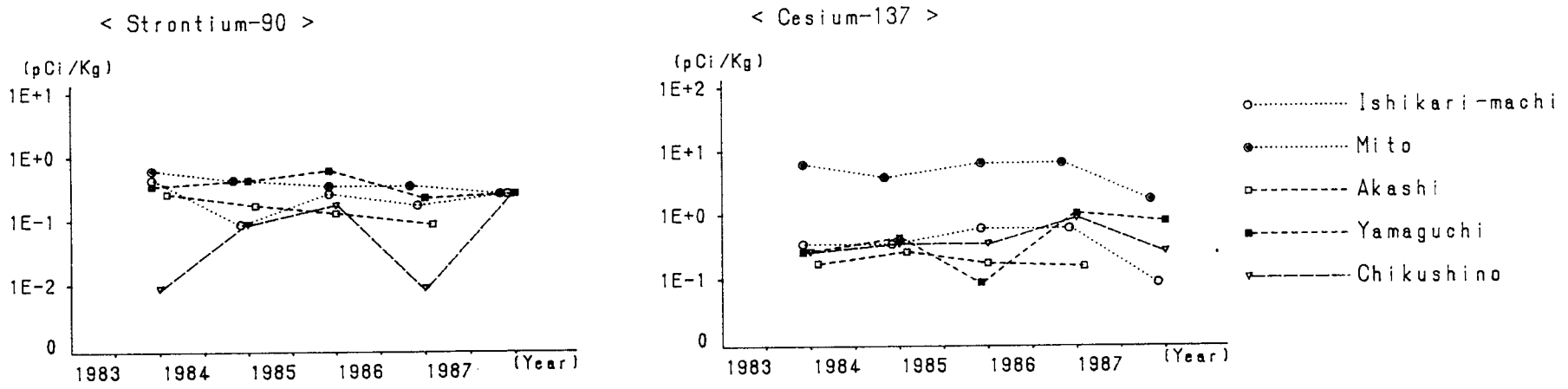

Fig.2-1

* * * Rice(consuming districts) * * *

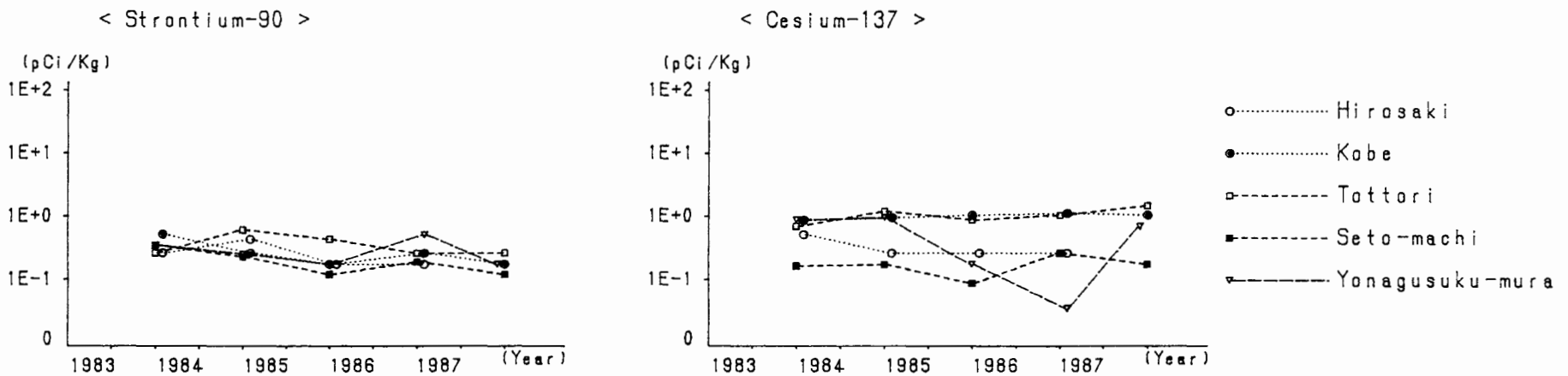

Fig.2-2

＊＊＊　Milk(producing districts for domestic program)　＊＊＊

