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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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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 5000cm^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 5ℓ of distilled water and the washing was combined to the filtrate.

The sample was passed through a cation exchange column (500mℓ of Dowex 50W X8, 50~100 mesh, Na form) at a rate flow of 80mℓ/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 3000m^3 per month.

The sampling was done 1 to 1.5 meters above the ground.

(3) Service water and freshwater

Service water, 100ℓ 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 dust storms, inflow and out flow 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 2mm 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 20ℓ 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 1m 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 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 transferred 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 nonstarch 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 4kg 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 details 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 0.25mm 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 0.25mm 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 0.35mm 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 molybdophosphate added.

After filtered off and washed with hydrochloric 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 90min. Net sample counting rates were corrected for counter efficiency, recovery, self-absorption and decay to obtain the content of strontium-90 and cesium-137per 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 Apr. 1995 to Sep. 1995)
-continued from No, 113 of this publication-
Table (1) Strontium-90 and Cesium-137 in Total Diet

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	Ash(g/p·d)	Ca(mg/p·d)	K(mg/p·d)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
May, 1995							
Iwanai-machi, HOKKAIDOU	13.8	653	1760	0.060 ± 0.0067	0.092 ± 0.010	0.049 ± 0.0080	0.028 ± 0.0045
Kochi, KOCHI	15.1	491	2000	0.087 ± 0.011	0.18 ± 0.022	0.033 ± 0.0063	0.017 ± 0.0031
Saga-machi, KOCHI	16.7	480	2080	0.078 ± 0.012	0.16 ± 0.025	0.030 ± 0.0065	0.015 ± 0.0031
June, 1995							
Sapporo, HOKKAIDOU	20.1	954	2430	0.091 ± 0.0075	0.095 ± 0.0079	0.069 ± 0.0081	0.029 ± 0.0033
Aomori, AOMORI	17.2	436	1900	0.096 ± 0.0078	0.22 ± 0.018	0.069 ± 0.0082	0.036 ± 0.0043
Ajigasawa-machi, AOMORI	16.7	498	2170	0.10 ± 0.008	0.21 ± 0.016	0.072 ± 0.0086	0.033 ± 0.0040
Morioka, IWATE	14.4	464	1770	0.060 ± 0.0062	0.13 ± 0.013	0.035 ± 0.0063	0.020 ± 0.0036
Iwaizumi-machi, IWATE	13.3	370	1660	0.044 ± 0.0058	0.12 ± 0.016	0.055 ± 0.0079	0.033 ± 0.0047
Yamagata, YAMAGATA	13.3	414	1610	0.040 ± 0.0053	0.097 ± 0.013	0.029 ± 0.0060	0.018 ± 0.0037
Sagae, YAMAGATA	11.2	311	1230	0.042 ± 0.0079	0.14 ± 0.025	0.045 ± 0.0067	0.037 ± 0.0054
Fukushima, FUKUSHIMA	13.3	281	1580	0.046 ± 0.0097	0.16 ± 0.034	0.047 ± 0.0080	0.030 ± 0.0050
Ookuma-machi, FUKUSHIMA	17.1	635	1980	0.073 ± 0.011	0.11 ± 0.017	0.065 ± 0.0088	0.033 ± 0.0044
Mito, IBARAKI	14.1	417	1930	0.036 ± 0.0090	0.085 ± 0.021	0.029 ± 0.0078	0.015 ± 0.0041
Tokai-mura, IBARAKI	16.9	654	2240	0.051 ± 0.0090	0.078 ± 0.014	0.047 ± 0.0080	0.021 ± 0.0036
Utsunomiya, TOCHIGI	15.1	442	2070	0.070 ± 0.0064	0.16 ± 0.014	0.024 ± 0.0055	0.011 ± 0.0026
Mooka, TOCHIGI	14.1	298	1610	0.021 ± 0.0080	0.071 ± 0.027	0.032 ± 0.0072	0.020 ± 0.0044
Maebashi, GUNMA	14.3	489	1930	0.042 ± 0.0056	0.085 ± 0.011	0.026 ± 0.0057	0.014 ± 0.0030
Nakanojou-machi, GUNMA	18.2	578	2450	0.072 ± 0.0073	0.13 ± 0.013	0.051 ± 0.0075	0.021 ± 0.0031
Urawa, SAITAMA	16.8	473	2180	0.051 ± 0.0058	0.11 ± 0.012	0.026 ± 0.0055	0.012 ± 0.0025
Kumagaya, SAITAMA	15.4	476	1760	0.037 ± 0.0078	0.078 ± 0.016	0.034 ± 0.0065	0.019 ± 0.0037
Ichihara, CHIBA	13.9	395	1830	0.032 ± 0.0049	0.080 ± 0.012	0.012 ± 0.0048	0.0068 ± 0.0026
Chikura-machi, CHIBA	17.7	416	2140	0.050 ± 0.0063	0.12 ± 0.015	0.030 ± 0.0060	0.014 ± 0.0028

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	Ash(g/p·d)	Ca(mg/p·d)	K(mg/p·d)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
Shinjuku, TOKYO	13.6	422	1750	0.048 ± 0.0053	0.11 ± 0.013	0.082 ± 0.0099	0.047 ± 0.0057
Hachijou-machi, TOKYO	13.3	466	1470	0.057 ± 0.0062	0.12 ± 0.013	0.038 ± 0.0081	0.026 ± 0.0055
Yokohama, KANAGAWA	12.1	529	1980	0.033 ± 0.0050	0.062 ± 0.0095	0.051 ± 0.0077	0.026 ± 0.0039
Hiratsuka, KANAGAWA	16.0	475	2160	0.053 ± 0.0062	0.11 ± 0.013	0.066 ± 0.0081	0.031 ± 0.0038
Nishikawa-machi, NIIGATA	24.9	665	2960	0.18 ± 0.017	0.27 ± 0.025	0.059 ± 0.0077	0.020 ± 0.0026
Kashiwazaki, NIIGATA	19.9	541	2530	0.075 ± 0.0066	0.14 ± 0.012	0.043 ± 0.0075	0.017 ± 0.0030
Takaoka, TOYAMA	13.1	394	1860	0.049 ± 0.0061	0.13 ± 0.016	0.024 ± 0.0059	0.013 ± 0.0032
Takaoka, TOYAMA	13.5	555	1850	0.033 ± 0.0051	0.060 ± 0.0092	0.056 ± 0.0086	0.030 ± 0.0047
Kanazawa, ISHIKAWA	17.0	607	2050	0.040 ± 0.0084	0.066 ± 0.014	0.065 ± 0.0085	0.032 ± 0.0042
Yoshinodani-mura, ISHIKAWA	12.2	539	1450	0.065 ± 0.0094	0.12 ± 0.017	0.047 ± 0.0075	0.032 ± 0.0052
Fukui, FUKUI	14.4	628	1700	0.046 ± 0.0093	0.074 ± 0.015	0.018 ± 0.0053	0.010 ± 0.0031
Koufu, YAMANASHI	15.2	452	1880	0.041 ± 0.0058	0.092 ± 0.013	0.038 ± 0.0065	0.020 ± 0.0034
Nirasaki, YAMANASHI	14.4	444	1840	0.052 ± 0.0068	0.12 ± 0.015	0.042 ± 0.0070	0.023 ± 0.0038
Nagano, NAGANO	17.0	661	2280	0.074 ± 0.0077	0.11 ± 0.012	0.027 ± 0.0055	0.012 ± 0.0024
Sanada-machi, NAGANO	14.8	396	1950	0.036 ± 0.0086	0.091 ± 0.022	0.12 ± 0.010	0.064 ± 0.0053
Gifu, GIFU	16.0	573	2060	0.034 ± 0.0061	0.059 ± 0.011	0.031 ± 0.0059	0.015 ± 0.0029
Takayama, GIFU	10.7	404	1500	0.050 ± 0.010	0.12 ± 0.025	0.030 ± 0.0061	0.020 ± 0.0040
Shizuoka, SHIZUOKA	14.9	543	2090	0.074 ± 0.0070	0.14 ± 0.013	0.027 ± 0.0079	0.013 ± 0.0038
Hamaoka-machi, SHIZUOKA	14.7	510	1730	0.066 ± 0.0068	0.13 ± 0.013	0.024 ± 0.0078	0.014 ± 0.0045
Nagoya, AICHI	17.2	1220	2290	0.040 ± 0.0059	0.033 ± 0.0048	0.021 ± 0.0060	0.0092 ± 0.0026
Shinshiro, AICHI	13.5	555	1850	0.037 ± 0.0055	0.067 ± 0.0098	0.024 ± 0.0068	0.013 ± 0.0037
Ootsu, SHIGA	13.1	371	1930	0.049 ± 0.0065	0.13 ± 0.018	0.048 ± 0.0073	0.025 ± 0.0038
Imazu-machi, SHIGA	14.4	512	2120	0.084 ± 0.0078	0.16 ± 0.015	0.042 ± 0.0080	0.020 ± 0.0038
Tsu, MIE	15.2	619	1980	0.058 ± 0.0070	0.094 ± 0.011	0.049 ± 0.0074	0.025 ± 0.0037
Owase, MIE	12.0	471	1770	0.064 ± 0.0063	0.14 ± 0.013	0.040 ± 0.0069	0.022 ± 0.0039

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	Ash(g/p·d)	Ca(mg/p·d)	K(mg/p·d)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
Osaka, OSAKA	14.2	436	1990	0.052 ± 0.0068	0.12 ± 0.016	0.036 ± 0.0065	0.018 ± 0.0032
Sakai, OSAKA	12.8	466	1730	0.035 ± 0.0050	0.074 ± 0.011	0.043 ± 0.0069	0.025 ± 0.0040
Kakogawa, HYOUGO	12.4	481	1740	0.064 ± 0.010	0.13 ± 0.022	0.012 ± 0.0065	0.0071 ± 0.0037
Hamasaka-machi, HYOUGO	14.6	951	1730	0.075 ± 0.0076	0.079 ± 0.0080	0.038 ± 0.0066	0.022 ± 0.0038
Kashihara, NARA	14.1	1250	1680	0.044 ± 0.0065	0.035 ± 0.0051	0.016 ± 0.0048	0.0095 ± 0.0029
Gojou, NARA	13.8	1140	1750	0.048 ± 0.0060	0.042 ± 0.0053	0.035 ± 0.0065	0.020 ± 0.0037
Wakayama, WAKAYAMA	15.2	630	1850	0.042 ± 0.0092	0.066 ± 0.015	0.028 ± 0.0057	0.015 ± 0.0031
Kitayama-mura, WAKAYAMA	9.88	270	1500	0.034 ± 0.0052	0.12 ± 0.019	0.0095 ± 0.0068	0.0063 ± 0.0045
Tottori, TOTTORI	11.7	347	1540	0.028 ± 0.0084	0.079 ± 0.024	0.026 ± 0.0058	0.017 ± 0.0038
Fukube-mura, TOTTORI	12.2	438	1710	0.061 ± 0.011	0.14 ± 0.025	0.033 ± 0.0060	0.020 ± 0.0035
Kashima-machi, SHIMANE	17.9	902	2240	0.078 ± 0.0073	0.087 ± 0.0081	0.048 ± 0.0085	0.022 ± 0.0038
Okayama, OKAYAMA	17.8	646	2240	0.046 ± 0.0097	0.071 ± 0.015	0.046 ± 0.0069	0.020 ± 0.0031
Kamisaibara-mura, OKAYAMA	11.2	316	1510	0.088 ± 0.0085	0.28 ± 0.027	0.023 ± 0.0055	0.016 ± 0.0037
Miyoshi, HIROSHIMA	12.2	354	1500	0.039 ± 0.0059	0.11 ± 0.017	0.014 ± 0.0058	0.0095 ± 0.0038
Yamaguchi, YAMAGUCHI	16.5	686	2310	0.054 ± 0.0099	0.079 ± 0.014	0.069 ± 0.0086	0.030 ± 0.0037
Ajisu-machi, YAMAGUCHI	21.6	740	2720	0.054 ± 0.0062	0.073 ± 0.0084	0.049 ± 0.0078	0.018 ± 0.0029
Tokushima, TOKUSHIMA	13.5	300	1650	0.036 ± 0.0091	0.12 ± 0.030	0.018 ± 0.0049	0.011 ± 0.0030
Takamatsu, KAGAWA	12.0	445	1770	0.047 ± 0.0094	0.11 ± 0.021	0.028 ± 0.0059	0.016 ± 0.0033
Tuda-machi, KAGAWA	14.0	494	1990	0.032 ± 0.0087	0.066 ± 0.018	0.043 ± 0.0069	0.022 ± 0.0035
Matsuyama, EHIME	12.0	426	1550	0.022 ± 0.0073	0.053 ± 0.017	0.016 ± 0.0051	0.010 ± 0.0033
Ikata-machi, EHIME	9.37	588	1190	0.025 ± 0.0076	0.042 ± 0.013	0.016 ± 0.0053	0.014 ± 0.0045
Dazaifu, FUKUOKA	12.5	355	1840	0.040 ± 0.0090	0.11 ± 0.025	0.056 ± 0.0076	0.030 ± 0.0041
Fukuoka, FUKUOKA	11.5	406	1390	0.035 ± 0.0084	0.086 ± 0.021	0.022 ± 0.0055	0.016 ± 0.0039
Saga, SAGA	14.5	330	1690	0.048 ± 0.0069	0.14 ± 0.021	0.033 ± 0.0064	0.019 ± 0.0038
Nagasaki, NAGASAKI	15.5	507	2240	0.063 ± 0.011	0.12 ± 0.021	0.039 ± 0.0066	0.018 ± 0.0030

