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RADIOACTIVITY SURVEY DATA in Japan

Part 2
= Dietary Materials =

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National Institute of Radiological Sciences
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Radioactivity Survey Data

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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 asampling 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 threemonths 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 andcesium carriers were added to the filtered water sample. The subsequent process was the same as that describedin the section (1). Freshwater was treated inthe 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 out flow due to precipitation, etc.. Any places located under trees in a forest, in astony 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 driedin 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 1mℓ to 1ℓ 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 stainless 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 otherin-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 46 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 left 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 p
ersons		
(8) Rice		
1. Producing districts	yearly (harvesting season)	5 kg (polished rice)
2. Consuming districts	yaerly (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 washeated. 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 sievedsample 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 retainedfor cesium-137 determination. The carbonates weredissolved 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 molybdophosphate added.

After filtered off and washed with hydrochlotric acid the precipitate was dissolved in 2.5 N 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 cesiumwas 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 andpotassium were determined by atomic absorption andflame 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 May. 1992 to Jul. 1992)

-continued from No.101 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)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
May, 1992							
Iwanai-machi, HOKKAIDO	14.1	494	1560	0.057 ±0.0061	0.11 ±0.012	0.031 ±0.0076	0.020 ±0.0049
Hamasaka-machi, HYOGO	13.8	642	1830	0.051 ±0.0061	0.080±0.0094	0.041 ±0.0071	0.023 ±0.0039
Hiroshima, HIROSHIMA	16.9	915	2070	0.062 ±0.0072	0.068±0.0079	0.071 ±0.0094	0.034 ±0.0045
Miyoshi, HIROSHIMA	9.14	222	1350	0.025 ±0.0052	0.11 ±0.023	0.0079±0.0044	0.0058±0.0033
June, 1992							
Sapporo, HOKKAIDO	15.0	612	1910	0.077 ±0.0071	0.13 ±0.012	0.11 ±0.012	0.056 ±0.0063
Aomori, AOMORI	17.8	641	2210	0.099 ±0.015	0.15 ±0.023	0.081 ±0.0092	0.037 ±0.0042
Ajigasawa-machi, AOMORI	13.4	436	1700	0.056 ±0.010	0.13 ±0.024	0.037 ±0.0056	0.022 ±0.0033
Yamagata, YAMAGATA	12.8	495	1550	0.045 ±0.0059	0.091±0.012	0.15 ±0.012	0.096 ±0.0075
Higashine, YAMAGATA	14.9	752	1420	0.046 ±0.0064	0.061±0.0086	0.021 ±0.0067	0.015 ±0.0047
Fukushima, FUKUSHIMA	16.9	748	1860	0.068 ±0.016	0.091±0.021	0.064 ±0.0088	0.035 ±0.0047
Ookuma-machi, FUKUSHIMA	11.1	310	1440	0.048 ±0.0090	0.16 ±0.029	0.073 ±0.0072	0.051 ±0.0050
Mito, IBARAKI	17.7	583	2550	0.060 ±0.0065	0.10 ±0.011	0.061 ±0.011	0.024 ±0.0044
Tokai, IBARAKI	13.7	472	1800	0.047 ±0.0063	0.099±0.013	0.023 ±0.0092	0.013 ±0.0051
Utsunomiya, TOCHIGI	11.4	421	1670	0.048 ±0.0044	0.11 ±0.011	0.032 ±0.0050	0.019 ±0.0030
Mooka, TOCHIGI	14.9	617	1950	0.052 ±0.0054	0.084±0.0087	0.032 ±0.0050	0.019 ±0.0030
Mabashi, GUNMA	14.6	476	2090	0.049 ±0.011	0.10 ±0.022	0.058 ±0.0083	0.028 ±0.0040
Nakanojou-machi, GUNMA	15.0	757	1860	0.035 ±0.0097	0.046±0.013	0.057 ±0.0087	0.031 ±0.0047
Urawa, SAITAMA	17.1	795	1960	0.063 ±0.0065	0.079±0.0082	0.10 ±0.010	0.052 ±0.0050
Kumagaya, SAITAMA	14.9	590	2160	0.054 ±0.0068	0.091±0.012	0.065 ±0.011	0.030 ±0.0051
Ichihara, CHIBA	13.8	446	1680	0.033 ±0.0090	0.075±0.020	0.030 ±0.0060	0.018 ±0.0036
Chikura-machi, CHIBA	18.7	550	2320	0.060 ±0.013	0.11 ±0.023	0.059 ±0.0091	0.025 ±0.0039
Shinjuku, TOKYO	14.6	696	1660	0.041 ±0.0056	0.059±0.0080	0.054 ±0.0095	0.033 ±0.0057
Hachijou, TOKYO	12.0	370	1630	0.050 ±0.0070	0.14 ±0.019	0.030 ±0.0089	0.018 ±0.0054
Yokohama, KANAGAWA	14.4	510	1690	0.039 ±0.0058	0.076±0.011	0.048 ±0.0077	0.029 ±0.0046
Hiratsuka, KANAGAWA	15.7	500	2370	0.055 ±0.0070	0.11 ±0.014	0.060 ±0.0091	0.025 ±0.0038
Kashiwazaki, NIIGATA	15.9	397	2030	0.12 ±0.010	0.30 ±0.025	0.051 ±0.0090	0.025 ±0.0044
Nishikawa, NIIGATA	20.5	674	2630	0.069 ±0.0094	0.10 ±0.014	0.035 ±0.0081	0.013 ±0.0031
Kosugi-machi, TOYAMA	14.0	374	1880	0.046 ±0.012	0.12 ±0.032	0.046 ±0.0081	0.025 ±0.0043
Takaoka, TOYAMA	12.0	319	1680	0.034 ±0.0095	0.11 ±0.030	0.036 ±0.0071	0.021 ±0.0042
Kanazawa, ISHIKAWA	11.5	225	1080	0.034 ±0.0048	0.15 ±0.021	0.0087±0.0039	0.0080±0.0036
Yoshinodani-mura, ISHIKAWA	13.1	693	1770	0.074 ±0.0068	0.11 ±0.010	0.065 ±0.0090	0.037 ±0.0051