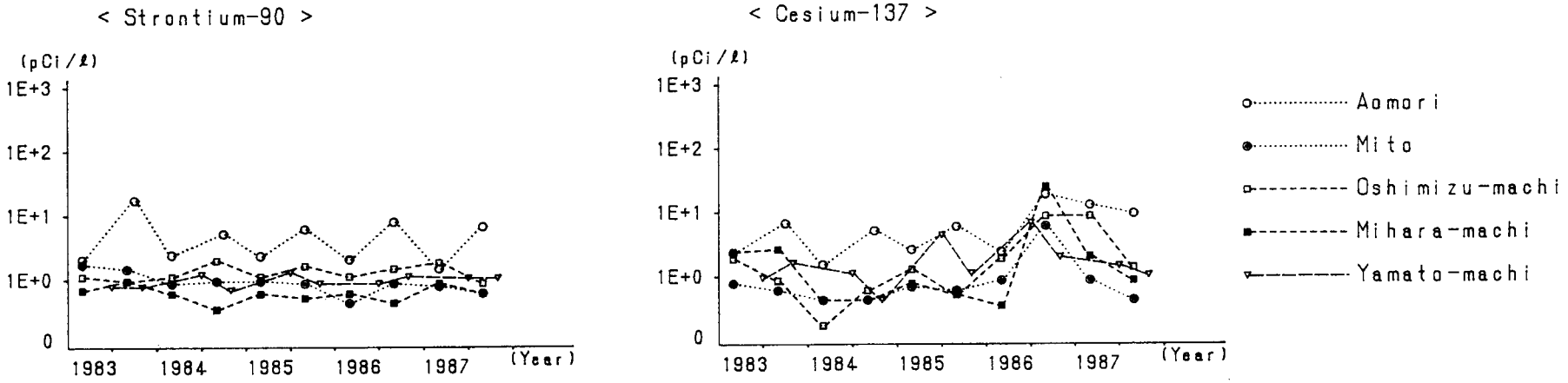

Fig.3-1

* * * Milk(producing districts for WHO program) * * *

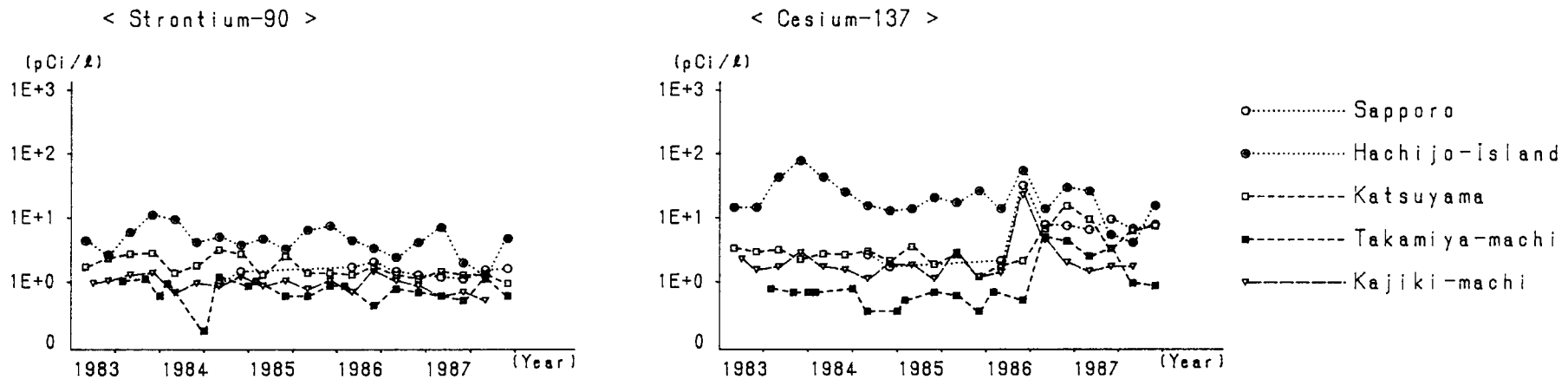

Fig.3-2

* * * Milk(consuming districts) * * *