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	Ash(g/p·d)	Ca(mg/p·d)	K(mg/p·d)	(Bq/p·d)	(Bq/gCa)	(Bq/p·d)	(Bq/gK)
Matsuura, NAGASAKI	12.3	592	1760	0.042 ± 0.0054	0.071 ± 0.0092	0.051 ± 0.0085	0.029 ± 0.0048
Kumamoto, KUMAMOTO	14.9	351	1960	0.043 ± 0.0068	0.12 ± 0.019	0.033 ± 0.0062	0.017 ± 0.0032
Aso-machi, KUMAMOTO	15.1	303	2040	0.043 ± 0.0053	0.14 ± 0.017	0.055 ± 0.0073	0.027 ± 0.0036
Ooita, OOITA	12.4	505	1760	0.024 ± 0.0049	0.047 ± 0.0098	0.028 ± 0.0058	0.016 ± 0.0033
Miyazaki, MIYAZAKI	15.8	532	2020	0.043 ± 0.0059	0.080 ± 0.011	0.050 ± 0.0073	0.025 ± 0.0036
Sendai, MIYAGI	12.9	434	1570	0.052 ± 0.0066	0.12 ± 0.015	0.060 ± 0.0079	0.038 ± 0.0050
Ookuchi, KAGOSHIMA	20.5	382	1650	0.060 ± 0.0068	0.16 ± 0.018	0.064 ± 0.0078	0.038 ± 0.0047
July, 1995							
Ishinomaki, MIYAGI	15.0	516	2140	0.035 ± 0.0051	0.069 ± 0.0099	0.049 ± 0.0087	0.023 ± 0.0041
Onagawa-machi, MIYAGI	18.1	931	2250	0.051 ± 0.0059	0.055 ± 0.0063	0.16 ± 0.013	0.073 ± 0.0058
Akita, AKITA	14.1	381	1870	0.065 ± 0.0068	0.17 ± 0.018	0.058 ± 0.0074	0.031 ± 0.0040
Tsuruga, FUKUI	12.1	409	1600	0.036 ± 0.010	0.089 ± 0.026	0.023 ± 0.0056	0.014 ± 0.0035
Kyoto, KYOTO	14.7	589	2280	0.058 ± 0.010	0.098 ± 0.017	0.020 ± 0.0053	0.0087 ± 0.0023
Maizuru, KYOTO	19.5	657	2150	0.044 ± 0.0069	0.067 ± 0.010	0.030 ± 0.0062	0.014 ± 0.0029
Matsue, SHIMANE	24.6	1060	3740	0.10 ± 0.008	0.095 ± 0.0077	0.16 ± 0.013	0.043 ± 0.0035
Hiroshima, HIROSHIMA	13.9	469	1660	0.045 ± 0.0092	0.095 ± 0.020	0.029 ± 0.0059	0.018 ± 0.0035
Karatsu, SAGA	14.8	390	1560	0.027 ± 0.0048	0.071 ± 0.012	0.012 ± 0.0066	0.0074 ± 0.0042
Saiki, OOITA	12.9	450	1550	0.066 ± 0.0068	0.15 ± 0.015	0.028 ± 0.0076	0.018 ± 0.0049
Takahara-machi, MIYAZAKI	14.6	290	1560	0.053 ± 0.0060	0.18 ± 0.021	0.13 ± 0.012	0.082 ± 0.0077
August, 1995							
Akita, AKITA	17.8	462	2120	0.065 ± 0.0068	0.14 ± 0.015	0.032 ± 0.0065	0.015 ± 0.0031
Naha, Okinawa	16.5	624	2620	0.073 ± 0.0071	0.12 ± 0.011	0.064 ± 0.0078	0.024 ± 0.0030
September, 1995							
Ginowan, Okinawa	17.1	632	2130	0.055 ± 0.0064	0.087 ± 0.010	0.034 ± 0.0075	0.016 ± 0.0035

(2) Strontium-90 and Cesium-137 in Rice (producing districts)
(from Apr. 1995 to Sep. 1995)
-continued from No. 113 of this publication-
Table (2) 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, 1995							
Chiba, CHIBA	0.558	0.037	0.792	0.0000 ± 0.0032	0.000 ± 0.086	0.0030 ± 0.0040	0.0038 ± 0.0050
Kanazawa, ISHIKAWA	0.592	0.044	0.977	0.017 ± 0.0045	0.38 ± 0.10	0.0025 ± 0.0046	0.0025 ± 0.0047
Toyosina-machi, NAGANO	0.459	0.038	0.789	0.0017 ± 0.0030	0.046 ± 0.079	0.0000 ± 0.0036	0.0000 ± 0.0045
Gifu, GIFU	0.468	0.046	0.870	0.0015 ± 0.0038	0.032 ± 0.082	0.0047 ± 0.0041	0.0053 ± 0.0048
Matsusaka, MIE	0.489	0.034	0.773	0.0047 ± 0.0038	0.14 ± 0.11	0.0028 ± 0.0043	0.0036 ± 0.0056
Sadohara-machi, MIYAZAKI	0.501	0.042	0.852	0.016 ± 0.0046	0.39 ± 0.11	0.0042 ± 0.0049	0.0049 ± 0.0057

(3)-1 Strontium-90 and Cesium-137 in Milk (producing districts for domestic program)
(from Apr. 1995 to Sep. 1995)
-continued from No, 113 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, 1995							
Yamato-machi, SAGA	7.43	1.12	1.70	0.032 ± 0.0055	0.029 ± 0.0049	0.0000 ± 0.0045	0.0000 ± 0.0027
July, 1995							
Nishinasuno-machi, TOCHIGI	6.89	1.02	1.63	0.045 ± 0.0056	0.044 ± 0.0055	0.10 ± 0.010	0.063 ± 0.0060
Shinguu, WAKAYAMA	6.59	1.01	1.48	0.032 ± 0.0049	0.032 ± 0.0049	0.028 ± 0.0054	0.019 ± 0.0037
August, 1995							
Aomori, AOMORI	7.24	0.986	1.50	0.11 ± 0.009	0.11 ± 0.009	0.054 ± 0.0077	0.036 ± 0.0051
Takizawa-mura, IWATE	6.76	1.04	1.59	0.030 ± 0.0049	0.029 ± 0.0048	0.086 ± 0.0090	0.054 ± 0.0057
Mito, IBARAKI	7.38	1.13	1.58	0.028 ± 0.0046	0.025 ± 0.0040	0.025 ± 0.0056	0.016 ± 0.0036
Fujimi-mura, GUNMA	6.90	1.07	1.61	0.028 ± 0.0048	0.026 ± 0.0045	0.033 ± 0.0060	0.021 ± 0.0037
Yachimata, CHIBA	7.48	1.06	1.73	0.028 ± 0.0054	0.027 ± 0.0051	0.021 ± 0.0055	0.012 ± 0.0032
Tonami, TOYAMA	7.21	1.06	1.62	0.014 ± 0.0065	0.013 ± 0.0061	0.014 ± 0.0052	0.0087 ± 0.0032
Oshimizu-machi, ISHIKAWA	7.13	1.12	1.57	0.031 ± 0.0053	0.028 ± 0.0047	0.026 ± 0.0076	0.017 ± 0.0048
Takane-machi, YAMANASHI	6.70	1.03	1.51	0.016 ± 0.0070	0.016 ± 0.0068	0.0063 ± 0.0050	0.0042 ± 0.0033
Kasamatsu-machi, GIFU	6.61	1.01	1.41	0.035 ± 0.0087	0.035 ± 0.0087	0.0078 ± 0.0050	0.0055 ± 0.0035
Hino-machi, SHIGA	7.14	1.05	1.68	0.034 ± 0.0054	0.032 ± 0.0051	0.020 ± 0.0053	0.012 ± 0.0032
Oouchiyama-mura, MIE	7.20	1.09	1.64	0.034 ± 0.0055	0.031 ± 0.0051	0.022 ± 0.0053	0.013 ± 0.0032
Mihara-machi, HYOUGO	6.80	1.04	1.53	0.026 ± 0.0055	0.025 ± 0.0053	0.021 ± 0.0056	0.014 ± 0.0037
Oouda-machi, NARA	7.50	1.16	1.48	0.020 ± 0.0051	0.018 ± 0.0043	0.023 ± 0.0054	0.015 ± 0.0037
Kamiita-machi, TOKUSHIMA	7.21	1.05	1.74	0.021 ± 0.0043	0.020 ± 0.0041	0.0092 ± 0.0038	0.0053 ± 0.0022
Takase-machi, KAGAWA	7.11	1.07	1.60	0.017 ± 0.0040	0.016 ± 0.0037	0.0084 ± 0.0041	0.0052 ± 0.0026
Matsuyama, EHIME	7.13	1.11	1.59	0.036 ± 0.0058	0.032 ± 0.0052	0.0029 ± 0.0066	0.0018 ± 0.0041
Koushi-machi, KUMAMOTO	7.20	1.07	1.60	0.027 ± 0.0073	0.026 ± 0.0068	0.0095 ± 0.0047	0.0059 ± 0.0029
Kujuu-machi, OOITA	7.29	1.09	1.59	0.016 ± 0.0063	0.014 ± 0.0058	0.081 ± 0.0086	0.051 ± 0.0054
Takahara-machi, MIYAZAKI	6.89	1.03	1.60	0.026 ± 0.0076	0.025 ± 0.0074	0.035 ± 0.0062	0.022 ± 0.0039