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	(g/p·d)	(mg/p·d)	(mg/p·d)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
Koufu, YAMANASHI	15.5	546	1590	0.040 ± 0.0053	0.073 ± 0.0097	0.020 ± 0.0049	0.013 ± 0.0031
NagasaKa-machi, YAMANASHI	12.1	408	1600	0.039 ± 0.0049	0.096 ± 0.012	0.050 ± 0.0058	0.031 ± 0.0036
Nagano, NAGANO	19.4	566	2510	0.083 ± 0.016	0.15 ± 0.028	0.34 ± 0.021	0.14 ± 0.008
Sanada-machi, NAGANO	19.4	614	2140	0.046 ± 0.0076	0.075 ± 0.012	0.037 ± 0.011	0.017 ± 0.0049
Gifu, GIFU	14.0	468	1770	0.051 ± 0.0061	0.11 ± 0.013	0.084 ± 0.0091	0.048 ± 0.0051
Takayama, GIFU	20.4	1150	2020	0.051 ± 0.0077	0.044 ± 0.0067	0.084 ± 0.013	0.042 ± 0.0064
Shizuoka, SHIZUOKA	14.6	702	2290	0.051 ± 0.010	0.072 ± 0.015	0.019 ± 0.0075	0.0082 ± 0.0033
Hamaoka-machi, SHIZUOKA	13.6	363	1900	0.050 ± 0.010	0.14 ± 0.029	0.063 ± 0.0093	0.033 ± 0.0049
Nagoya, AICHI	16.9	1110	1940	0.059 ± 0.0069	0.053 ± 0.0062	0.064 ± 0.0083	0.033 ± 0.0043
Shinshiro, AICHI	14.7	389	1670	0.068 ± 0.012	0.18 ± 0.032	0.019 ± 0.015	0.011 ± 0.0091
Tsu, MIE	15.0	382	1610	0.039 ± 0.012	0.10 ± 0.031	0.077 ± 0.0099	0.048 ± 0.0061
Owashi, MIE	13.5	284	1560	0.067 ± 0.012	0.24 ± 0.041	0.037 ± 0.0080	0.024 ± 0.0051
Ootsu, SHIGA	18.2	517	2470	0.097 ± 0.0077	0.19 ± 0.015	0.055 ± 0.0089	0.022 ± 0.0036
Imazu-machi, SHIGA	12.1	411	1530	0.057 ± 0.0073	0.14 ± 0.018	0.023 ± 0.0079	0.015 ± 0.0052
Kyoto, KYOTO	19.4	1160	2460	0.085 ± 0.0082	0.073 ± 0.0070	0.081 ± 0.012	0.033 ± 0.0048
Maizuru, KYOTO	16.2	724	2060	0.061 ± 0.0066	0.084 ± 0.0091	0.049 ± 0.0077	0.024 ± 0.0037
Osaka, OSAKA	16.7	631	2420	0.082 ± 0.0083	0.13 ± 0.013	0.061 ± 0.011	0.025 ± 0.0044
Neyagawa, OSAKA	14.6	422	2140	0.054 ± 0.0066	0.13 ± 0.016	0.046 ± 0.0098	0.021 ± 0.0046
Kakogawa, HYOGO	15.5	684	2090	0.078 ± 0.0088	0.11 ± 0.013	0.033 ± 0.0089	0.016 ± 0.0043
Kashihara, NARA	14.3	869	1580	0.031 ± 0.0088	0.036 ± 0.010	0.075 ± 0.0075	0.047 ± 0.0047
Gojyo, NARA	11.9	684	1670	0.064 ± 0.0084	0.093 ± 0.012	0.073 ± 0.0065	0.044 ± 0.0039
Tottori, TOTTORI	15.7	388	2000	0.066 ± 0.016	0.17 ± 0.041	0.044 ± 0.011	0.022 ± 0.0055
Fukube-mura, TOTTORI	15.2	564	1650	0.053 ± 0.012	0.095 ± 0.021	0.034 ± 0.0084	0.021 ± 0.0051
Okayama, OKAYAMA	16.3	557	2100	0.055 ± 0.0088	0.098 ± 0.016	0.049 ± 0.011	0.023 ± 0.0052
Kamisaibara-mura, OKAYAMA	13.8	546	1840	0.19 ± 0.011	0.36 ± 0.020	0.016 ± 0.0070	0.0087 ± 0.0038
Yamaguchi, YAMAGUCHI	14.9	556	2020	0.048 ± 0.0066	0.087 ± 0.012	0.068 ± 0.010	0.033 ± 0.0050
Ajisu-machi, YAMAGUCHI	14.3	616	2060	0.083 ± 0.0077	0.13 ± 0.013	0.028 ± 0.0075	0.013 ± 0.0036
Tokushima, TOKUSHIMA	13.6	351	1700	0.061 ± 0.0067	0.17 ± 0.019	0.016 ± 0.0065	0.0097 ± 0.0038
Takamatsu, KAGAWA	11.2	535	1720	0.049 ± 0.0075	0.092 ± 0.014	0.050 ± 0.0097	0.029 ± 0.0056
Nagao-machi, KAGAWA	14.9	372	1790	0.059 ± 0.0072	0.16 ± 0.019	0.013 ± 0.0087	0.0074 ± 0.0048
Matsuyama, EHIME	12.7	655	1520	0.020 ± 0.011	0.031 ± 0.017	0.022 ± 0.0075	0.014 ± 0.0049
Ikata-machi, EHIME	10.1	482	1300	0.059 ± 0.012	0.12 ± 0.025	0.011 ± 0.0061	0.0087 ± 0.0047
Kochi, KOCHI	10.6	389	1540	0.091 ± 0.011	0.23 ± 0.028	0.036 ± 0.014	0.023 ± 0.0092
Saga-machi, KOCHI	15.4	531	2160	0.081 ± 0.019	0.15 ± 0.035	0.039 ± 0.014	0.018 ± 0.0064
Fukuoka, FUKUOKA	10.2	269	983	0.031 ± 0.012	0.12 ± 0.043	0.035 ± 0.0060	0.0036 ± 0.0061
Dazaifu, FUKUOKA	15.6	526	1960	0.064 ± 0.013	0.12 ± 0.024	0.095 ± 0.011	0.048 ± 0.0056
Saga, SAGA	17.5	617	2520	0.045 ± 0.0057	0.073 ± 0.0093	0.073 ± 0.0097	0.029 ± 0.0039
Nagasaki, NAGASAKI	15.6	410	2220	0.038 ± 0.0059	0.093 ± 0.014	0.059 ± 0.0081	0.026 ± 0.0036
Matsuura, NAGASAKI	15.6	744	1860	0.039 ± 0.0055	0.053 ± 0.0074	0.040 ± 0.0076	0.022 ± 0.0041
Kumamoto, KUMAMOTO	12.7	301	1650	0.054 ± 0.0074	0.18 ± 0.025	0.044 ± 0.011	0.026 ± 0.0064

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	(g/p·d)	(mg/p·d)	(mg/p·d)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
Aso-machi, KUMAMOTO	16.2	374	1990	0.096 ±0.0082	0.26 ±0.022	0.092 ±0.012	0.046 ±0.0060
Ooita, OOITA	11.7	482	1510	0.037 ±0.0082	0.076±0.0082	0.028 ±0.0050	0.018 ±0.0033
Saiki, OOITA	12.2	326	1510	0.036 ±0.0042	0.11 ±0.013	0.038 ±0.0055	0.025 ±0.0036
Miyazaki, MIYAZAKI	13.9	395	1670	0.055 ±0.011	0.14 ±0.027	0.061 ±0.0081	0.036 ±0.0049
Takaharu-machi, MIYAZAKI	17.5	592	2810	0.073 ±0.011	0.12 ±0.019	0.18 ±0.013	0.063 ±0.0046
Sendai, KAGOSHIMA	13.7	412	1540	0.054 ±0.0050	0.13 ±0.012	0.031 ±0.0059	0.020 ±0.0038
Ookuchi, KAGOSHIMA	14.4	401	1760	0.075 ±0.0061	0.19 ±0.015	0.070 ±0.0080	0.040 ±0.0045
Naha, OKINAWA	14.8	806	2290	0.044 ±0.0088	0.055±0.011	0.039 ±0.0060	0.017 ±0.0026
Yoshinowan, OKINAWA	15.1	526	2100	0.055 ±0.011	0.10 ±0.021	0.027 ±0.0056	0.013 ±0.0027
July, 1992							
Morioka, IWATE	14.6	429	1960	0.039 ±0.0049	0.091±0.011	0.040 ±0.0077	0.020 ±0.0039
Iwaizumi-machi, IWATE	17.0	392	1470	0.063 ±0.0071	0.16 ±0.018	0.042 ±0.011	0.029 ±0.0073
Ishimaki, MIYAGI	21.8	2680	1930	0.16 ±0.010	0.059±0.0037	0.044 ±0.0092	0.023 ±0.0048
Onagawa-machi, MIYAGI	14.8	519	1790	0.070 ±0.0075	0.13 ±0.015	0.069 ±0.0099	0.039 ±0.0055
Akita, AKITA	14.2	522	1800	0.058 ±0.0061	0.11 ±0.012	0.22 ±0.013	0.12 ±0.007
Oomagari, AKITA	12.9	487	1730	0.068 ±0.0061	0.14 ±0.013	0.056 ±0.0073	0.033 ±0.0042
Fukui, FUKUI	14.6	381	1950	0.060 ±0.0062	0.16 ±0.016	0.027 ±0.0050	0.014 ±0.0025
Tsuruga, FUKUI	16.6	929	1700	0.038 ±0.0051	0.041±0.0055	0.056 ±0.0069	0.033 ±0.0040
Wakayama, WAKAYAMA	15.4	782	1760	0.033 ±0.0050	0.043±0.0064	0.025 ±0.0050	0.014 ±0.0028
Koza-machi WAKAYAMA	14.5	564	2170	0.051 ±0.0057	0.090±0.010	0.028 ±0.0053	0.013 ±0.0024
Matsue, SHIMANE	22.7	868	3820	0.13 ±0.010	0.15 ±0.012	0.057 ±0.010	0.015 ±0.0027
Kashima-machi, SHIMANE	15.1	829	1880	0.082 ±0.0062	0.099±0.0075	0.037 ±0.0069	0.020 ±0.0037
Genkai-machi, SAGA	19.0	662	1860	0.060 ±0.0070	0.091±0.011	0.029 ±0.0075	0.015 ±0.0040

(2)-1 Strontium-90 and Cesium-137 in Rice(producing districts)
(Sep. 1992)

-continued from No.101 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)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
September, 1992							
Chiba, CHIBA	0.549	0.033	0.972	0.021 ± 0.011	0.64 ± 0.34	0.0009 ± 0.0066	0.0009 ± 0.0068
Kosugi-machi, TOYAMA	0.451	0.031	0.708	0.0035 ± 0.0097	0.11 ± 0.31	0.0071 ± 0.0049	0.010 ± 0.0070
Kanazawa, ISHIKAWA	0.433	0.040	0.701	0.013 ± 0.0084	0.33 ± 0.21	0.048 ± 0.0076	0.068 ± 0.011
Gifu, GIFU	0.441	0.030	0.644	0.0044 ± 0.0033	0.15 ± 0.11	0.0068 ± 0.0049	0.011 ± 0.0076
Sadohara-machi, MIYAZAKI	0.518	0.034	0.886	0.008 ± 0.010	0.25 ± 0.30	0.0076 ± 0.0050	0.0086 ± 0.0057

(3)-1 Strontium-90 and Cesium-137 in Milk(producing districts for domestic program)
(from Jun. 1992 to Aug. 1992)