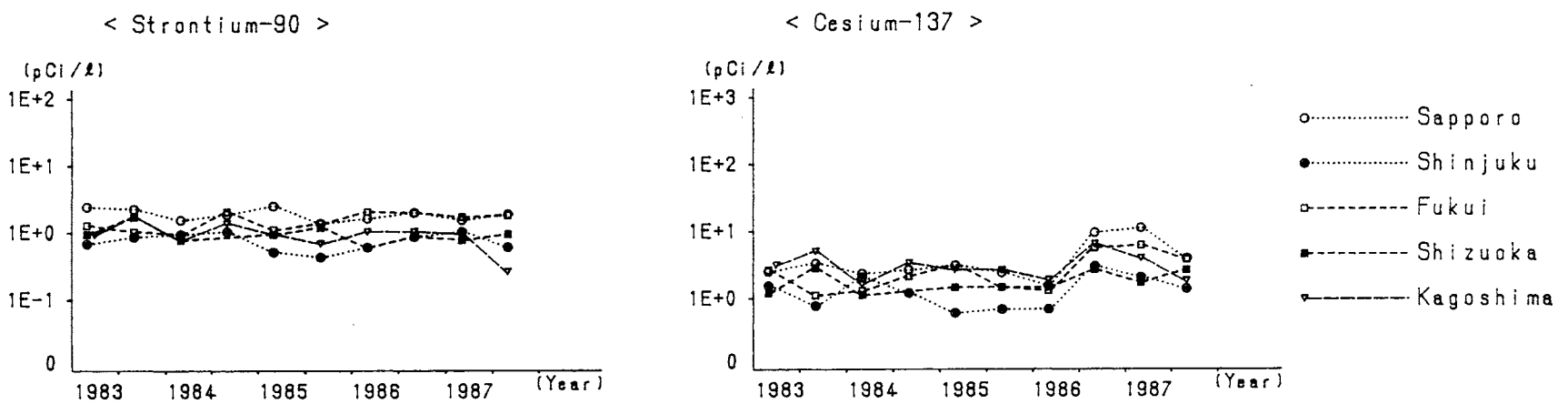

Fig.3-3

* * * Powdered Milk * * *

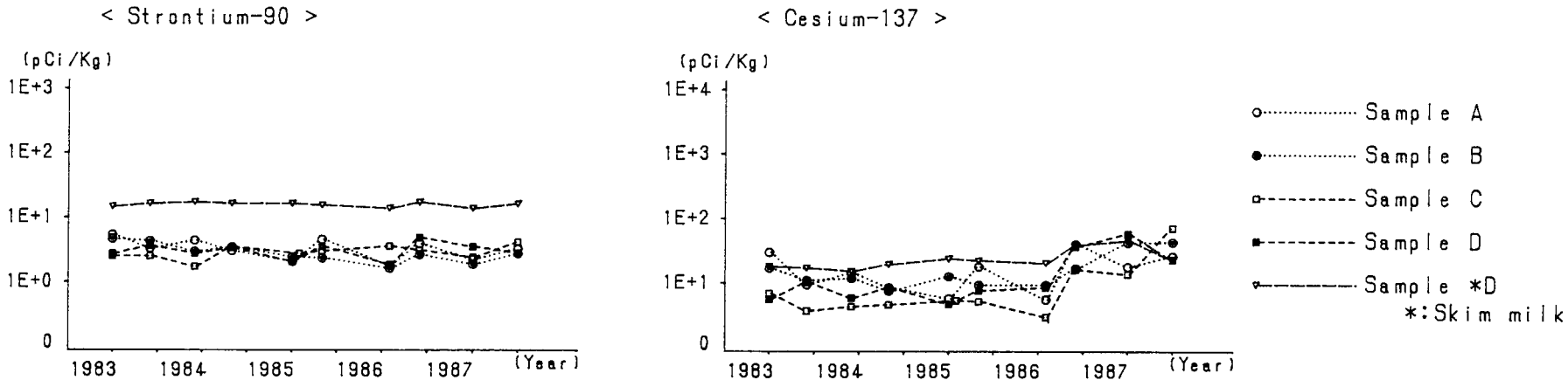

Fig.3-4

* * * Vegetables(producing districts) * * *

[Japanese radish]