(3)-2 Strontium-90 and Cesium-137 in Milk (producing districts for WHO program)
(from Apr. 1995 to Sep. 1995)
-continued from No. 113 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, 1995							
Hokudainoujou, HOKKAIDOU	7.29	1.14	1.61	0.046 ± 0.0063	0.041 ± 0.0056	0.040 ± 0.0085	0.025 ± 0.0053
Hachijo-Island, TOKYO	6.84	0.810	1.26	0.044 ± 0.0061	0.054 ± 0.0076	0.066 ± 0.0092	0.052 ± 0.0073
Nishikawa-machi, NIIGATA	7.43	1.06	1.74	0.024 ± 0.0056	0.023 ± 0.0053	0.016 ± 0.0072	0.0093 ± 0.0041
Katsuyama, FUKUI	7.27	1.09	1.63	0.015 ± 0.0045	0.013 ± 0.0041	0.056 ± 0.0089	0.035 ± 0.0055
Shijounawate, OSAKA	7.41	1.12	1.55	0.043 ± 0.0062	0.039 ± 0.0055	0.0092 ± 0.0062	0.0059 ± 0.0040
Takamiya-machi, HIROSHIMA	7.12	1.07	1.57	0.024 ± 0.0051	0.023 ± 0.0047	0.016 ± 0.0066	0.010 ± 0.0042
Kochi, KOCHI	7.40	1.19	1.59	0.040 ± 0.0059	0.034 ± 0.0049	0.012 ± 0.0069	0.0075 ± 0.0044
Yasu-machi, FUKUOKA	7.22	1.08	1.56	0.018 ± 0.0049	0.017 ± 0.0045	0.0017 ± 0.0055	0.0011 ± 0.0035
Kajiki-machi, KAGOSHIMA	7.39	1.12	1.58	0.029 ± 0.0060	0.026 ± 0.0053	0.028 ± 0.0082	0.017 ± 0.0052
June, 1995							
Hikawa-machi, SHIMANE	7.55	1.20	1.43	0.058 ± 0.0060	0.049 ± 0.0050	0.070 ± 0.0081	0.049 ± 0.0056
August, 1995							
Hokudainoujou, HOKKAIDOU	7.21	1.10	1.59	0.054 ± 0.0070	0.049 ± 0.0064	0.038 ± 0.0082	0.024 ± 0.0052
Hachijo-Island, TOKYO	6.69	0.938	1.41	0.059 ± 0.0057	0.063 ± 0.0061	0.044 ± 0.0062	0.031 ± 0.0044
Nishikawa-machi, NIIGATA	7.29	1.10	1.66	0.017 ± 0.0038	0.015 ± 0.0034	0.0089 ± 0.0057	0.0053 ± 0.0034
Katsuyama, FUKUI	7.27	1.15	1.53	0.019 ± 0.0046	0.016 ± 0.0040	0.031 ± 0.0077	0.020 ± 0.0050
Shijounawate, OSAKA	6.72	1.02	1.35	0.037 ± 0.0062	0.037 ± 0.0061	0.014 ± 0.0067	0.010 ± 0.0050
Hikawa-machi, SHIMANE	9.22	1.47	0.940	0.092 ± 0.0072	0.063 ± 0.0049	0.11 ± 0.010	0.11 ± 0.010
Takamiya-machi, HIROSHIMA	6.79	0.993	1.47	0.022 ± 0.0046	0.023 ± 0.0047	0.0012 ± 0.0042	0.0008 ± 0.0029
Kochi, KOCHI	7.24	1.09	1.64	0.033 ± 0.0050	0.030 ± 0.0046	0.0030 ± 0.0035	0.0018 ± 0.0021
Yasu-machi, FUKUOKA	7.05	1.06	1.52	0.029 ± 0.0057	0.027 ± 0.0054	0.015 ± 0.0069	0.0099 ± 0.0046
Kajiki-machi, KAGOSHIMA	7.06	1.08	1.55	0.018 ± 0.0078	0.016 ± 0.0072	0.020 ± 0.0072	0.013 ± 0.0047

(3)-3 Strontium-90 and Cesium-137 in Milk (consuming districts)
(from Apr. 1995 to Sep. 1995)
-continued from No. 113 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, 1995							
Sendai, MIYAGI	7.22	1.12	1.58	0.033 ± 0.0046	0.030 ± 0.0041	0.0069 ± 0.0043	0.0044 ± 0.0027
Kyoto, KYOTO	7.23	1.06	1.57	0.025 ± 0.0082	0.023 ± 0.0077	0.0045 ± 0.0050	0.0028 ± 0.0032
Hiroshima, HIROSHIMA	6.88	1.05	1.49	0.029 ± 0.0052	0.028 ± 0.0050	0.033 ± 0.0072	0.022 ± 0.0048
August, 1995							
Sapporo, HOKKAIDOU	7.17	1.08	1.57	0.042 ± 0.0054	0.039 ± 0.0050	0.046 ± 0.0070	0.029 ± 0.0044
Akita, AKITA	6.38	0.963	1.42	0.036 ± 0.0050	0.037 ± 0.0052	0.016 ± 0.0052	0.012 ± 0.0036
Yamagata, YAMAGATA	6.70	1.00	1.51	0.032 ± 0.0049	0.031 ± 0.0049	0.0067 ± 0.0046	0.0045 ± 0.0030
Fukushima, FUKUSHIMA	7.21	1.08	1.59	0.022 ± 0.0054	0.021 ± 0.0050	0.029 ± 0.0080	0.019 ± 0.0051
Urawa, SAITAMA	7.03	1.08	1.56	0.026 ± 0.0049	0.024 ± 0.0046	0.021 ± 0.0050	0.014 ± 0.0032
Shinjuku, TOKYO	6.58	0.971	1.48	0.018 ± 0.0067	0.019 ± 0.0069	0.010 ± 0.0061	0.0070 ± 0.0041
Yokohama, KANAGAWA	7.23	1.09	1.62	0.026 ± 0.0053	0.024 ± 0.0049	0.064 ± 0.0079	0.040 ± 0.0049
Niigata, NIIGATA	7.57	1.10	1.60	0.032 ± 0.0048	0.029 ± 0.0044	0.025 ± 0.0068	0.016 ± 0.0042
Fukui, FUKUI	7.31	1.11	1.68	0.022 ± 0.0047	0.020 ± 0.0042	0.0084 ± 0.0051	0.0050 ± 0.0030
Shizuoka, SHIZUOKA	7.24	1.10	1.61	0.032 ± 0.0054	0.029 ± 0.0049	0.037 ± 0.0084	0.023 ± 0.0052
Nagoya, AICHI	7.09	1.09	1.56	0.016 ± 0.0072	0.015 ± 0.0066	0.031 ± 0.0064	0.020 ± 0.0041
Osaka, OSAKA	6.81	0.983	1.54	0.061 ± 0.0071	0.062 ± 0.0073	0.042 ± 0.0068	0.027 ± 0.0044
Yonago, TOTTORI	6.73	1.01	1.52	0.022 ± 0.0050	0.022 ± 0.0050	0.020 ± 0.0051	0.013 ± 0.0033
Matsue, SHIMANE	7.25	1.10	1.60	0.033 ± 0.0051	0.030 ± 0.0046	0.023 ± 0.0058	0.014 ± 0.0036
Okayama, OKAYAMA	7.06	1.05	1.60	0.023 ± 0.0045	0.022 ± 0.0042	0.0069 ± 0.0039	0.0043 ± 0.0025
Yamaguchi, YAMAGUCHI	6.93	1.02	1.55	0.020 ± 0.0044	0.020 ± 0.0043	0.012 ± 0.0045	0.0075 ± 0.0029
Matsuyama, EHIME	7.01	1.04	1.42	0.026 ± 0.0051	0.025 ± 0.0050	0.024 ± 0.0071	0.017 ± 0.0050
Kochi, KOCHI	7.00	1.05	1.52	0.026 ± 0.0055	0.025 ± 0.0052	0.018 ± 0.0073	0.012 ± 0.0048
Chikushino, FUKUOKA	7.10	1.05	1.59	0.012 ± 0.0061	0.011 ± 0.0058	0.016 ± 0.0047	0.010 ± 0.0029
Nagasaki, NAGASAKI	6.64	1.03	1.49	0.026 ± 0.0071	0.025 ± 0.0069	0.010 ± 0.0046	0.0070 ± 0.0031
Kagoshima, KAGOSHIMA	7.17	1.07	1.57	0.028 ± 0.0088	0.026 ± 0.0082	0.014 ± 0.0071	0.0088 ± 0.0045
September, 1995							

Location	Component			^{90}Sr		^{137}Cs	
	Ash(g/ ℓ)	Ca(g/ ℓ)	K(g/ ℓ)	(Bq/ ℓ)	(Bq/gCa)	(Bq/ ℓ)	(Bq/gK)
Sendai, MIYAGI	7.25	1.07	1.57	0.012 ± 0.0048	0.011 ± 0.0045	0.0084 ± 0.0048	0.0054 ± 0.0031
Nagano, NAGANO	6.83	1.03	1.51	0.021 ± 0.0077	0.020 ± 0.0075	0.0052 ± 0.0048	0.0034 ± 0.0032
Yonagusuku-mura, Okinawa	7.24	1.06	1.62	0.021 ± 0.0067	0.020 ± 0.0063	0.0007 ± 0.0034	0.0004 ± 0.0021

(3)-4 Strontium-90 and Cesium-137 in Milk (powdered milk)
(from Apr. 1995 to Sep. 1995)
-continued from No. 113 of this publication-

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

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kg)	(Bq/gCa)	(Bq/kg)	(Bq/gK)
August, 1995							
Sample C,	7.97	12.1	17.1	0.43 ± 0.021	0.036 ± 0.0017	1.3 ± 0.04	0.075 ± 0.0024
September, 1995							
Sample A,	7.81	11.9	16.9	0.36 ± 0.018	0.031 ± 0.0015	0.51 ± 0.027	0.030 ± 0.0016
Sample B,	2.51	3.31	6.12	0.060 ± 0.0069	0.018 ± 0.0021	0.13 ± 0.011	0.021 ± 0.0018
Sample D,	2.50	4.05	5.43	0.025 ± 0.0063	0.0062 ± 0.0015	0.086 ± 0.0092	0.016 ± 0.0017
Sample E,	2.49	3.81	5.65	0.078 ± 0.0075	0.020 ± 0.0020	0.20 ± 0.014	0.036 ± 0.0025
Sample F,	2.48	3.47	5.31	0.068 ± 0.0072	0.019 ± 0.0021	0.17 ± 0.013	0.033 ± 0.0024

(4)-1 Strontium-90 and cesium-137 in Vegetables (producing districts)
(from Apr. 1995 to Sep. 1995)

-continued from No. 113 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)	
(Cabbege)											
July, 1995											
Oota, SHIMANE	1.22	1.51	3.41	1.1	± 0.02	0.70	± 0.016	0.85	± 0.028	0.25	± 0.008
(Japanese radish)											
May, 1995											
Tahara-machi, AICHI	0.711	0.320	2.87	0.033	± 0.0049	0.10	± 0.015	0.0062	± 0.0036	0.0022	± 0.0013
June, 1995											
Koushi-machi, KUMAMOTO	0.619	0.184	2.48	0.038	± 0.0053	0.21	± 0.029	0.0077	± 0.0038	0.0031	± 0.0015
July, 1995											
Oota, SHIMANE	0.646	0.196	2.22	0.40	± 0.014	2.0	± 0.07	0.41	± 0.019	0.18	± 0.008
August, 1995											
Hiroshima-machi, HOKKAIDOU	0.595	0.149	2.56	0.14	± 0.010	0.97	± 0.064	0.020	± 0.0054	0.0077	± 0.0021
(Onion)											
July, 1995											
Kumatori-machi, OSAKA	0.371	0.095	1.56	0.026	± 0.0048	0.28	± 0.050	0.0028	± 0.0033	0.0018	± 0.0021
(Potato)											
August, 1995											
Mutsu, AOMORI	0.892	0.046	3.95	0.015	± 0.0040	0.32	± 0.085	0.063	± 0.0091	0.016	± 0.0023
(Spinach)											
May, 1995											
Tahara-machi, AICHI	1.25	0.231	5.34	0.013	± 0.0038	0.057	± 0.016	0.013	± 0.0042	0.0025	± 0.00079
Koushi-machi, KUMAMOTO	1.35	0.738	4.93	0.097	± 0.0072	0.13	± 0.010	0.011	± 0.0042	0.0023	± 0.00086
August, 1995											
Hiroshima-machi, HOKKAIDOU	1.63	0.482	7.29	0.077	± 0.0062	0.16	± 0.013	0.013	± 0.0041	0.0017	± 0.00056

(4)-2 Strontium-90 and cesium-137 in Vegetables (consuming districts)
(from Apr. 1995 to Sep. 1995)

-continued from No. 113 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)							
September, 1995							
Sendai, MIYAGI	0.698	0.385	2.88	0.34 ± 0.014	0.89 ± 0.036	0.0096 ± 0.0048	0.0033 ± 0.0017
Urawa, SAITAMA	0.600	0.195	2.49	0.096 ± 0.0077	0.49 ± 0.039	0.0061 ± 0.0042	0.0025 ± 0.0017
(Spinach)							
May, 1995							
Sendai, MIYAGI	1.42	0.615	6.12	0.098 ± 0.0068	0.16 ± 0.011	0.0025 ± 0.0036	0.00040 ± 0.00060
June, 1995							
Niigata, NIIGATA	1.76	0.498	7.99	0.11 ± 0.009	0.23 ± 0.017	0.011 ± 0.0046	0.0014 ± 0.00057
September, 1995							
Urawa, SAITAMA	1.76	0.454	7.64	0.11 ± 0.009	0.25 ± 0.019	0.0037 ± 0.0046	0.00049 ± 0.00060
Kanazawa, ISHIKAWA	1.94	0.581	7.92	0.072 ± 0.0080	0.12 ± 0.014	0.011 ± 0.0049	0.0014 ± 0.00061

(5) Strontium-90 and Cesium-137 in Tea (Japanese Tea)
(from Apr. 1995 to Sep. 1995)
-continued from No. 111 of this publication-
Table (5) Strontium-90 and Cesium-137 in Tea (Japanese Tea)