-continued from No. 101 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)	Bq/ℓ	Bq/gCa	Bq/ℓ	Bq/gK
June, 1992							
Yamato-machi, SAGA	7.42	1.10	1.61	0.045 ± 0.0094	0.041 ± 0.0085	0.017 ± 0.0061	0.011 ± 0.0038
August, 1992							
Aomori, AOMORI	7.44	1.11	1.57	0.18 ± 0.013	0.16 ± 0.011	0.16 ± 0.010	0.10 ± 0.007
Takizawa-mura, IWATE	7.22	1.07	1.62	0.037 ± 0.0054	0.034 ± 0.0050	0.074 ± 0.0098	0.046 ± 0.0061
Mito, IBARAGI	7.33	1.11	1.54	0.054 ± 0.0084	0.049 ± 0.0076	0.010 ± 0.0038	0.0065 ± 0.0025
Nishinasuno-machi, TOCHIGI	7.23	1.08	1.58	0.057 ± 0.0064	0.053 ± 0.0059	0.035 ± 0.0073	0.022 ± 0.0046
Fujimi-mura, GUNMA	7.29	1.09	1.68	0.037 ± 0.0050	0.034 ± 0.0050	0.029 ± 0.0079	0.017 ± 0.0047
Yachimata, CHIBA	7.68	1.12	1.79	0.027 ± 0.0061	0.024 ± 0.0054	0.058 ± 0.0088	0.032 ± 0.0049
Tonami, TOYAMA	7.45	1.09	1.62	0.016 ± 0.010	0.015 ± 0.0094	0.030 ± 0.0084	0.019 ± 0.0052
Oshimizu, ISHIKAWA	7.12	1.08	1.67	0.042 ± 0.0074	0.039 ± 0.0069	0.035 ± 0.0053	0.021 ± 0.0032
Takane-machi, YAMANASHI	6.45	0.985	1.45	0.0047 ± 0.0083	0.0048 ± 0.0084	0.031 ± 0.0072	0.021 ± 0.0050
Kasamatsu-machi, GIFU	7.01	1.03	1.49	0.028 ± 0.011	0.027 ± 0.010	0.0064 ± 0.0065	0.0043 ± 0.0043
Oouctiyama-mura, MIE	7.19	1.09	1.62	0.008 ± 0.011	0.007 ± 0.010	0.0057 ± 0.0070	0.0035 ± 0.0043
Hino-machi, SHIGA	7.28	1.10	1.68	0.026 ± 0.011	0.023 ± 0.010	0.0037 ± 0.0063	0.0022 ± 0.0038
Mihara-machi, HYOUGO	7.07	1.14	1.56	0.009 ± 0.011	0.0077 ± 0.0094	0.0000 ± 0.0058	0.0000 ± 0.0037
Oouda-machi, NARA	6.76	0.919	1.49	0.002 ± 0.011	0.002 ± 0.011	0.0014 ± 0.0061	0.0009 ± 0.0041
Kamiita-machi, TOKUSHIMA	6.69	1.04	1.50	0.019 ± 0.0045	0.019 ± 0.0043	0.0073 ± 0.0059	0.0049 ± 0.0039
Takase-machi, KAGAWA	7.18	1.08	1.58	0.028 ± 0.0054	0.026 ± 0.0050	0.015 ± 0.0064	0.0097 ± 0.0040
Matsuyama, EHIME	7.23	1.11	1.63	0.032 ± 0.0075	0.029 ± 0.0068	0.017 ± 0.0076	0.010 ± 0.0047
Koushi-machi, KUMAMOTO	6.89	1.08	1.55	0.028 ± 0.0099	0.026 ± 0.0092	0.0026 ± 0.0078	0.0016 ± 0.0050
Kujuu-machi, OOITA	7.58	1.18	1.66	0.034 ± 0.011	0.029 ± 0.0090	0.15 ± 0.014	0.091 ± 0.0081
Takaharu-machi, MIYAZAKI	7.15	1.05	1.67	0.013 ± 0.0091	0.013 ± 0.0087	0.066 ± 0.0092	0.039 ± 0.0055

(3)-2 Strontium-90 and Cesium-137 in Milk(producing districts for WHO program)
(from May. 1992 to Aug. 1992)

-continued from No. 101 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)	Bq/ℓ	Bq/gCa	Bq/ℓ	Bq/gK
May, 1992							
Hokudaibokujou, HOKKAIDO	7.32	1.13	1.65	0.044 ± 0.0091	0.039 ± 0.0080	0.092 ± 0.0093	0.056 ± 0.0056
Hachijou-island, TOKYO	6.64	0.923	1.25	0.073 ± 0.0081	0.079 ± 0.0088	0.055 ± 0.0062	0.044 ± 0.0049
Nishikawa-machi, NIIGATA	6.99	0.972	1.64	0.015 ± 0.0070	0.016 ± 0.0072	0.0050 ± 0.0040	0.0030 ± 0.0024
Katsuyama, FUKUI	7.27	1.11	1.62	0.025 ± 0.0072	0.022 ± 0.0065	0.022 ± 0.0058	0.014 ± 0.0036
Nose-machi, OOSAKA	7.38	1.10	1.58	0.043 ± 0.0085	0.040 ± 0.0077	0.011 ± 0.0047	0.0071 ± 0.0029
Hikawa-machi, SHIMANE	6.96	0.997	1.64	0.023 ± 0.0051	0.023 ± 0.0051	0.090 ± 0.011	0.054 ± 0.0065
Takamiya-machi, HIROSHIMA	6.97	1.04	1.48	0.021 ± 0.0067	0.020 ± 0.0065	0.0000 ± 0.0044	0.0000 ± 0.0030
Kochi, KOCHI	7.23	1.10	1.58	0.14 ± 0.012	0.13 ± 0.011	0.039 ± 0.0061	0.025 ± 0.0039
Yasu-machi, FUKUOKA	7.16	1.07	1.50	0.022 ± 0.0072	0.020 ± 0.0068	0.0078 ± 0.0040	0.0052 ± 0.0027
Kajiki-machi, KAGOSHIMA	7.25	1.09	1.55	0.038 ± 0.011	0.035 ± 0.0099	0.017 ± 0.0088	0.011 ± 0.0057
August, 1992							
Hokudaibokujou, HOKKAIDO	7.21	1.07	1.69	0.040 ± 0.0074	0.037 ± 0.0070	0.052 ± 0.0063	0.031 ± 0.0038
Hachijou-island, TOKYO	6.78	0.996	1.30	0.069 ± 0.0091	0.069 ± 0.0092	0.090 ± 0.011	0.069 ± 0.0083
Nishikawa-machi, NIIGATA	7.14	1.03	1.70	0.000 ± 0.018	0.000 ± 0.018	0.022 ± 0.0089	0.013 ± 0.0053
Katuyama, FUKUI	7.37	1.13	1.67	0.025 ± 0.0076	0.022 ± 0.0067	0.016 ± 0.0081	0.0095 ± 0.0049
Nose-machi, OOSAKA	7.54	1.14	1.64	0.025 ± 0.0073	0.025 ± 0.0063	0.014 ± 0.0046	0.0088 ± 0.0028
Hikawa-machi, SHIMANE	7.94	1.31	1.61	0.046 ± 0.0085	0.035 ± 0.0065	0.12 ± 0.009	0.071 ± 0.0057
Kochi, KOCHI	7.39	1.13	1.55	0.13 ± 0.013	0.11 ± 0.012	0.074 ± 0.0093	0.048 ± 0.0060
Yasu-machi, FUKUOKA	7.18	1.05	1.56	0.035 ± 0.0072	0.033 ± 0.0068	0.012 ± 0.0043	0.0079 ± 0.0027
Kajiki-machi, KAGOSHIMA	6.56	0.978	1.38	0.020 ± 0.0091	0.021 ± 0.0093	0.013 ± 0.0079	0.0093 ± 0.0057
September, 1992							
Takamiya-machi, HIROSHIMA	7.14	1.06	1.57	0.016 ± 0.0069	0.015 ± 0.0066	0.0096 ± 0.0074	0.0061 ± 0.0047

(3)-3 Strontium-90 and Cesium-137 in Milk(consuming districts)
(from May. 1992 to Sep. 1992)