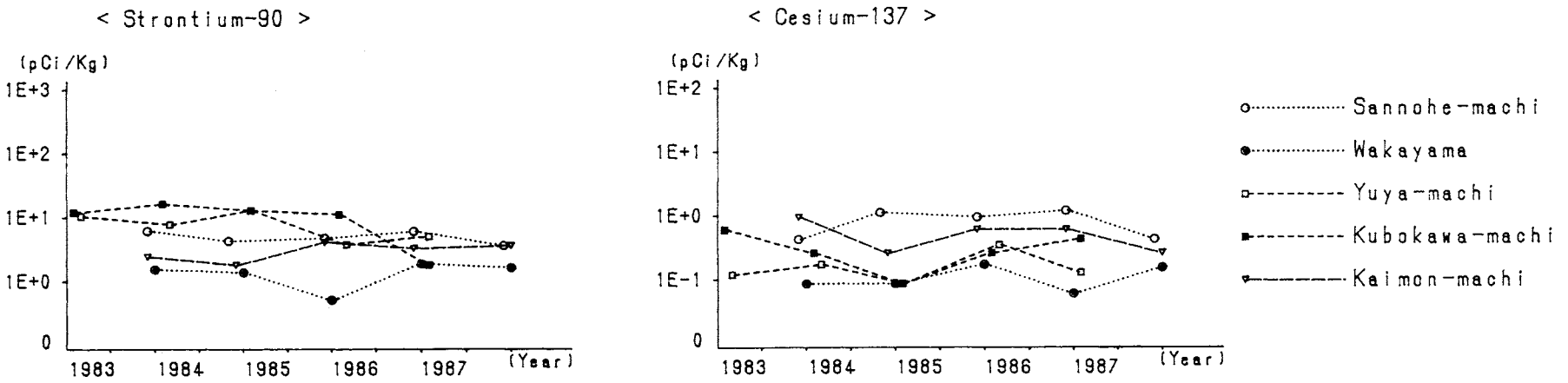

Fig.4-1

* * * Vegetables(consuming districts) * * *

[Japanese radish]

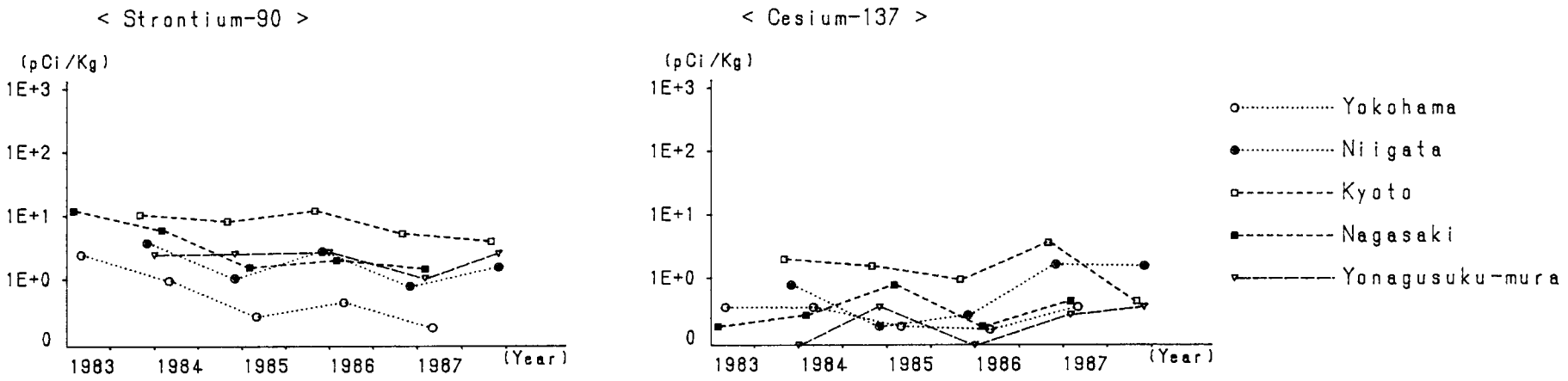

Fig.4-2

* * * Sea Fish * * *

[Scomber japonicus]