Location	Component			^{90}Sr				^{137}Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kg)		(Bq/gCa)		(Bq/kg)		(Bq/gK)	
May, 1995											
Shirakawa-machi, GIFU	4.74	1.82	16.8	0.30	± 0.028	0.16	± 0.015	0.16	± 0.024	0.0094	± 0.0014
Ikeda-machi, GIFU	4.46	3.09	14.8	1.1	± 0.05	0.37	± 0.015	0.26	± 0.029	0.017	± 0.0019
Iwata, SHIZUOKA	1.22	0.567	4.58	0.088	± 0.0074	0.16	± 0.013	0.041	± 0.0062	0.0090	± 0.0014
Shuzenji-machi, SHIZUOKA	1.21	0.573	4.60	0.16	± 0.009	0.27	± 0.016	0.17	± 0.011	0.037	± 0.0025
Kameyama, MIE	5.01	2.34	18.2	0.82	± 0.037	0.35	± 0.016	0.21	± 0.024	0.012	± 0.0013
Oodai-machi, MIE	5.76	1.99	22.5	0.20	± 0.021	0.098	± 0.011	0.58	± 0.040	0.026	± 0.0018
Kaya-machi, KYOTO	5.11	2.68	17.7	1.4	± 0.05	0.52	± 0.020	0.43	± 0.041	0.024	± 0.0023
Nara, NARA	5.23	1.86	19.4	0.34	± 0.031	0.18	± 0.017	1.0	± 0.06	0.054	± 0.0029
Nara, NARA	5.00	2.08	18.0	0.33	± 0.027	0.16	± 0.013	0.22	± 0.027	0.012	± 0.0015
Mifune-machi, KUMAMOTO	5.71	3.08	19.6	0.31	± 0.030	0.10	± 0.010	0.11	± 0.025	0.0055	± 0.0013
Ue-mura, KUMAMOTO	4.75	3.37	15.9	0.69	± 0.041	0.21	± 0.012	0.24	± 0.031	0.015	± 0.0020
Miyakonojou, MIYAZAKI	4.70	3.23	16.7	0.28	± 0.026	0.087	± 0.0080	0.55	± 0.042	0.033	± 0.0025
Kawaminami-machi, MIYAZAKI	5.36	2.47	20.0	0.58	± 0.037	0.23	± 0.015	2.8	± 0.09	0.14	± 0.005
June, 1995											
Iruma, SAITAMA	5.19	2.08	19.9	0.39	± 0.034	0.19	± 0.017	0.55	± 0.044	0.027	± 0.0022
Tokorozawa, SAITAMA	5.20	2.83	18.8	0.43	± 0.034	0.15	± 0.012	0.45	± 0.040	0.024	± 0.0021
Uji, KYOTO	5.30	1.93	19.2	0.50	± 0.035	0.26	± 0.018	0.13	± 0.028	0.0067	± 0.0015
Miyanojou-machi, KAGOSHIMA	5.71	3.24	20.3	0.77	± 0.036	0.24	± 0.011	0.61	± 0.040	0.030	± 0.0020
Chiran-machi, KAGOSHIMA	5.20	2.01	19.3	0.22	± 0.020	0.11	± 0.010	1.8	± 0.06	0.092	± 0.0033

(6) Strontium-90 and cesium-137 in Sea Fish
(from Apr. 1995 to Sep. 1995)

-continued from No, 113 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)
(Ammodytes personatus)							
April, 1995							
Akashi, HYOUGO	2.13	2.86	3.91	0.0078 ± 0.0038	0.0027 ± 0.0013	0.11 ± 0.010	0.027 ± 0.0025
(Hexagrammos otakii)							
September, 1995							
Souma, FUKUSHIMA	1.67	1.86	4.10	0.0031 ± 0.0035	0.0017 ± 0.0019	0.19 ± 0.014	0.047 ± 0.0034
(Katsuwonus pelamis)							
May, 1995							
Tosa, KOCHI	1.33	0.145	4.06	0.0020 ± 0.0046	0.013 ± 0.032	0.36 ± 0.021	0.089 ± 0.0052
(Limanda herzensteini)							
June, 1995							
Sendai, MIYAGI	2.57	5.58	3.02	0.0055 ± 0.0046	0.00099 ± 0.00082	0.050 ± 0.0092	0.016 ± 0.0030
(Mugil cephalus)							
August, 1995							
Morodomi-machi, SAGA	1.39	0.393	4.37	0.019 ± 0.0044	0.048 ± 0.011	0.074 ± 0.0084	0.017 ± 0.0019
(Oncorhynchus keta)							
September, 1995							
Urakawa-machi, HOKKAIDOU	1.52	0.590	4.31	0.0000 ± 0.0039	0.0000 ± 0.0066	0.11 ± 0.010	0.025 ± 0.0024
(Pagrus sp)							
July, 1995							
Tennou-machi, AKITA	1.26	0.688	3.72	0.0030 ± 0.0051	0.0044 ± 0.0074	0.15 ± 0.011	0.041 ± 0.0031
Fukuoka, FUKUOKA	1.33	0.318	4.32	0.0013 ± 0.0037	0.004 ± 0.012	0.17 ± 0.014	0.039 ± 0.0031
September, 1995							
Owase, MIE	1.41	0.567	4.28	0.0000 ± 0.0030	0.0000 ± 0.0053	0.14 ± 0.012	0.033 ± 0.0027
(Sardinops melanostictus)							
August, 1995							

Location	Component			^{90}Sr		^{137}Cs	
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)	(Bq/gCa)	(Bq/kgwet)	(Bq/gK)
Yamagata, YAMAGATA	2.32	5.52	2.11	0.0000 ± 0.0029	0.00000 ± 0.00052	0.060 ± 0.0095	0.029 ± 0.0045
(Scomber sp)							
August, 1995							
Matsuyama, EHIME	1.30	0.607	3.91	0.0024 ± 0.0043	0.0039 ± 0.0070	0.14 ± 0.013	0.037 ± 0.0034
(Sebastiscus marmoratus)							
May, 1995							
Hamada, SHIMANE	5.63	17.0	2.90	0.031 ± 0.0082	0.0018 ± 0.00048	0.10 ± 0.010	0.035 ± 0.0035
(Sillago sp)							
June, 1995							
Minamichita-machi, AICHI	4.32	11.1	3.72	0.014 ± 0.0045	0.0013 ± 0.00040	0.099 ± 0.013	0.027 ± 0.0034
(Trachurus sp)							
July, 1995							
Shinguu, WAKAYAMA	1.80	0.960	4.18	0.0055 ± 0.0055	0.0057 ± 0.0057	0.29 ± 0.016	0.069 ± 0.0038

Sea Fish

Japanese name	English name	Scientific name
Magarei	Brown sole	Limanda herzensteini
Bora	Gray mullet	Mugil cephalus
Maiwashi	Japanese pilchard	Sardinops melanostictus
Saba	Mackerel	Scomber sp
Ainame	Fat greenling	Hexagrammos otakii
Tai	Sea bream	Pagrus sp
Aji	Horse mackerel	Trachurus sp
Ikanago	Japanese sand lance	Ammodytes personatus
Katsuo	Skipjack tuna	Katsuwonus pelamis
Sake	Chum Salmon	Oncorhynchus Keta
Kasago	Scorpion-fish	Sebastiscus marmoratus
Kisu	Whiting	Sillago sp

(7) Strontium-90 and cesium-137 in Freshwater Fish
(from Apr. 1995 to Sep. 1995)

-continued from No. 113 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)
(Carassius auratus)							
July, 1995							
Ishikari-machi, HOKKAIDOU	5.09	15.6	2.71	0.50 ± 0.017	0.032 ± 0.0011	0.062 ± 0.0099	0.023 ± 0.0036
(Cyprinus carpio)							
May, 1995							
Kasumigaura-lake, IBARAKI	1.06	0.186	3.71	0.012 ± 0.0047	0.062 ± 0.025	0.66 ± 0.025	0.18 ± 0.007
August, 1995							
Akita, AKITA	3.86	11.0	2.77	2.1 ± 0.05	0.19 ± 0.005	0.19 ± 0.013	0.068 ± 0.0046
(Salvelinus leucomaenis)							
September, 1995							
Fukushima, FUKUSHIMA	1.27	0.583	3.96	0.0083 ± 0.0049	0.014 ± 0.0084	0.16 ± 0.014	0.041 ± 0.0036

Freshwater Fish

Japanese name	English name	Scientific name
Funa	Crucian carp	Carassius anratus
Koi	Carp	Cyprinus carpio
Iwana	Char	Salvelinus leucomaenis

(8) Strontium-90 and cesium-137 in Shellfish
(from Apr. 1995 to Sep. 1995)

-continued from No. 113 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)
(Crassostrea gigas)							
Febraly, 1996							
Hatsukaichi, HIROSHIMA	1.83	0.850	2.45	0.0073 ± 0.0076	0.0085 ± 0.0089	0.019 ± 0.0089	0.0079 ± 0.0036
(Mytilus edulis)							
June, 1995							
Mutsu, AOMORI	2.74	0.593	1.40	0.0039 ± 0.0030	0.0065 ± 0.0050	0.015 ± 0.0061	0.011 ± 0.0044
(Ruditapes phillipinarum)							
May, 1995							
Konagai-machi, NAGASAKI	2.11	0.533	1.62	0.0049 ± 0.0037	0.0093 ± 0.0069	0.023 ± 0.0070	0.014 ± 0.0043
June, 1995							
Minamichita-machi, AICHI	1.83	0.491	3.34	0.0069 ± 0.0046	0.014 ± 0.0093	0.023 ± 0.0072	0.0068 ± 0.0022
(Turbo cornutus)							
April, 1995							
Ryotsu, NIIGATA	2.37	0.720	2.88	0.011 ± 0.0052	0.015 ± 0.0072	0.031 ± 0.0093	0.011 ± 0.0032
June, 1995							
Sakata, YAMAGATA	3.30	1.95	3.50	0.0089 ± 0.0044	0.0045 ± 0.0023	0.043 ± 0.0092	0.012 ± 0.0026
August, 1995							
Togi-machi, ISHIKAWA	2.87	0.944	1.89	0.0040 ± 0.0038	0.0043 ± 0.0041	0.028 ± 0.0077	0.015 ± 0.0041

Shellfish

Japanese name	English name	Scientific name
Magaki	Giant Pacific oyster	Crassostrea gigas
Murasakiigai	Common blue mussel	Mytilus edulis
Asari	Japanese littleneck	Ruditapes phillipinarum
Sazae	Horned turban	Turbo cornutus

(9) Strontium-90 and cesium-137 in Seaweeds
(from Apr. 1995 to Sep. 1995)

-continued from No. 113 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, 1995							
Ryotsu, NIIGATA	3.89	1.04	5.33	0.032 ± 0.0049	0.030 ± 0.0048	0.024 ± 0.0074	0.0045 ± 0.0014
Togi-machi, ISHIKAWA	4.07	1.02	6.51	0.023 ± 0.0049	0.022 ± 0.0048	0.018 ± 0.0065	0.0027 ± 0.0010
May, 1995							
Fukaura-machi, AOMORI	1.94	0.852	5.61	0.023 ± 0.0041	0.027 ± 0.0049	0.015 ± 0.0066	0.0027 ± 0.0012
Mutsu, AOMORI	2.69	0.807	5.78	0.025 ± 0.0046	0.031 ± 0.0057	0.038 ± 0.0070	0.0066 ± 0.0012
June, 1995							
Sakata, YAMAGATA	3.42	1.14	4.45	0.029 ± 0.0064	0.026 ± 0.0056	0.030 ± 0.0076	0.0069 ± 0.0017

Seaweeds

Japanese name	English name	Scientific name
Wakame	Wakame seaweed	Undaria pinnatifida