-continued from No. 101 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)	Bq/ℓ	Bq/gCa	Bq/ℓ	Bq/gK
May, 1992							
Sendai, MIYAGI	7.21	1.09	1.58	0.026 ± 0.0062	0.024 ± 0.0057	0.027 ± 0.0048	0.017 ± 0.0031
Kyoto, KYOTO	7.26	1.08	1.64	0.026 ± 0.0070	0.024 ± 0.0065	0.016 ± 0.0098	0.0096 ± 0.0060
June, 1992							
Hiroshima, HIROSHIMA	6.47	0.986	1.41	0.024 ± 0.0048	0.024 ± 0.0048	0.013 ± 0.0064	0.0093 ± 0.0045
July, 1992							
Shinguu, WAKAYAMA	6.80	1.05	1.54	0.011 ± 0.0039	0.010 ± 0.0038	0.021 ± 0.0065	0.014 ± 0.0042
August, 1992							
Sapporo, HOKKAIDOU	7.21	1.11	1.63	0.057 ± 0.0068	0.052 ± 0.0062	0.063 ± 0.0087	0.039 ± 0.0053
Yamagata, YAMAGATA	6.85	1.02	1.55	0.025 ± 0.0051	0.025 ± 0.0050	0.0097 ± 0.0050	0.0063 ± 0.0032
Urawa, SAITAMA	7.04	1.06	1.52	0.0075 ± 0.0039	0.0071 ± 0.0037	0.011 ± 0.0066	0.0075 ± 0.0043
Shinjuku, TOKYO	7.10	1.03	1.61	0.017 ± 0.0049	0.017 ± 0.0047	0.015 ± 0.0055	0.0091 ± 0.0034
Yokohama, KANAGAWA	7.34	1.11	1.65	0.028 ± 0.0058	0.025 ± 0.0052	0.045 ± 0.0074	0.027 ± 0.0045
Niigata, NIIGATA	7.60	1.25	1.71	0.032 ± 0.0084	0.026 ± 0.0067	0.090 ± 0.015	0.053 ± 0.0089
Fukui, FUKUI	7.22	1.07	1.62	0.016 ± 0.0068	0.015 ± 0.0063	0.0054 ± 0.0074	0.0033 ± 0.0046
Nagano, NAGANO	7.13	1.05	3.26	0.0032 ± 0.0093	0.030 ± 0.0088	0.029 ± 0.0081	0.0088 ± 0.0025
Shizuoka, SHIZUOKA	6.79	1.02	1.53	0.007 ± 0.013	0.007 ± 0.013	0.041 ± 0.018	0.027 ± 0.012
Nagoya, AICHI	7.23	1.06	1.61	0.013 ± 0.010	0.013 ± 0.0098	0.0080 ± 0.0066	0.0050 ± 0.0041
Oosaka, OOSAKA	7.27	1.12	1.63	0.034 ± 0.013	0.031 ± 0.011	0.048 ± 0.0095	0.029 ± 0.0058
Yonago, TOTTORI	6.67	1.00	1.49	0.022 ± 0.0050	0.022 ± 0.0050	0.080 ± 0.0096	0.054 ± 0.0065
Matue, SHIMANE	7.21	1.08	1.59	0.035 ± 0.0058	0.032 ± 0.0053	0.016 ± 0.0071	0.010 ± 0.0045
Okayama, OKAYAMA	7.70	1.06	1.56	0.018 ± 0.011	0.017 ± 0.010	0.016 ± 0.0099	0.010 ± 0.0063
Yamaguchi, YAMAGUCHI	6.97	1.03	1.54	0.017 ± 0.0046	0.016 ± 0.0045	0.0000 ± 0.0060	0.0000 ± 0.0039
Matsuyama, EHIME	7.10	1.04	1.58	0.028 ± 0.0074	0.027 ± 0.0071	0.020 ± 0.0086	0.013 ± 0.0054
Kochi, KOCHI	8.35	1.09	1.56	0.034 ± 0.0065	0.031 ± 0.0059	0.028 ± 0.0078	0.018 ± 0.0050
Chikushino, FUKUOKA	7.25	1.12	1.61	0.044 ± 0.011	0.039 ± 0.0097	0.084 ± 0.010	0.052 ± 0.0065
Nagasaki, NAGASAKI	7.74	1.17	1.62	0.047 ± 0.012	0.040 ± 0.010	0.15 ± 0.014	0.093 ± 0.0088
Kagoshima, KAGOSHIMA	7.21	1.28	1.56	0.035 ± 0.0096	0.027 ± 0.0075	0.022 ± 0.0065	0.014 ± 0.0041
Yonagusuku-mura, OKINAWA	7.06	1.06	1.62	0.026 ± 0.014	0.024 ± 0.013	0.002 ± 0.015	0.0014 ± 0.0090
September, 1992							
Sendai, MIYAGI	7.12	1.06	1.59	0.026 ± 0.0096	0.025 ± 0.0090	0.029 ± 0.0071	0.018 ± 0.0045
Akita, AKITA	7.08	1.08	1.46	0.033 ± 0.0054	0.031 ± 0.0051	0.014 ± 0.0057	0.0094 ± 0.0039
Fukushima, FUKUSHIMA	7.18	1.07	1.62	0.030 ± 0.0080	0.028 ± 0.0075	0.043 ± 0.0093	0.026 ± 0.0057

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

-continued from No. 99 of this publication-

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

Market Milk	Component			^{90}Sr		^{137}Cs	
	Ash(g/ℓ)	Ca(g/ℓ)	K(g/ℓ)	Bq/ℓ	Bq/gCa	Bq/ℓ	Bq/gK
July, 1992							
Sample A	7.99	12.1	19.0	0.54 ± 0.030	0.044 ± 0.0025	0.86 ± 0.030	0.045 ± 0.0016
Sample B	2.53	3.31	6.05	0.11 ± 0.013	0.034 ± 0.0040	0.47 ± 0.022	0.078 ± 0.0037
Sample D	2.59	4.01	5.67	0.039 ± 0.010	0.0096 ± 0.0025	0.14 ± 0.014	0.025 ± 0.0025
Sample E	2.41	3.78	5.42	0.091 ± 0.012	0.024 ± 0.0032	0.26 ± 0.016	0.048 ± 0.0030
Sample F	2.60	3.69	5.33	0.050 ± 0.011	0.013 ± 0.0029	0.29 ± 0.018	0.054 ± 0.0034
August, 1992							
Sample C	7.91	11.9	17.7	0.76 ± 0.029	0.063 ± 0.0024	2.0 ± 0.04	0.12 ± 0.002

*Skim milk

(4)-1 Strontium-90 and Cesium-137 in Vegetables(producing districts)
(from May. 1992 to Aug. 1992)

-continued from No. 101 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)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Japanese radish)							
May, 1992							
Tahara-machi, AICHI	0.428	0.195	1.63	0.069 ± 0.013	0.35 ± 0.065	0.0084 ± 0.0068	0.0052 ± 0.0041
Koushi-machi, KUMAMOTO	0.557	0.220	2.38	0.035 ± 0.0069	0.16 ± 0.031	0.0037 ± 0.0041	0.0016 ± 0.0017
July, 1992							
Oota, SHIMANE	0.558	0.158	2.43	0.25 ± 0.014	1.6 ± 0.09	0.66 ± 0.025	0.27 ± 0.010
October, 1992							
Ishikari-machi, HOKKAIDOU	0.440	0.124	2.01	0.29 ± 0.020	2.3 ± 0.16	0.0028 ± 0.0044	0.0014 ± 0.0022
(Onion)							
June, 1992							
Kumatori-machi, OOSAKA	0.373	0.105	1.53	0.069 ± 0.013	0.66 ± 0.12	0.029 ± 0.0076	0.019 ± 0.0050
(Spinach)							
May, 1992							
Tahara-machi, AICHI	1.06	0.872	3.94	0.044 ± 0.0071	0.051 ± 0.0081	0.0072 ± 0.0057	0.0018 ± 0.0014
August, 1992							
Ishikari-machi, HOKKAIDOU	1.64	0.433	6.47	0.11 ± 0.017	0.26 ± 0.038	0.0005 ± 0.0062	0.00008 ± 0.00095
(Edible roots)							
July, 1992							
Oota, SHIMANE	0.740	0.837	2.20	0.50 ± 0.015	0.60 ± 0.018	2.6 ± 0.04	1.2 ± 0.02

(4)-2 Strontium-90 and Cesium-137 in Vegetables(consuming districts)
(from May. 1992 to Sep. 1992)

-continued from No. 101 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)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Japanese radish)							
August, 1992							
Urawa, SAITAMA	0.459	0.158	1.43	0.032 ± 0.011	0.20 ± 0.067	0.0000 ± 0.0071	0.0000 ± 0.0049
September, 1992							
Sendai, MIYAGI	0.444	0.246	1.69	0.37 ± 0.019	1.5 ± 0.08	0.098 ± 0.011	0.058 ± 0.0064
(Spinach)							
May, 1992							
Sendai, MIYAGI	1.79	0.752	7.46	0.073 ± 0.0081	0.097 ± 0.011	0.011 ± 0.0061	0.0015 ± 0.00082
June, 1992							
Niigata, NIIGATA	1.82	0.642	7.76	0.083 ± 0.014	0.13 ± 0.022	0.0095 ± 0.0071	0.0012 ± 0.00091
August, 1992							
Urawa, SAITAMA	1.64	0.508	7.20	0.088 ± 0.014	0.17 ± 0.027	0.023 ± 0.0068	0.0032 ± 0.00094

(5) Strontium-90 and Cesium-137 in Tea(Japanese Tea)
(from May. 1992 to Jun. 1992)