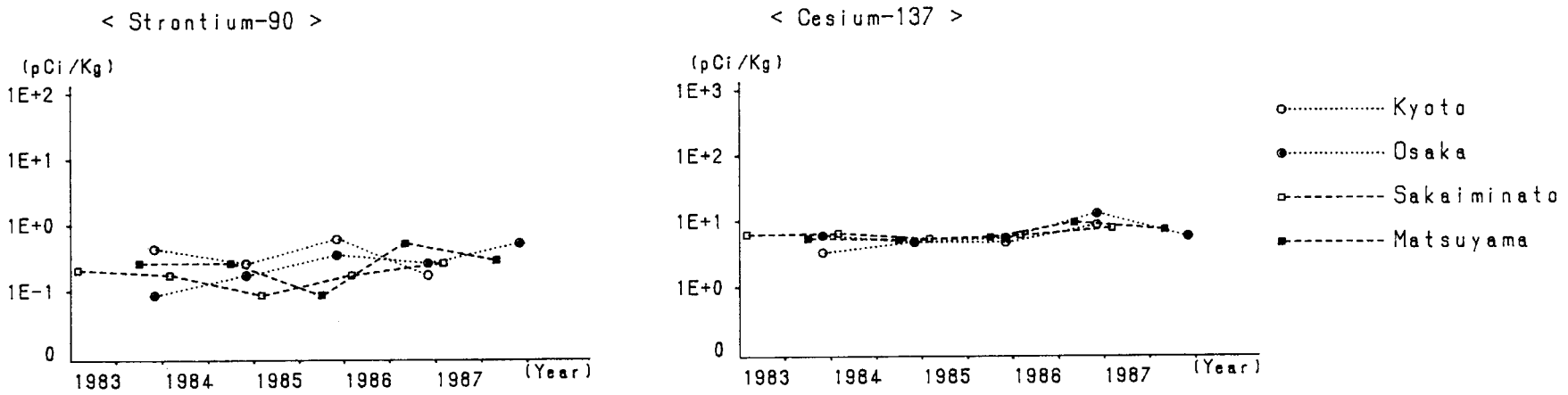

Fig.5

* * * Freshwater Fish * * *

(Carassius auratus)

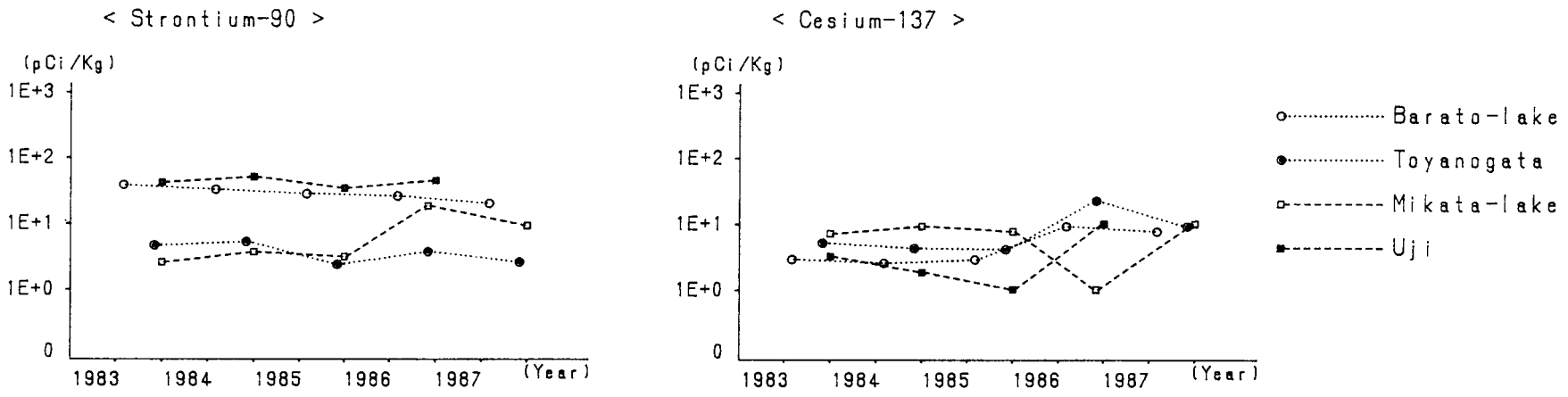

Fig.6

* * * Shellfish * * *

[Turbo cornutus]