＊ ＊ Total Diet ＊ ＊

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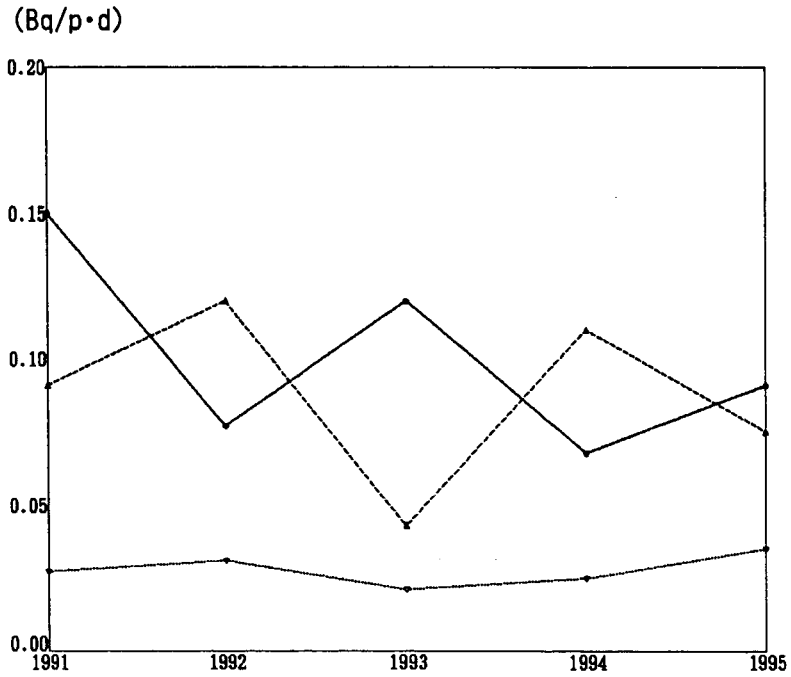

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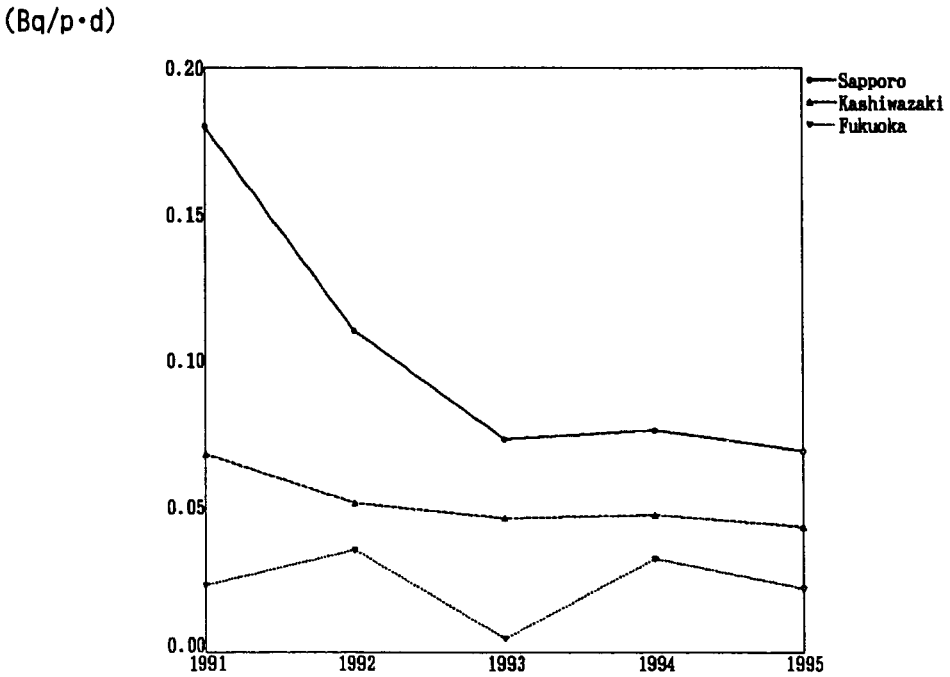
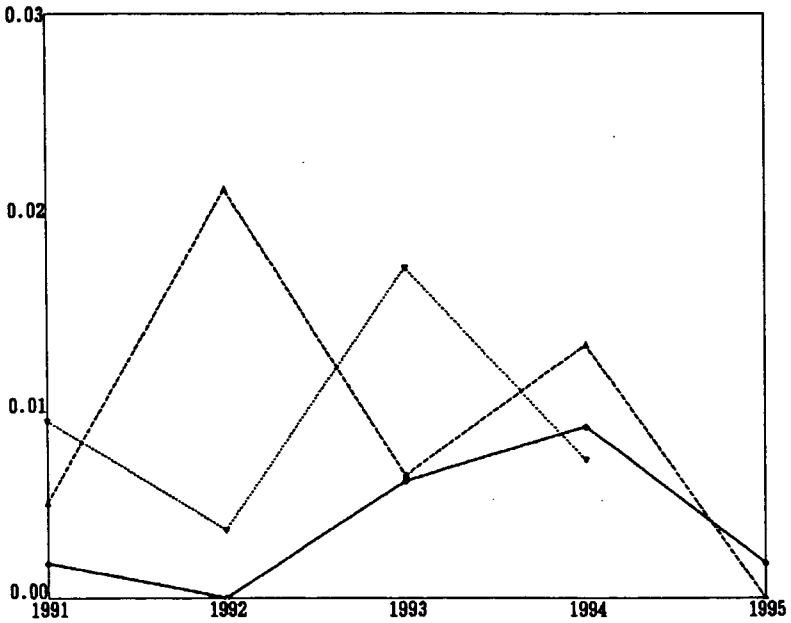


Fig. 1

* * Rice (producing districts) * *

<Strontium-90>

(Bq/kgwet)



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(Bq/kgwet)

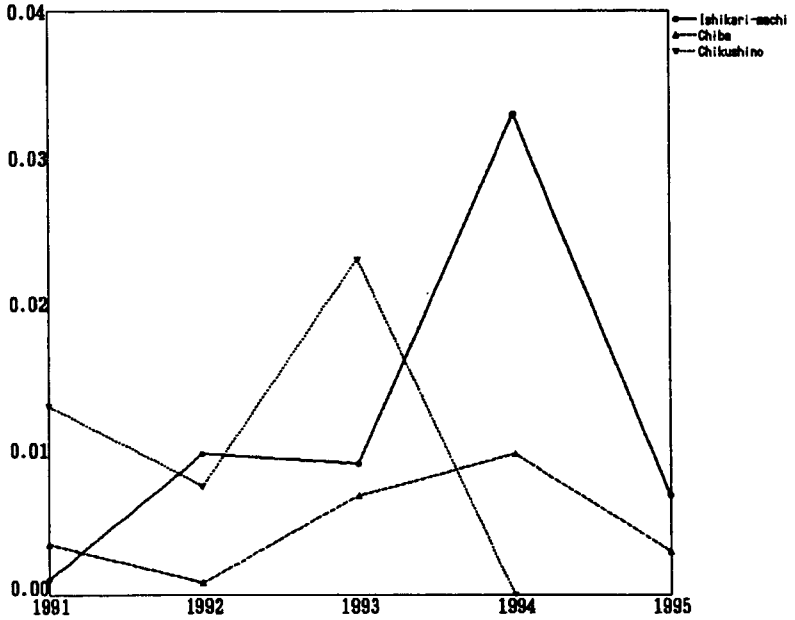

Fig. 2

* * Milk (producing districts for domestic program)

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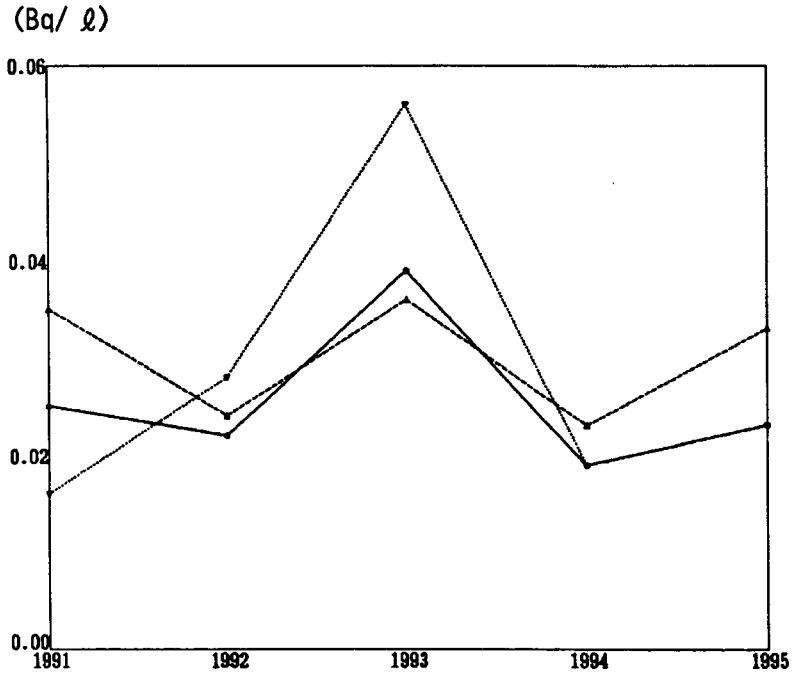

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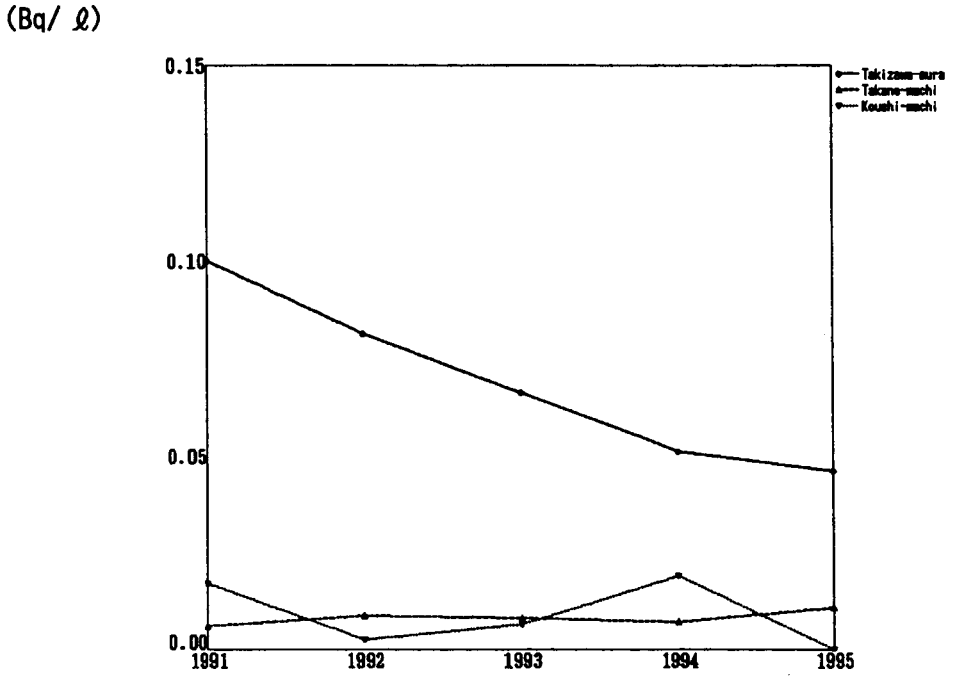

Fig. 3—1

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

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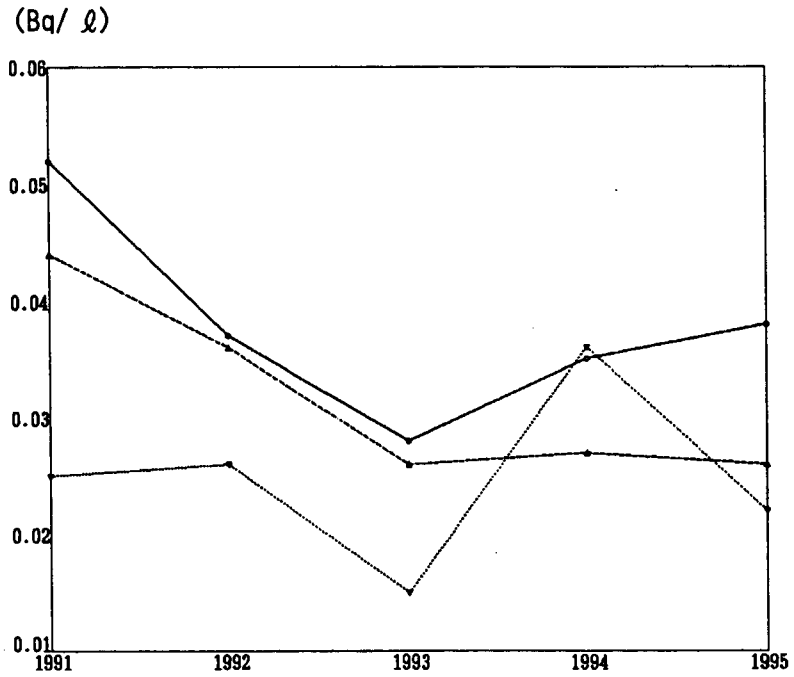