-continued from No. 99 of this publication-

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

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	Bq/kg	Bq/gCa	Bq/kg	Bq/gK
April, 1992							
Mifune-machi, KUMAMOTO	5.77	3.21	19.3	0.10 ± 0.034	0.033 ± 0.011	0.12 ± 0.049	0.0064 ± 0.0025
May, 1992							
Oodai-machi, MIE	4.77	2.10	19.0	0.44 ± 0.050	0.21 ± 0.024	0.42 ± 0.066	0.022 ± 0.0035
Kameyama, MIE	5.24	2.77	18.9	0.73 ± 0.068	0.27 ± 0.025	0.10 ± 0.058	0.0055 ± 0.0031
Ue-mura, KUMAMOTO	5.55	3.78	19.9	1.9 ± 0.09	0.51 ± 0.024	0.50 ± 0.065	0.025 ± 0.0032
Kawaminami-machi, MIYAZAKI	5.65	1.92	22.8	0.52 ± 0.092	0.27 ± 0.048	3.1 ± 0.14	0.13 ± 0.006
June, 1992							
Iruma, SAITAMA	5.35	2.66	19.0	0.42 ± 0.044	0.16 ± 0.017	0.22 ± 0.052	0.012 ± 0.0028
Tokorozawa, SAITAMA	4.99	3.06	17.2	0.59 ± 0.050	0.19 ± 0.016	0.65 ± 0.067	0.038 ± 0.0039
Kaya-machi, KYOTO	5.38	3.16	19.1	0.86 ± 0.057	0.27 ± 0.018	0.55 ± 0.065	0.029 ± 0.0034
Uji, KYOTO	5.56	2.75	20.9	0.90 ± 0.11	0.33 ± 0.039	0.091 ± 0.044	0.0043 ± 0.0021
Nara, NARA	4.96	2.47	19.3	0.49 ± 0.080	0.20 ± 0.033	0.35 ± 0.054	0.018 ± 0.0028
Miyakonojyo, MAYAZAKI	5.37	3.28	19.7	0.53 ± 0.080	0.16 ± 0.025	1.2 ± 0.09	0.063 ± 0.0045
Miyanojyo-machi, KAGOSHIMA	5.91	3.35	20.2	1.7 ± 0.12	0.50 ± 0.037	0.73 ± 0.076	0.036 ± 0.0038
Chiran-machi, KAGOSHIMA	5.19	2.47	18.9	0.44 ± 0.076	0.18 ± 0.031	1.5 ± 0.09	0.078 ± 0.0049

(6) Strontium-90 and Cesium-137 in Sea Fish
(from Apr. 1992 to Sep. 1992)

-continued from No. 101 of this publication-

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

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Sardinops melanosticta)							
September, 1992							
Yamagata, YAMAGATA	2.77	6.57	1.79	0.0000±0.0095	0.0000 ±0.0014	0.020 ±0.0088	0.011 ±0.0049
(Sebastiscus marmoratus)							
April, 1992							
Hamada, SHIMANE	6.26	18.9	3.00	0.035 ±0.0063	0.0018 ±0.00034	0.14 ±0.014	0.047 ±0.0048
(Katsuwonus pelamis)							
May, 1992							
Tosa, KOCHI	1.50	0.084	3.78	0.0000±0.0050	0.000 ±0.059	0.42 ±0.024	0.11 ±0.006
(Limanda herzensteini)							
July, 1992							
Sendai, MIYAGI	2.75	6.24	2.87	0.0000±0.0087	0.0000 ±0.0014	0.081 ±0.011	0.028 ±0.0038
(Sillaga sp)							
June, 1992							
Minamichita-machi, AICHI	3.74	8.99	3.93	0.011 ±0.0053	0.0012 ±0.00058	0.11 ±0.015	0.029 ±0.0037
(Oncorhynchus keta)							
September, 1992							
Urakawa-machi, HOKKAIDOU	1.52	0.630	4.01	0.0000±0.0084	0.000 ±0.013	0.16 ±0.013	0.040 ±0.0032
(Scomber sp)							
August, 1992							
Matsuyama, EHIME	1.36	0.715	4.29	0.000 ±0.010	0.000 ±0.015	0.22 ±0.017	0.052 ±0.0039
(Pagrus sp)							
July, 1992							
Fukuoka, FUKUOKA	1.48	0.484	4.80	0.0016±0.0049	0.003 ±0.010	0.18 ±0.016	0.038 ±0.0034
September, 1992							
Tennou-machi, AKITA	2.24	3.34	4.63	0.000 ±0.010	0.0000 ±0.0031	0.26 ±0.020	0.057 ±0.0042
(Mugil cephalus)							
August, 1992							
Morotomi-machi, SAGA	1.54	2.22	3.33	0.019 ±0.0060	0.0085 ±0.0027	0.099 ±0.012	0.030 ±0.0036

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Ammodytes personatus)							
May, 1992							
Akashi, HYOGO	2.48	3.93	4.18	0.001 ± 0.011	0.0002 ± 0.0027	0.092 ± 0.0098	0.022 ± 0.0023
(Decapterus muroadsi)							
September, 1992							
Miyake-island, TOKYO	1.70	2.37	3.43	0.0046 ± 0.0035	0.0019 ± 0.0015	0.17 ± 0.013	0.049 ± 0.0037

Sea Fish

Japanese name	English name	Scientific name
Iwashi	Sardine	Sardinops melanosticta
Kasago	Scorpion-fish	Sebastiscus marmoratus
Katsuo	Skipjack	Katsuwonus pelamis
Karei	Brown sole	Limanda herzensteini
Kisu	Whiting	Sillaga sp
Sake	Chum salmon	Oncorhynchus keta
Saba	Mackerel	Scomber sp
Tai	Sea bream	Pagrus sp
Bora	Gray mullet	Mugil cephalus
Ikanago	Japanese sando lance	Ammodytes personatus
Muroaji	Brownstriped mackerel scad	Decapterus muroadsi

(7) Strontium-90 and Cesium-137 in Freshwater Fish
(from May. 1992 to Sep. 1992)

-continued from No.101 of this publication-

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

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Cyprinus carpio)							
May, 1992							
Kasumigaura, IBARAKI	1.18	0.346	3.95	0.043 ± 0.0091	0.12 ± 0.026	0.38 ± 0.025	0.095 ± 0.0064
August, 1992							
Akita, AKITA	3.76	9.44	3.14	0.95 ± 0.033	0.10 ± 0.004	0.12 ± 0.014	0.038 ± 0.0044
September, 1992							
Fukushima, FUKUSHIMA	3.47	11.9	2.66	0.90 ± 0.035	0.076 ± 0.0030	0.13 ± 0.014	0.047 ± 0.0053
(Carassius auratus)							
July, 1992							
Ishikari-machi, HOKKAIDO	4.62	11.2	2.90	0.62 ± 0.020	0.055 ± 0.0018	0.067 ± 0.011	0.023 ± 0.0038

Freshwater Fish

Japanese name	English name	Scientific name
Koi	Carp	Cyprinus carpio
Funa	Crucian carp	Carassius auratus

(8) Strontium-90 and Cesium-137 in Shellfish
(from Apr. 1992 to Jul. 1992)

-continued from No. 101 of this publication-

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

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Ruditapes phillipinarum)							
May, 1992							
Takaki-machi, NAGASAKI	1.96	1.06	2.39	0.000 ± 0.011	0.000 ± 0.011	0.042 ± 0.0095	0.017 ± 0.0040
June, 1992							
Minamichita-machi, AICHI	2.05	1.25	3.35	0.000 ± 0.019	0.000 ± 0.015	0.054 ± 0.013	0.016 ± 0.0038
(Turbo cornutus)							
April, 1992							
Ryotsu, NIIGATA	1.95	0.381	3.13	0.000 ± 0.020	0.000 ± 0.051	0.018 ± 0.012	0.0059 ± 0.0038
June, 1992							
Sakata, YAMAGATA	3.26	2.84	3.17	0.010 ± 0.011	0.0036 ± 0.0038	0.046 ± 0.0086	0.014 ± 0.0027
July, 1992							
Togi-machi, ISHIKAWA	3.55	2.90	2.81	0.005 ± 0.012	0.0016 ± 0.0042	0.044 ± 0.0099	0.016 ± 0.0035

Shellfish

Japanese name	English name	Scientific name
Asari	Japanese littleneck	Ruditapes phillipinarum
Sazae	Horned turban	Turbo cornutus

(9) Strontium-90 and Cesium-137 in Seaweeds
(from Apr. 1992 to Jun. 1992)

-continued from No. 101 of this publication-

Table (9): Strontium-90 and Cesium-137 in Seaweeds

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	Bq/kgwet	Bq/gCa	Bq/kgwet	Bq/gK
(Undaria pinnatifida)							
April, 1992							
Fukaura-machi, AOMORI	1.51	0.597	3.85	0.015 ± 0.0046	0.025 ± 0.0078	0.025 ± 0.0075	0.0064 ± 0.0019
Ryotsu, NIIGATA	4.03	1.06	6.44	0.031 ± 0.010	0.029 ± 0.0098	0.029 ± 0.0069	0.0046 ± 0.0011
May, 1992							
Mutu, AOMORI	2.31	0.536	6.82	0.019 ± 0.0055	0.035 ± 0.010	0.036 ± 0.0095	0.0052 ± 0.0014
Togi-machi, ISHIKAWA	3.74	0.918	4.00	0.047 ± 0.012	0.051 ± 0.013	0.019 ± 0.0066	0.0047 ± 0.0017
June, 1992							
Sakata, YAMAGATA	3.98	1.39	6.33	0.049 ± 0.012	0.035 ± 0.0087	0.031 ± 0.0074	0.0049 ± 0.0012