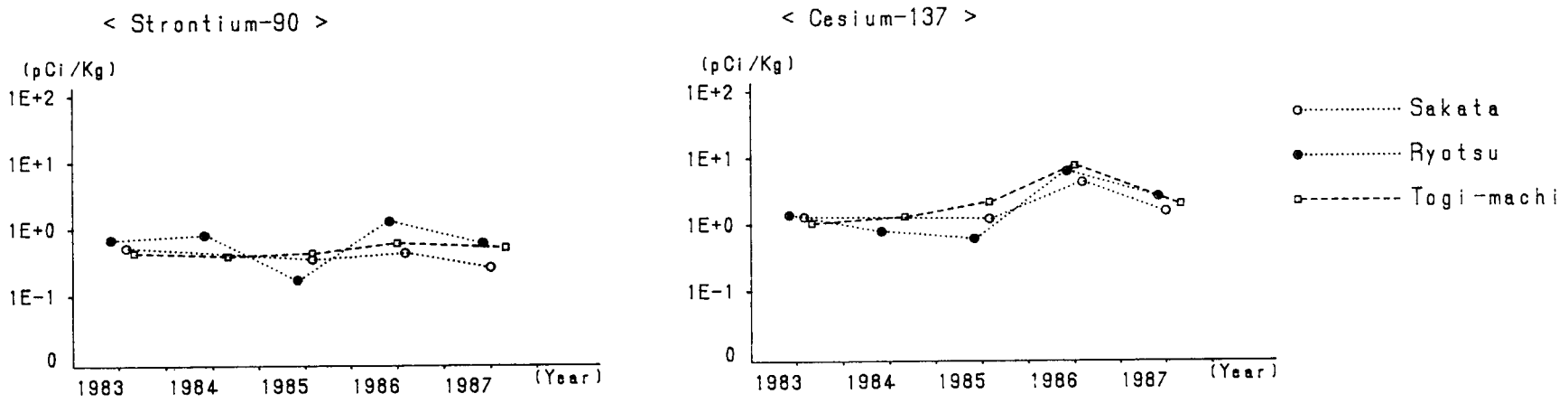

Fig.7

* * * Seaweeds * * *

[Undaria pinnatifida]

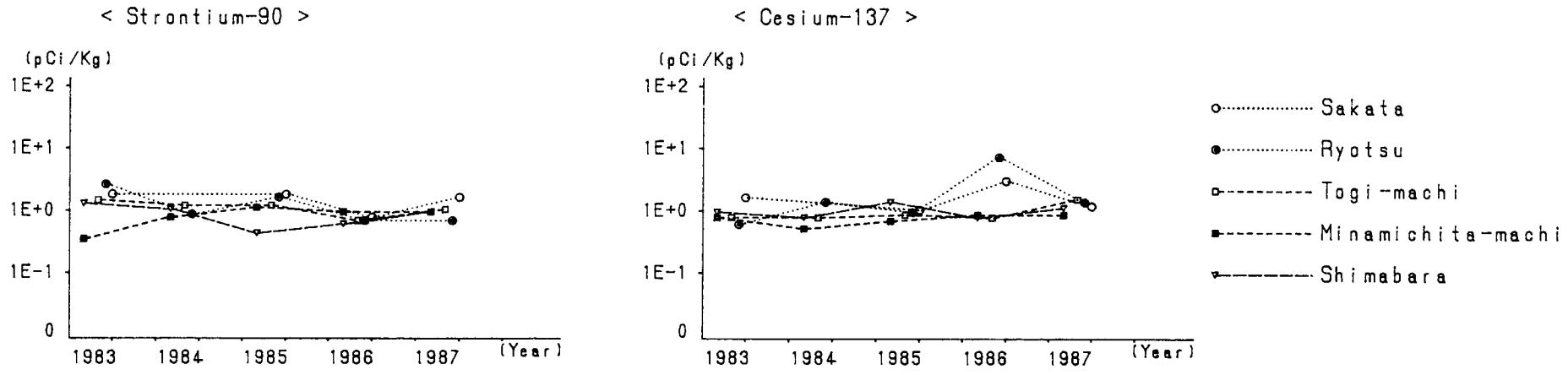

Fig.8

** Sampling Locations in Japan **

1 : Sapporo
2 : Aomori
3 : Akita
4 : Sendai
5 : Yamagata
6 : Fukushima
7 : Niigata
8 : Mito
9 : Chiba
10 : Shinjuku
11 : Nagano
12 : Yokohama
13 : Kanazawa
14 : Shizuoka
15 : Fukui
16 : Nagoya
17 : Kyoto
18 : Osaka
19 : Tottori
20 : Kobe
21 : Wakayama
22 : Okayama
23 : Matsue
24 : Hiroshima
25 : Kochi
26 : Matsuyama
27 : Yamaguchi
28 : Fukuoka
29 : Saga
30 : Nagasaki
31 : Kagoshima
32 : Naha