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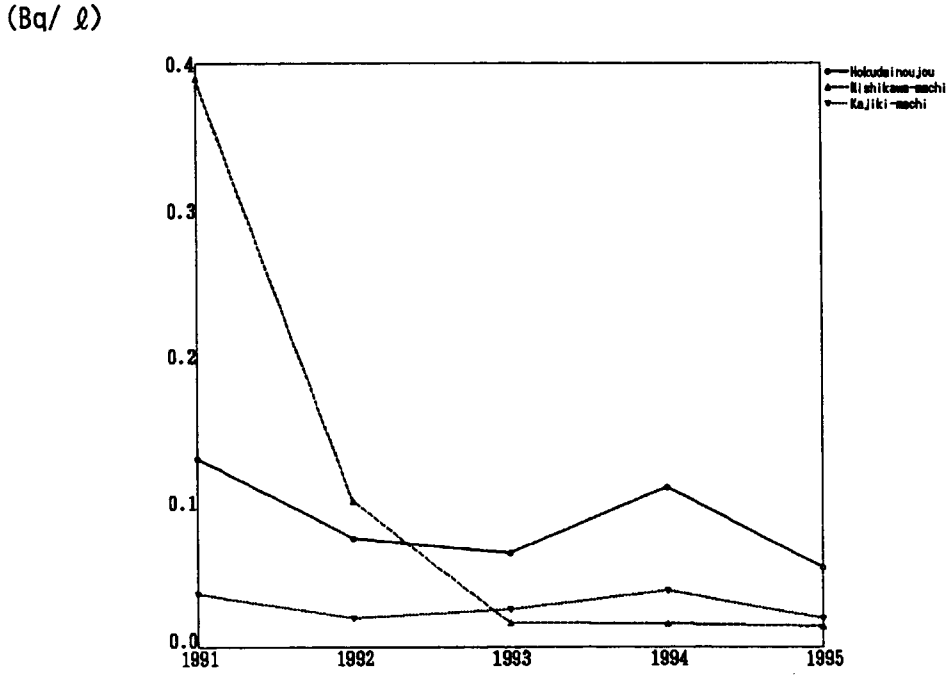

Fig.3—2

* * Milk (consuming districts) * *

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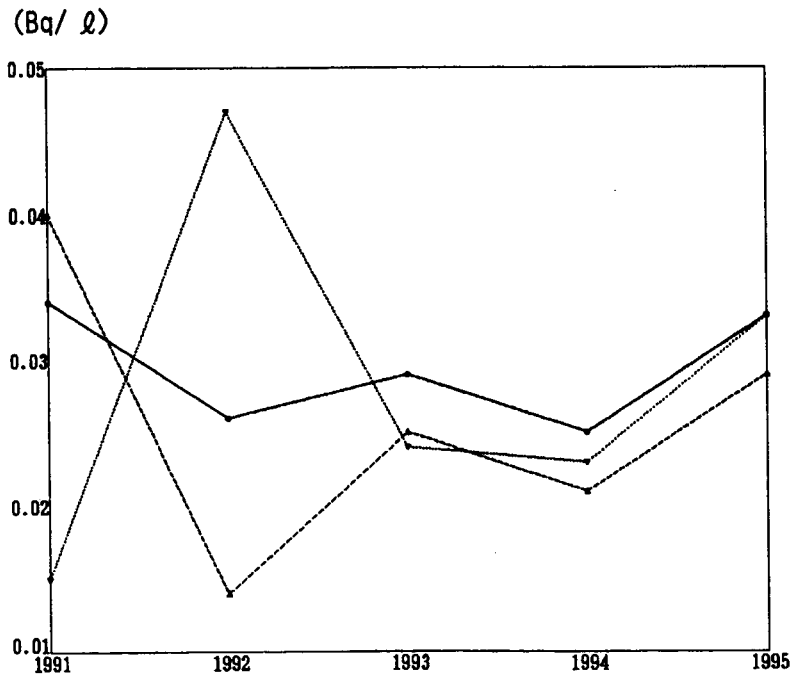

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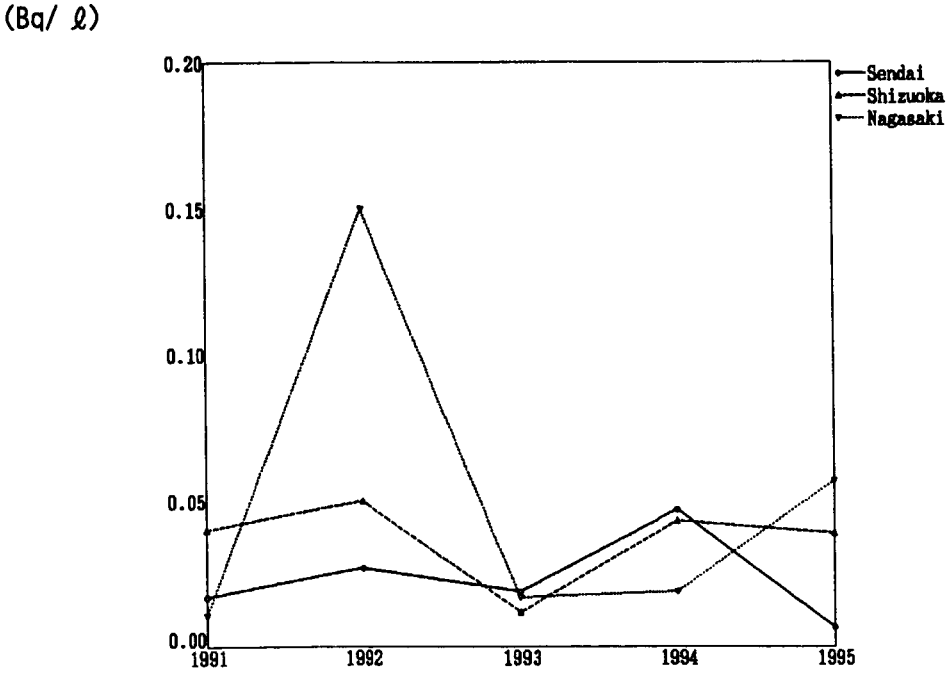

Fig.3—3

* * Powdered Milk * *

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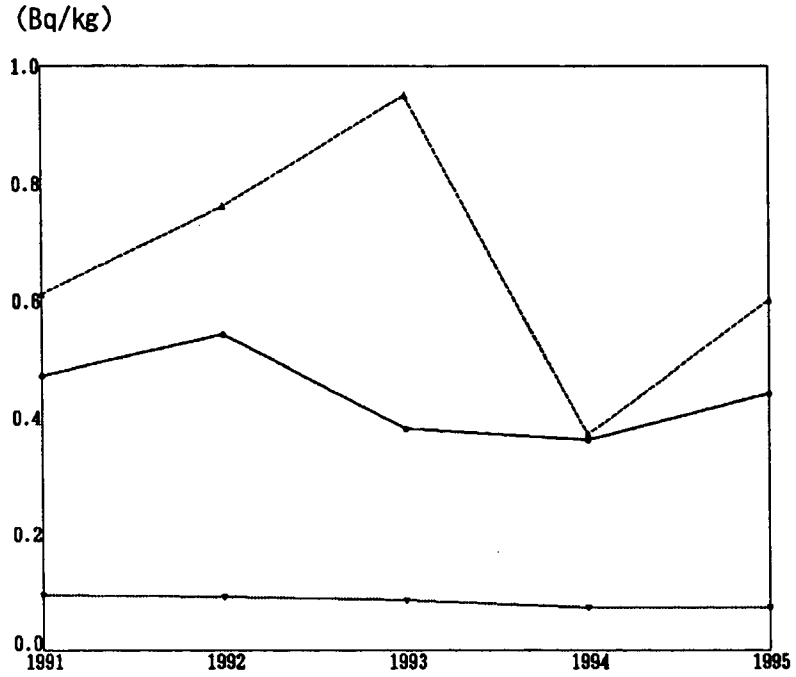

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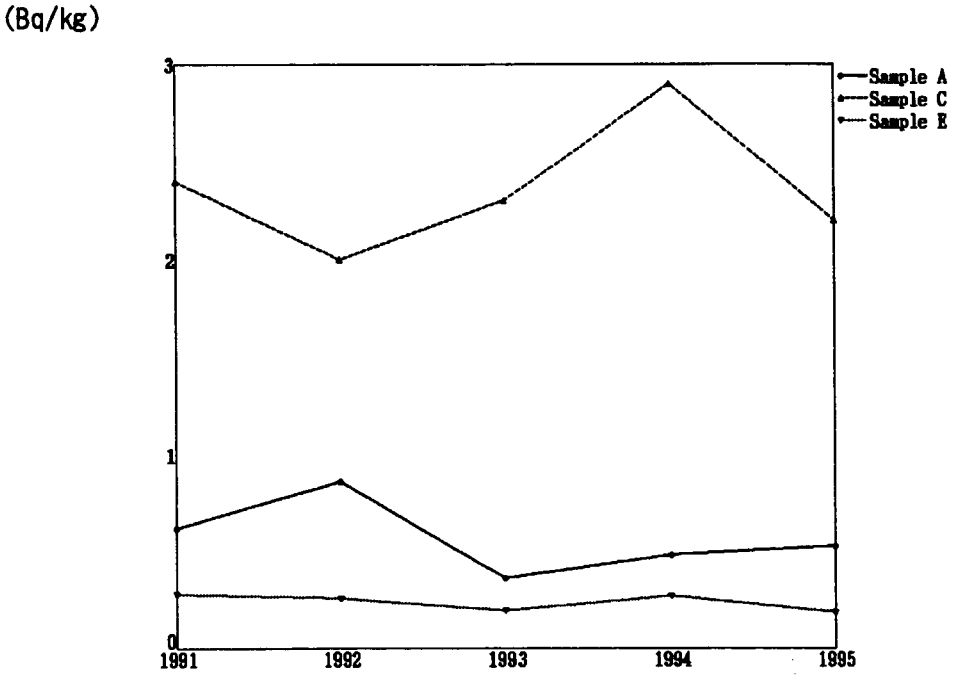

Fig.3—4

＊ ＊ Vegetables (producing districts) ＊ ＊

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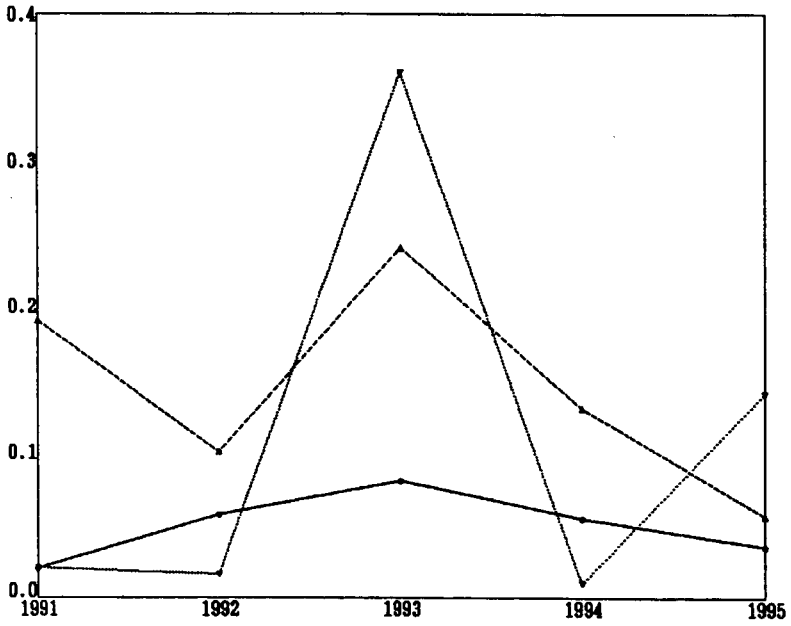