Seaweeds

Japanese name	English name	Scientific name
Wakame	Wakame seaweed	Undaria pinnatifida

＊＊＊　Total Diet　＊＊＊

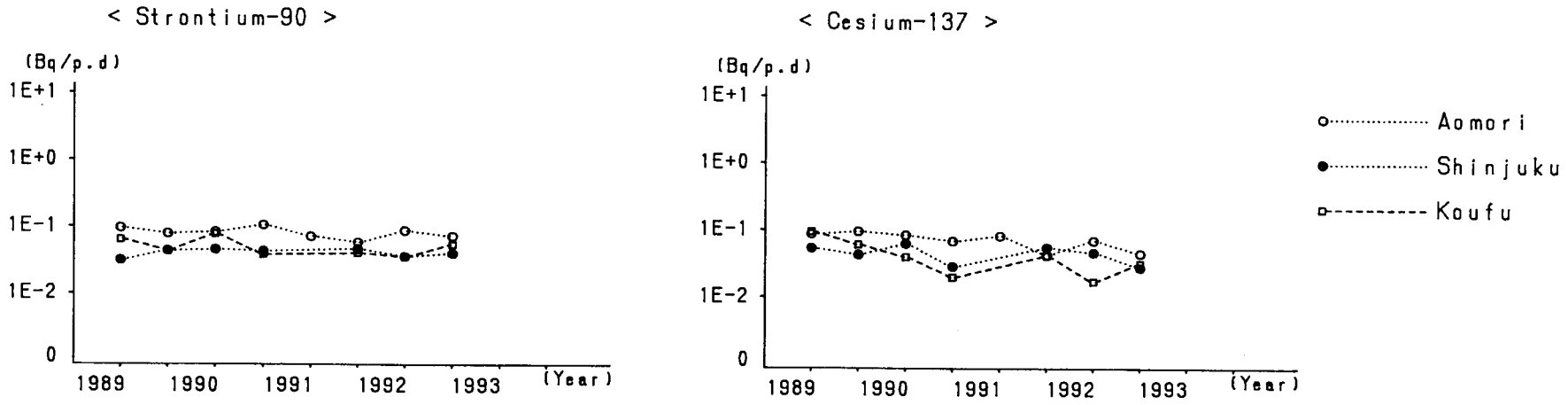

Fig.1

* * * Rice(producing districts) * * *

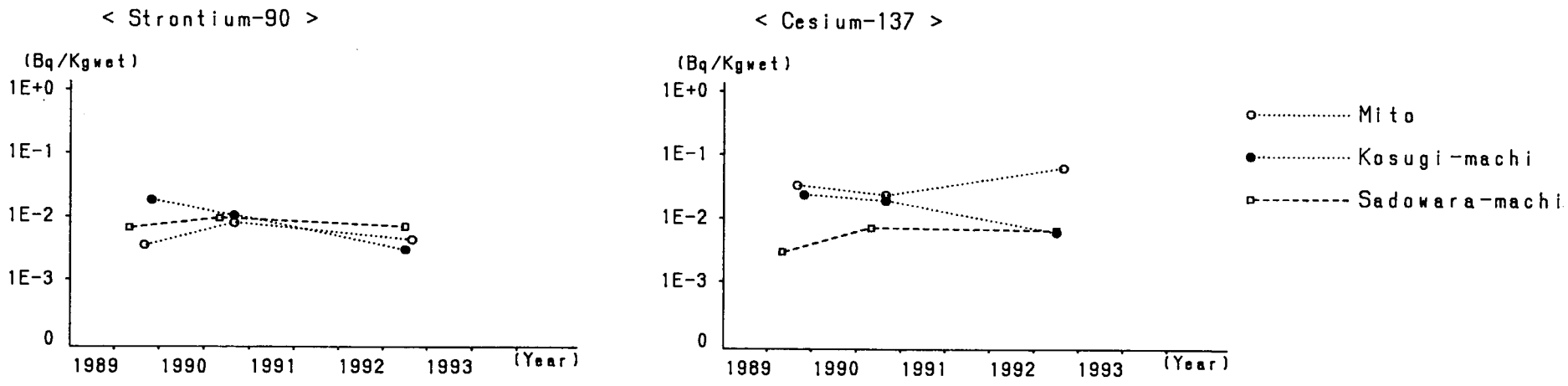

Fig.2-1

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

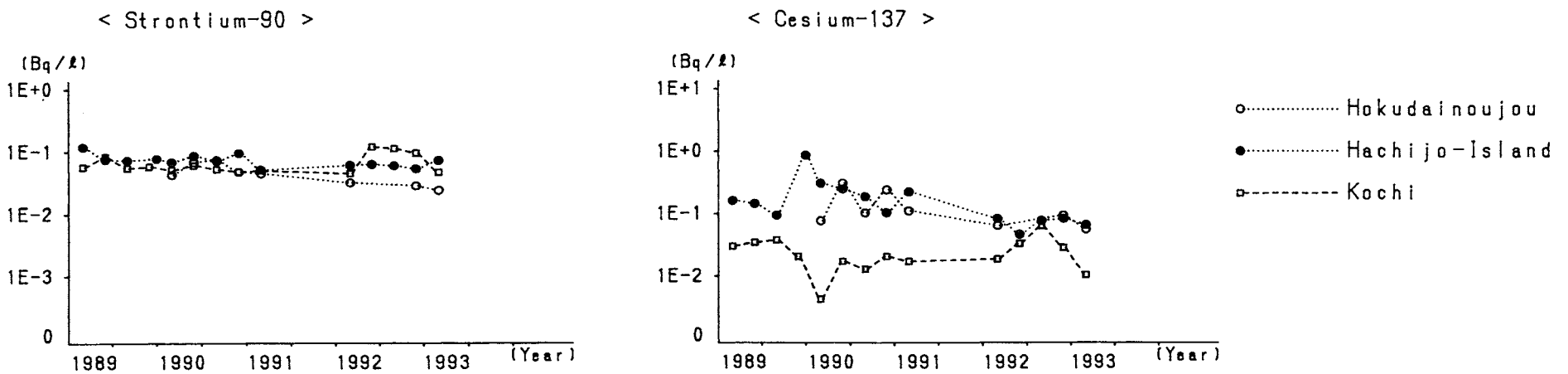

Fig.3-1

* * * Milk(consuming districts) * * *

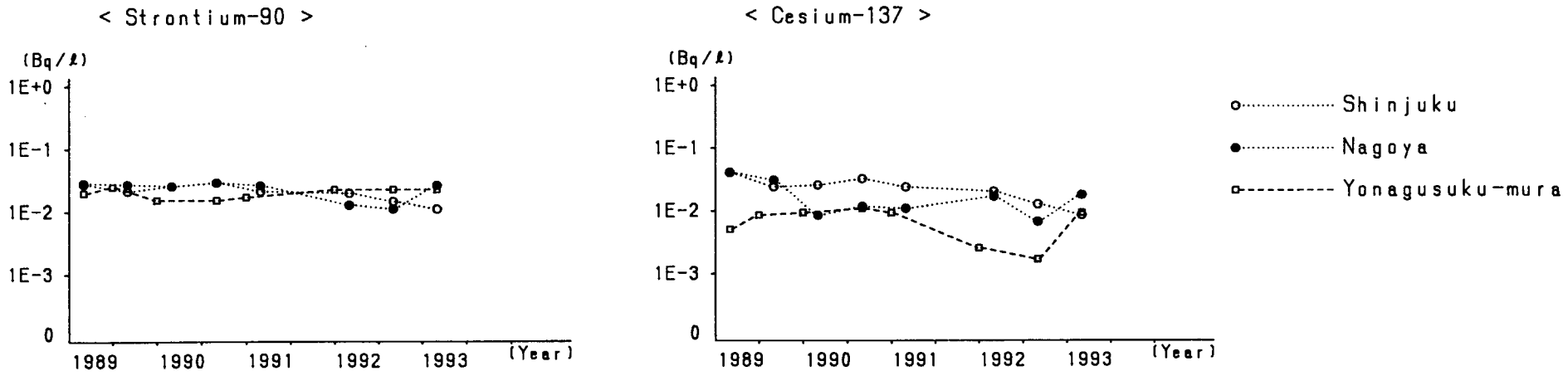