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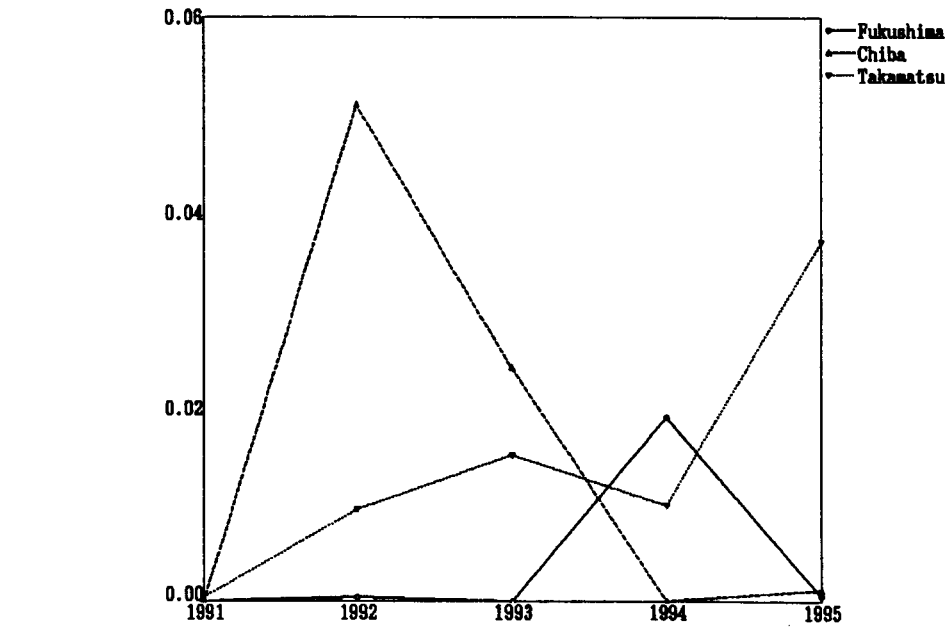

Fig.4—1

* * Vegetables (consuming districts) * *

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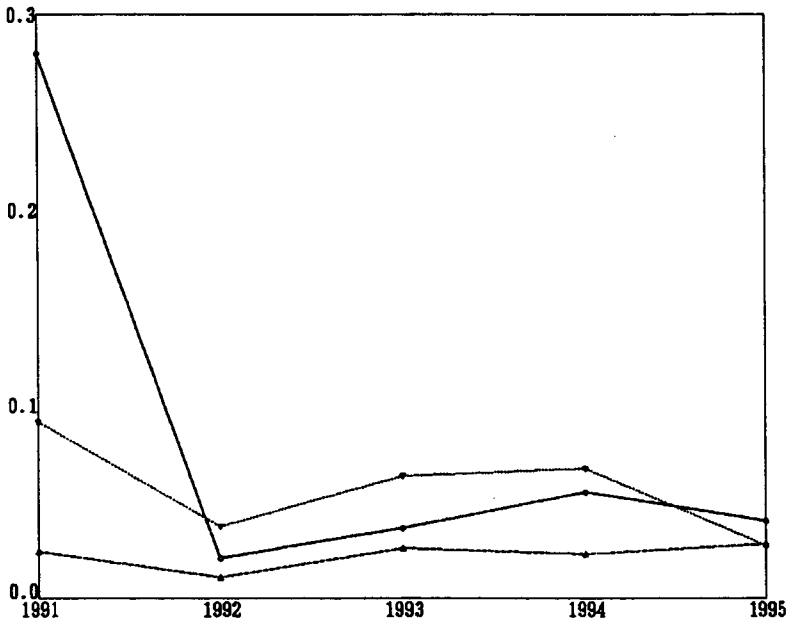

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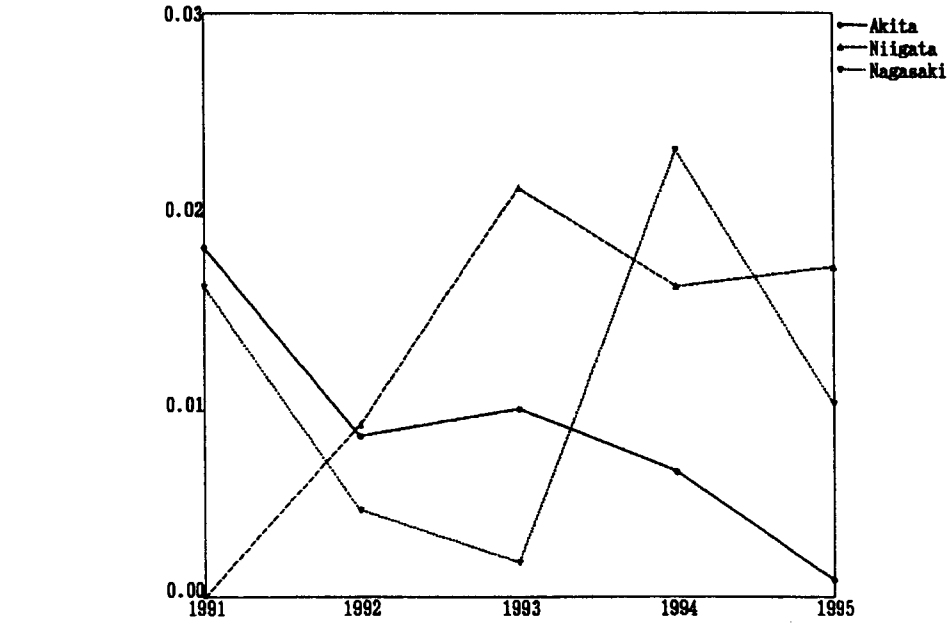
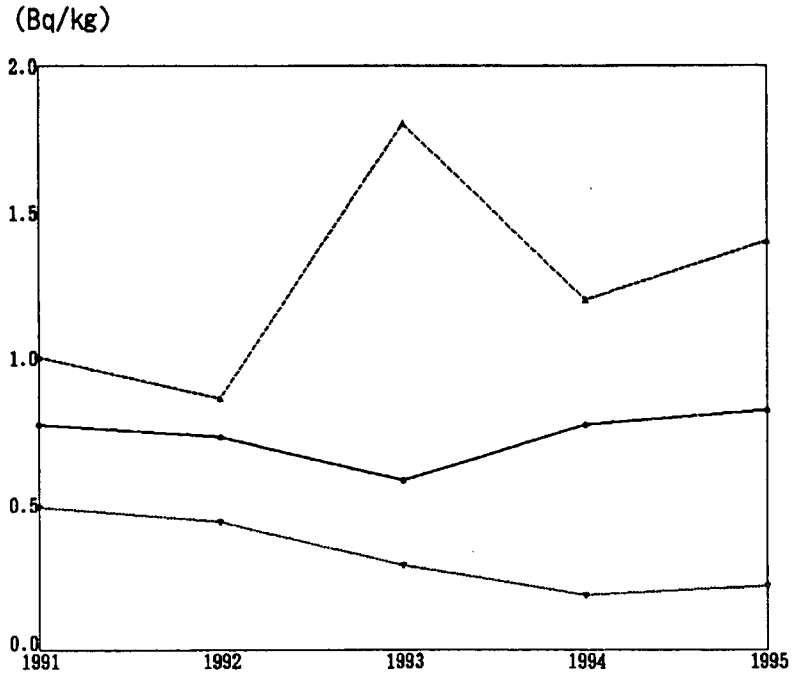


Fig.4—2

＊ ＊ Tea (Japanese Tea) ＊ ＊

<Strontium-90>



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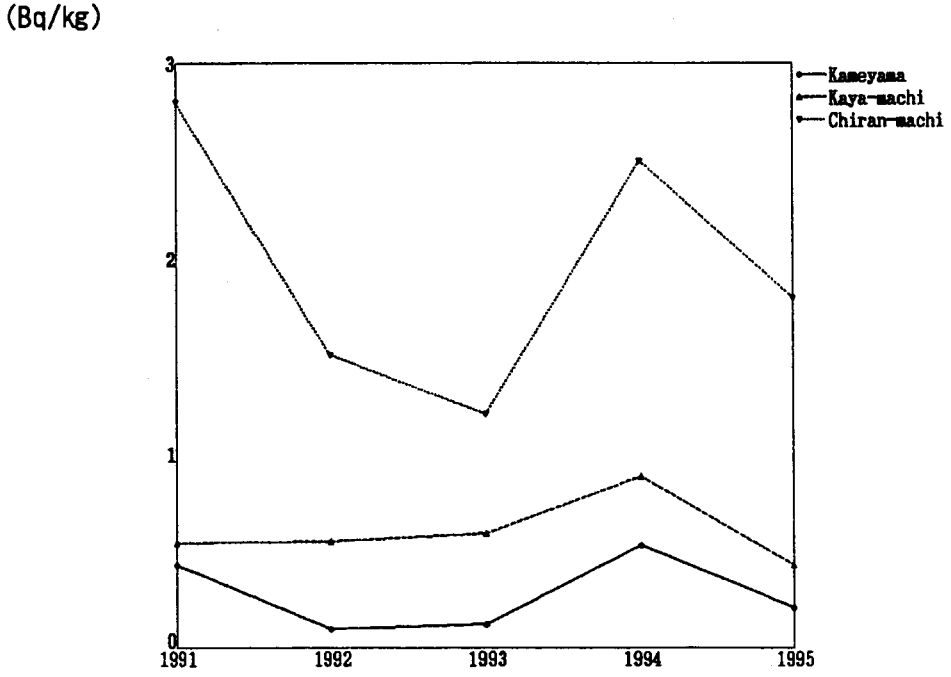
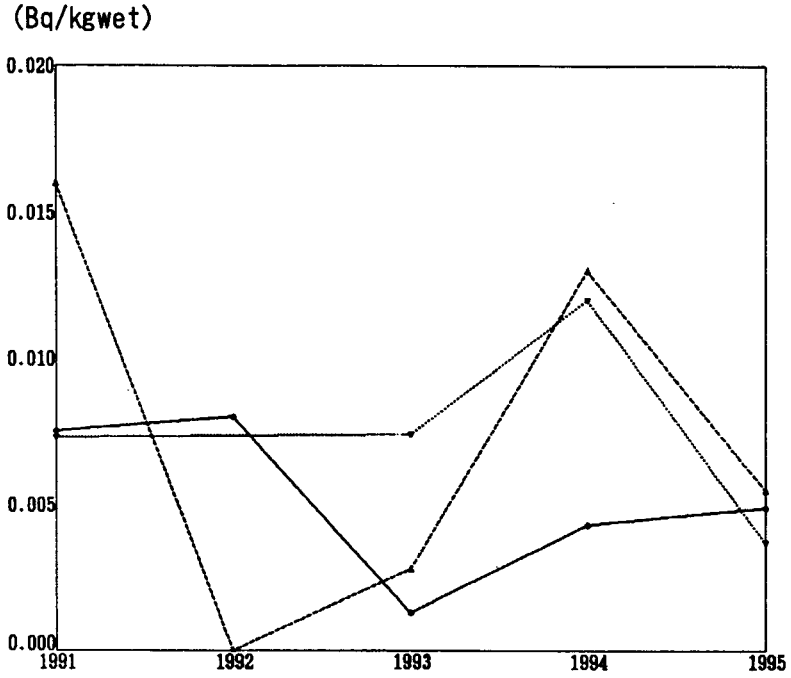