Fig.3-2

* * * Powdered Milk * * *

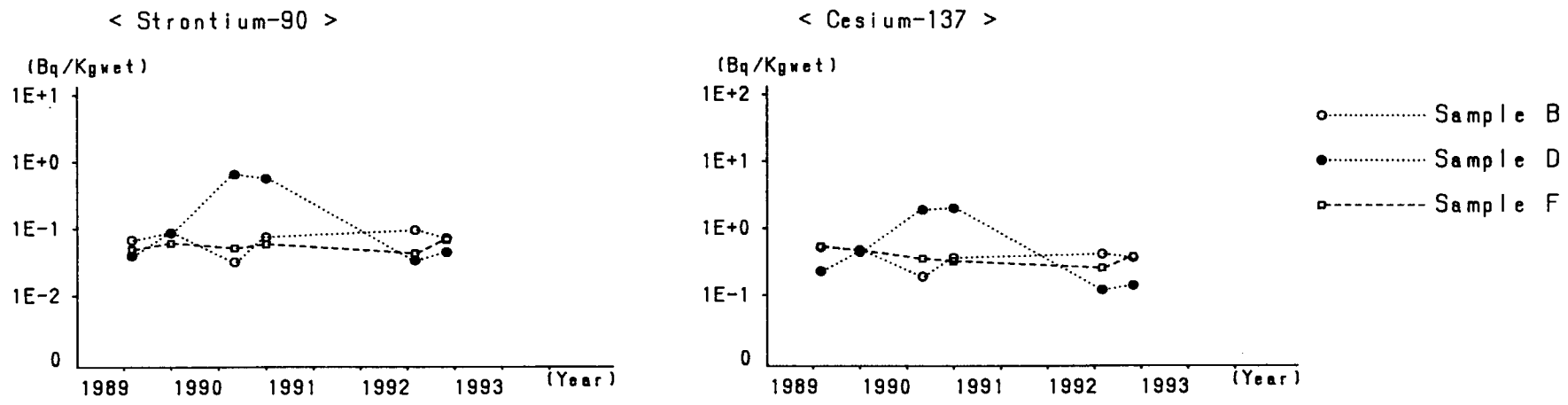

Fig.3-3

* * * Vegetables(producing districts) * * *

[Japanese radish]

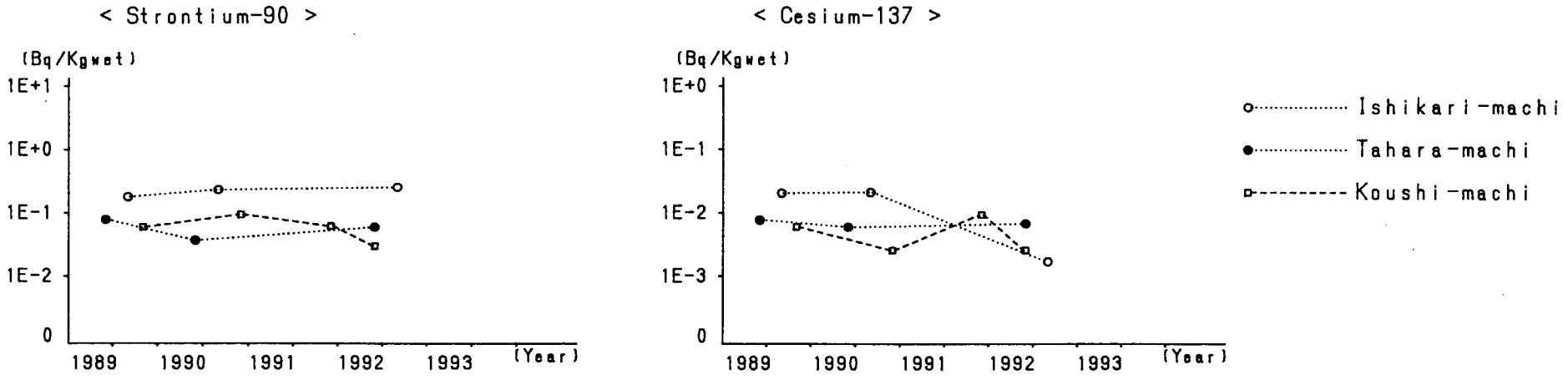

Fig.4-1

* * * Vegetables(consuming districts) * * *

[Japanese radish]

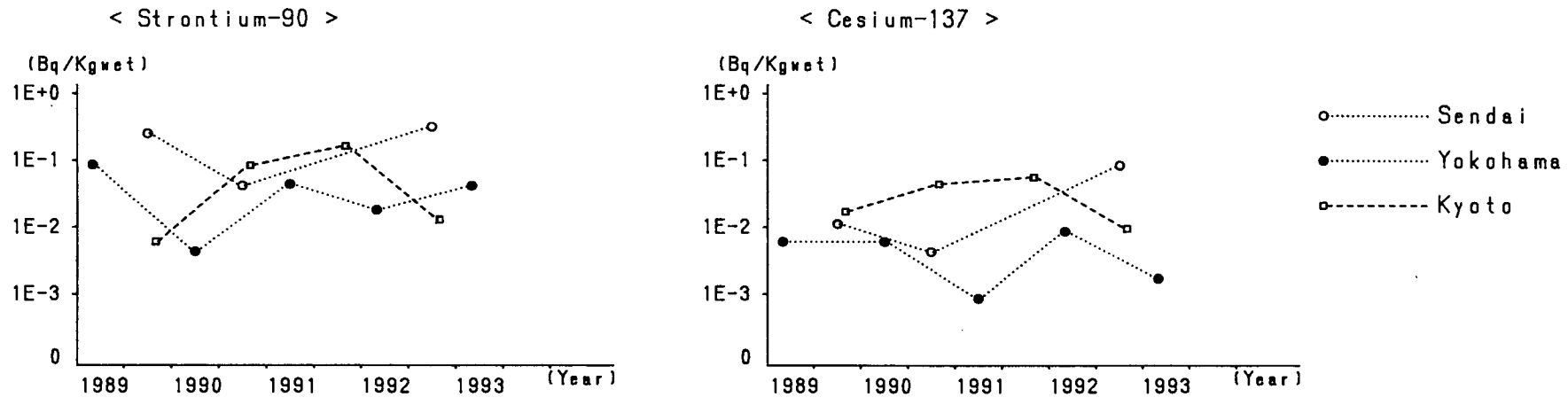

Fig.4-2

* * * Tea(Japanese Tea) * * *

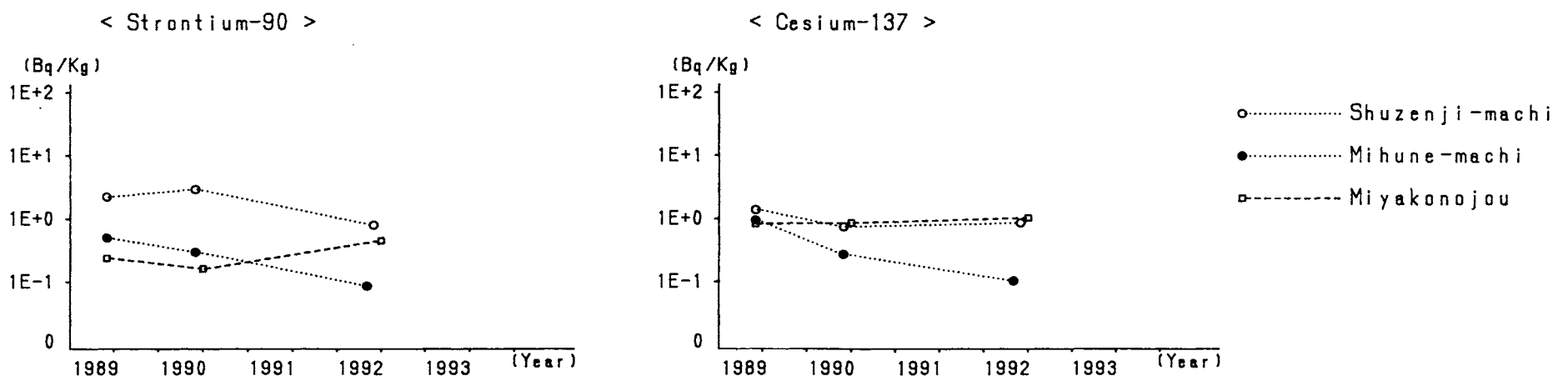

Fig.5

* * * Sea Fish * * *

[Limanda herzensteini]

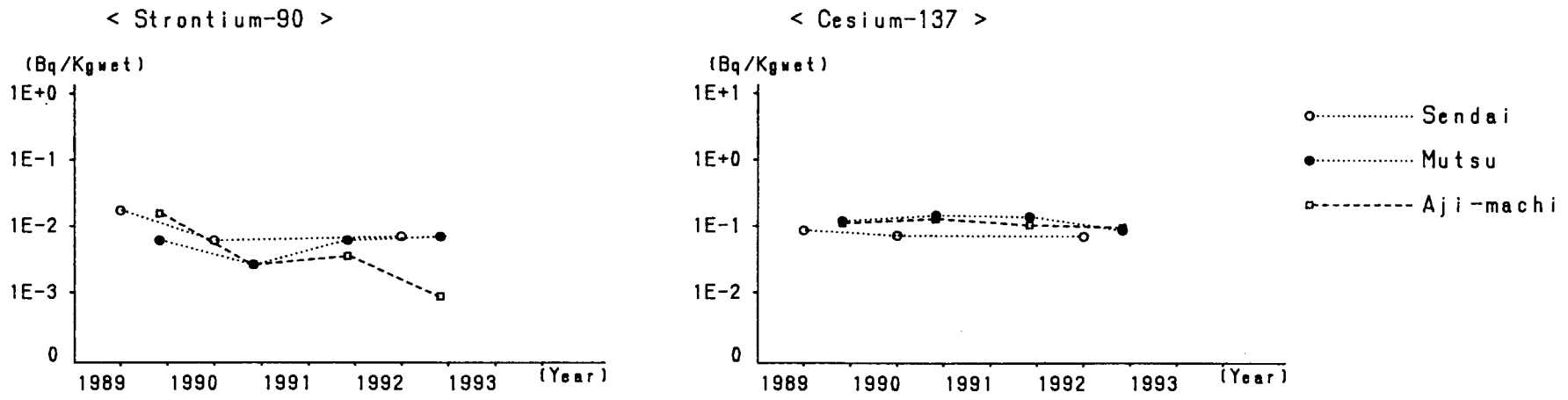

Fig.6

* * * Freshwater Fish * * *

[Cyprinus carpio]

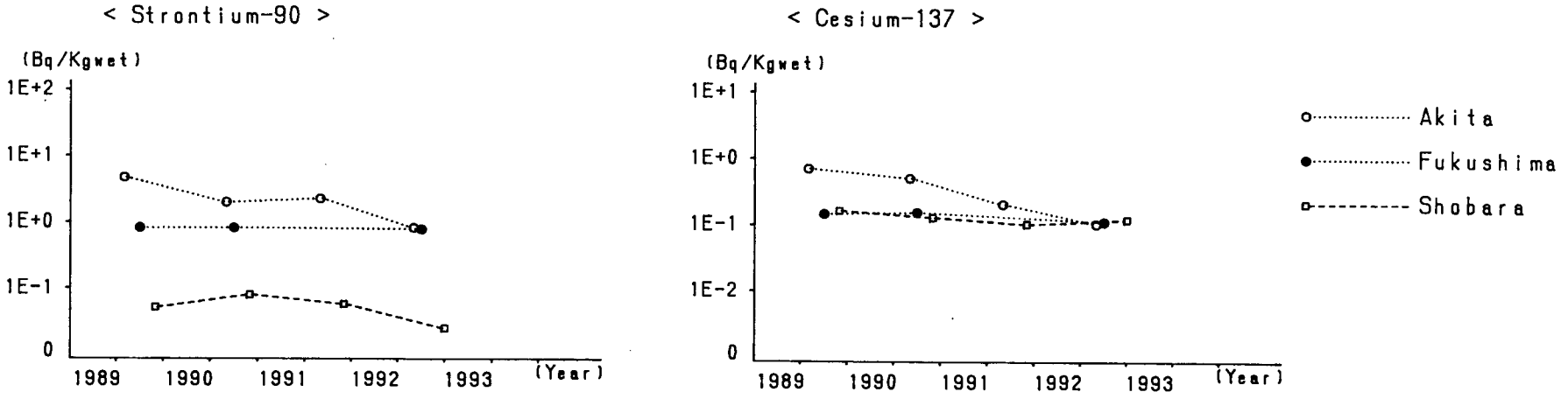

Fig.7

* * * Shellfish * * *

[Turbo cornutus]

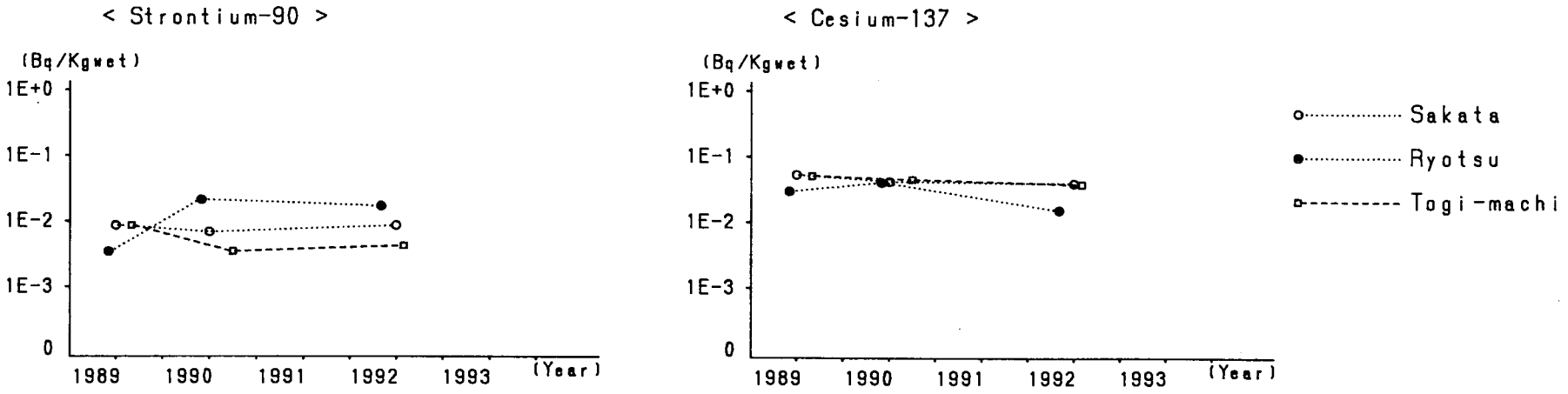

Fig.8

* * * Seaweeds * * *

[Undaria pinnatifida]

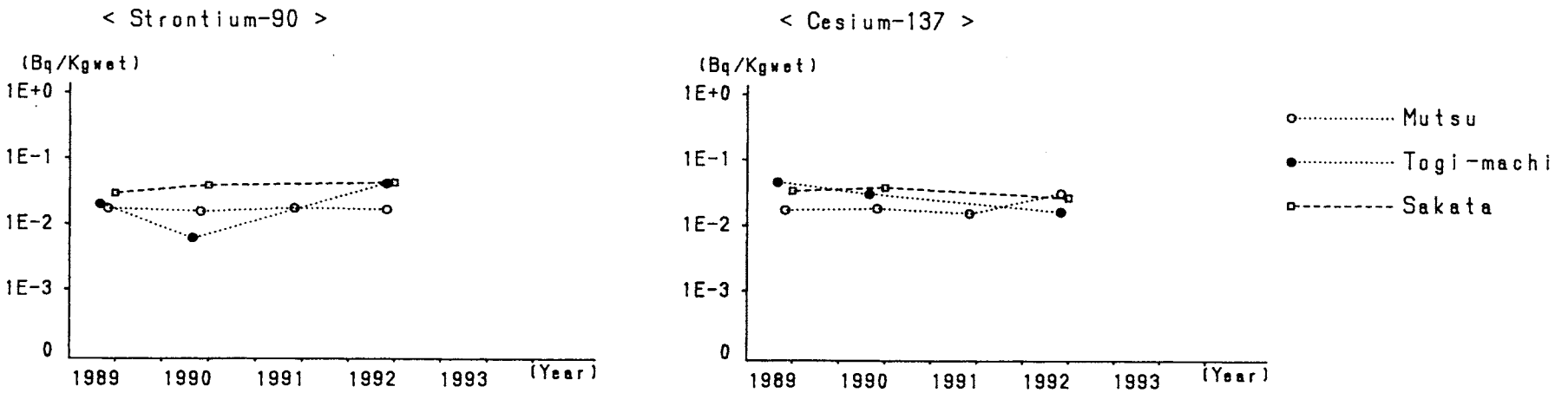

Fig.9

** Sampling Locations in Japan **

1 : Sapporo
2 : Aomori
3 : Morioka
4 : Akita
5 : Sendai
6 : Yamagata
7 : Fukushima
8 : Niigata
9 : Mito
10 : Utsunomiya
11 : Chiba
12 : Urawa
13 : Maebashi
14 : Shinjuku
15 : Nagano
16 : Yokohama
17 : Koufu
18 : Toyama
19 : Kanazawa
20 : Shizuoka
21 : Gifu
22 : Fukui
23 : Nagoya
24 : Ootsu
25 : Tsu
26 : Kyoto
27 : Nara
28 : Osaka
29 : Tottori
30 : Kobe
31 : Wakayama
32 : Okayama
33 : Matsue
34 : Tokushima
35 : Takamatsu
36 : Hiroshima
37 : Kochi
38 : Matsuyama
39 : Yamaguchi
40 : Ooita
41 : Fukuoka
42 : Saga
43 : Kumamoto
44 : Miyazaki
45 : Nagasaki
46 : Kagoshima
47 : Naha