Fig. 5

* * Sea Fish * *

<Strontium-90>



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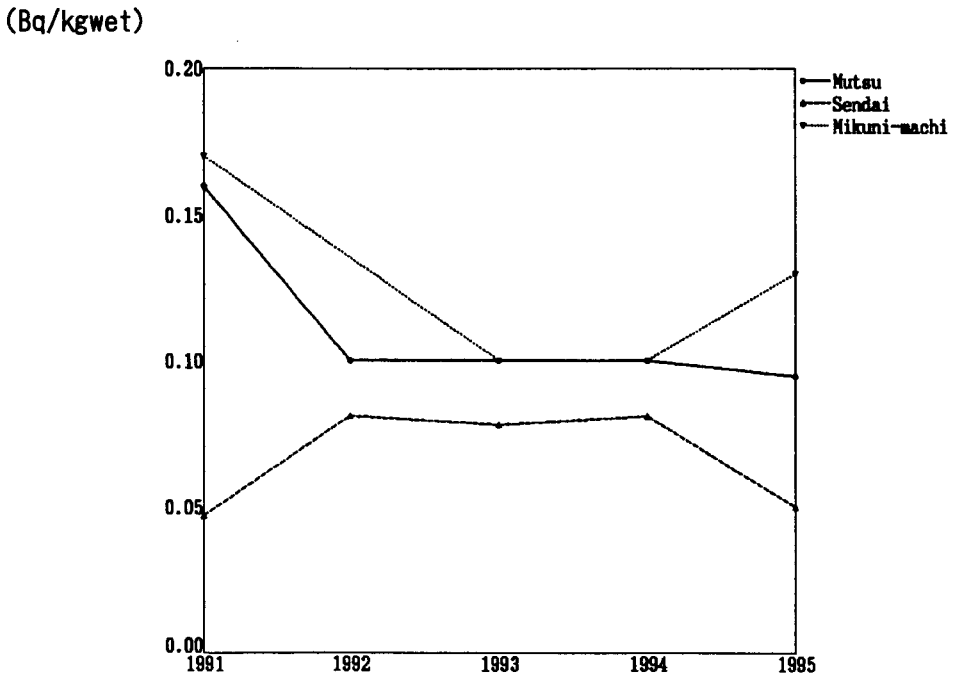
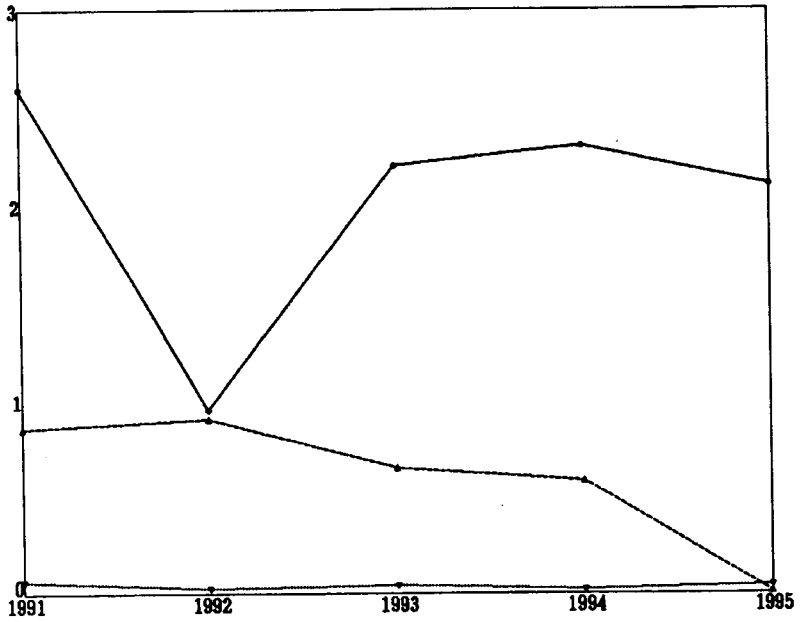


Fig. 6

* * Freshwater Fish * *

<Strontium-90>

(Bq/kgwet)



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(Bq/kgwet)

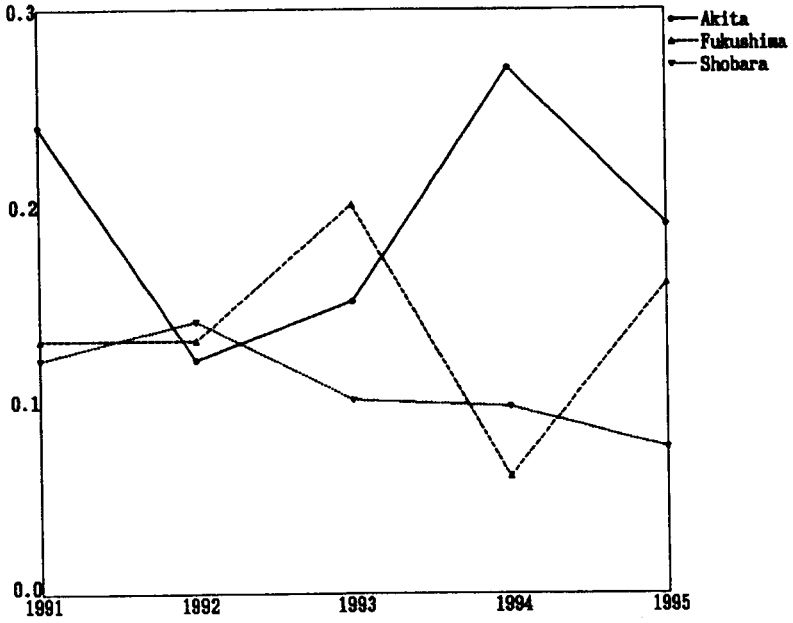
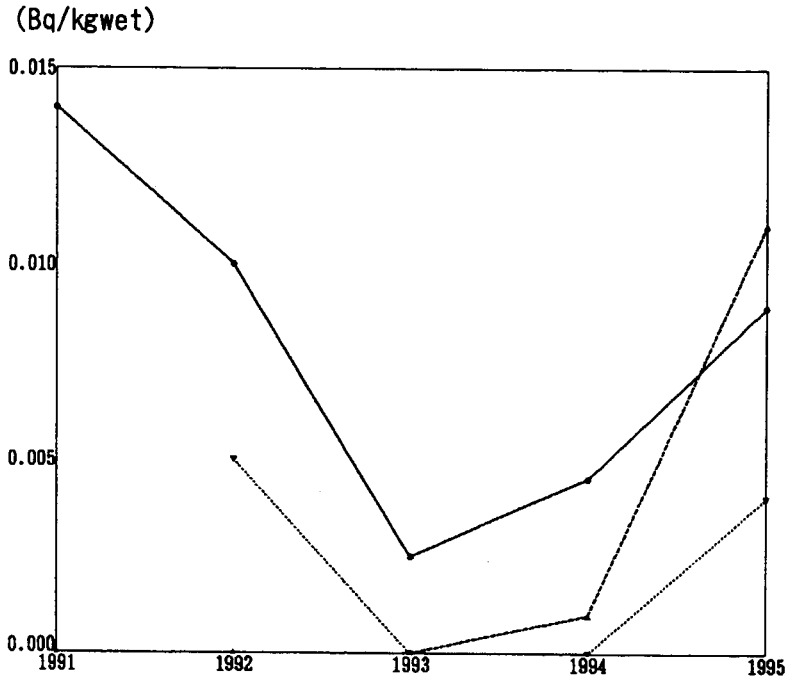


Fig. 7

* * Shellfish * *

<Strontium-90>



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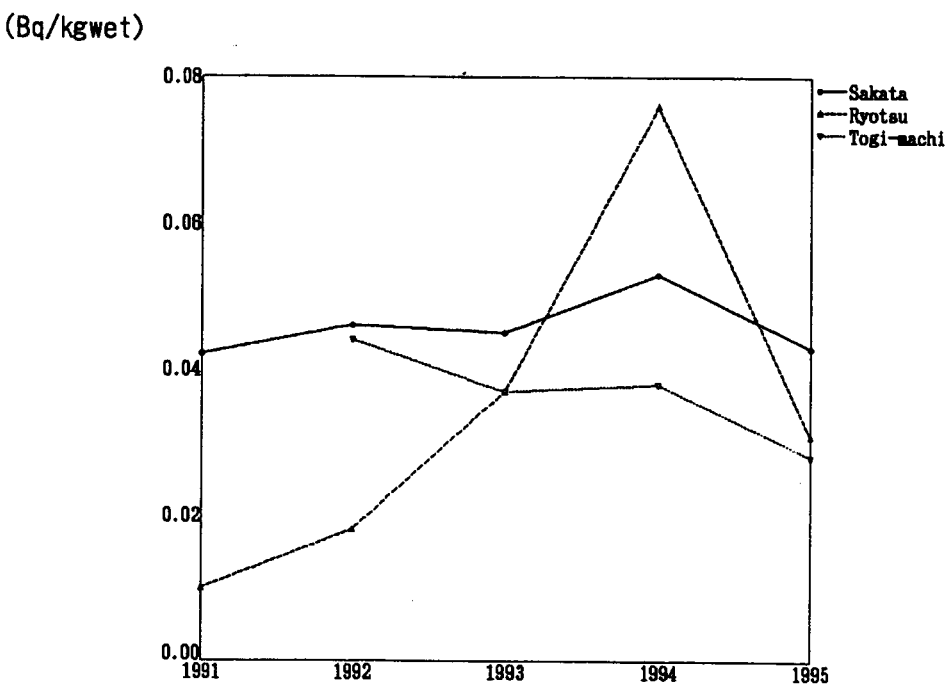
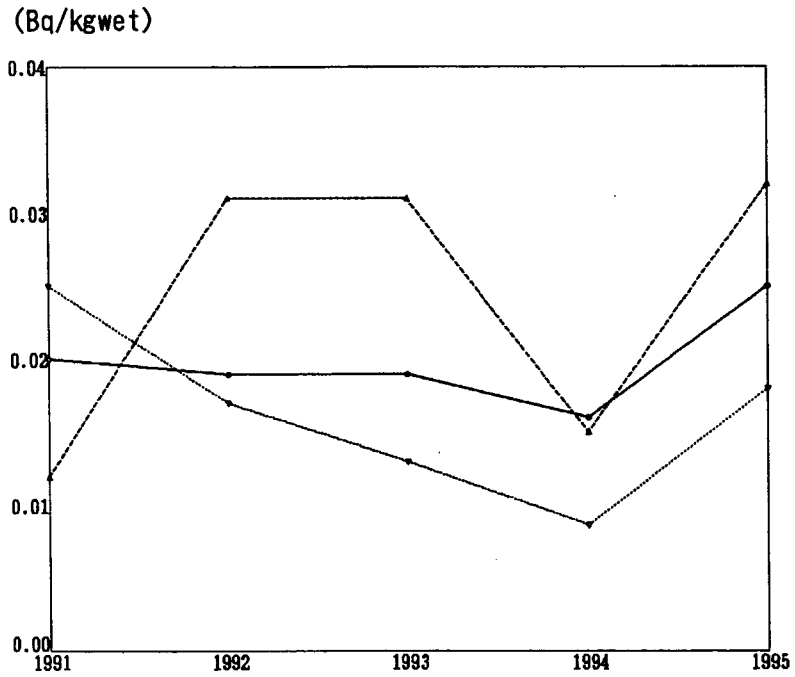


Fig. 8

* * Seaweeds * *

<Strontium-90>



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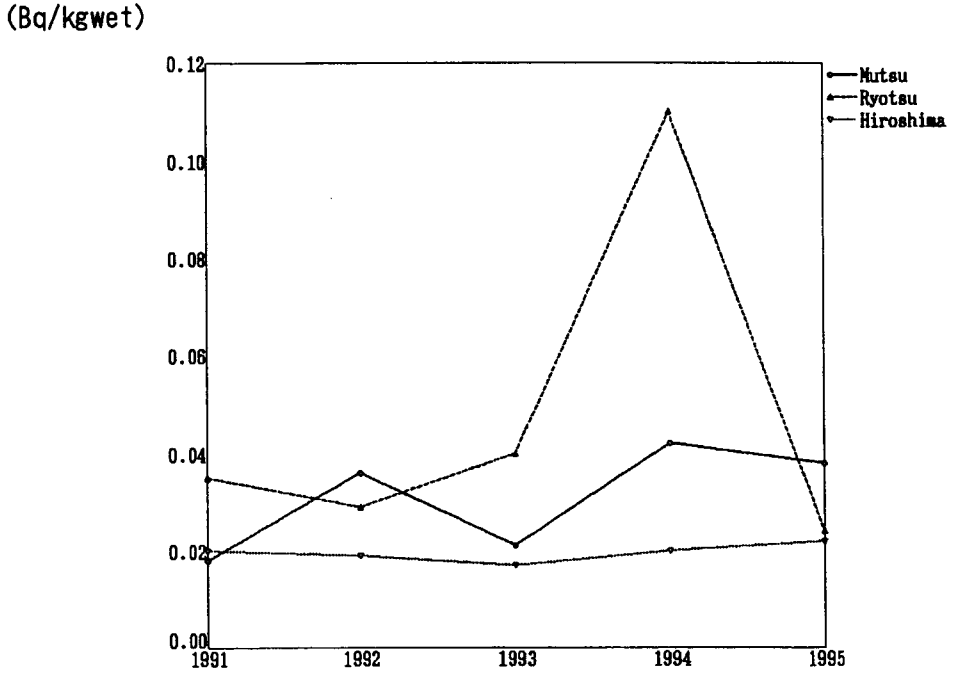

Fig. 9

* * 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: Shinjuku
14: Maebashi
15: Nagano
16: Yokohama
17: Toyama
18: Kouhu
19: Kanazawa
20: Shizuoka
21: Gifu
22: Fukui
23: Nagoya
24: Tsu
25: Ootsu
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