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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°C. 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°C.

(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°C 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°C 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) Strontuim-90 and Cesiumu-137 in Total Diet

(form APR. 1998 to Sep. 1998)

-continued from No. 125 for this publication-

Table (1) : Strontuim-90 and Cesiumu-137 in Total Diet

Location	Ash	Ca	K	90Sr		137Cs	
	(g/p/d)	(mg/p/d)	(mg/p/d)	(Bq/p/d)	(Bq/g Ca)	(Bq/p/d)	(Bq/g K)
Aug, 1998							
Yoshinodani-mura, ISHIK	12.4	462	1760	0.027 ± 0.01	0.059 ± 0.022	0.038 ± 0.0081	0.021 ± 0.0046
Jul, 1998							
Akita, AKITA	1.9	375	1910	0.083 ± 0.011	0.22 ± 0.029	0.027 ± 0.0057	0.014 ± 0.003
Yokote, AKITA	12.8	478	1760	0.048 ± 0.0095	0.099 ± 0.02	0.036 ± 0.007	0.02 ± 0.004
Ishinomaki, MIYAGI	16.8	774	2390	0.045 ± 0.01	0.059 ± 0.013	0.049 ± 0.0081	0.021 ± 0.0034
Onagawa-machi, MIYAGI	16	786	1840	0.039 ± 0.01	0.05 ± 0.013	0.035 ± 0.0072	0.019 ± 0.0039
Yokohama, KANAGAWA	13.7	584	1740	0.039 ± 0.0098	0.067 ± 0.017	0.033 ± 0.0071	0.019 ± 0.0041
Hiratsuka, KANAGAWA	18.2	638	2670	0.058 ± 0.01	0.09 ± 0.016	0.094 ± 0.0097	0.035 ± 0.0036
fuziyosida-shi, YAMANAS	14.5	627	2220	0.019 ± 0.0087	0.035 ± 0.017	0.046 ± 0.0078	0.021 ± 0.0035
Fukui, FUKUI	15.7	658	2180	0.057 ± 0.01	0.1 ± 0.018	0.016 ± 0.0056	0.0072 ± 0.0026
Tsuruga, FUKUI	14	902	1460	0.018 ± 0.0073	0.02 ± 0.0081	0.019 ± 0.0053	0.013 ± 0.0037
Karatsu, SAGA	15.5	510	1800	0.029 ± 0.0069	0.056 ± 0.013	0.021 ± 0.0054	0.012 ± 0.003
Naha, Okinawa	15.3	480	2370	0.02 ± 0.0071	0.042 ± 0.015	0.044 ± 0.0069	0.018 ± 0.0029
nisihara-machi, Okinawa	18.4	832	2410	0.055 ± 0.009	0.066 ± 0.011	0.035 ± 0.0065	0.014 ± 0.0027
Jun, 1998							
Sapporo, HOKKAIDOU	18.2	794	2200	0.066 ± 0.007	0.083 ± 0.0089	0.048 ± 0.0071	0.022 ± 0.0032
Iwanai-machi, HOKKAIDOU	12.4	513	1750	0.073 ± 0.012	0.14 ± 0.023	0.032 ± 0.0065	0.018 ± 0.0037
Aomori, AOMORI	21.6	619	2240	0.057 ± 0.0069	0.092 ± 0.011	0.064 ± 0.009	0.029 ± 0.004
Ajigasawa-machi, AOMORI	11.5	370	1520	0.054 ± 0.0069	0.15 ± 0.019	0.026 ± 0.0066	0.016 ± 0.0042
Iwaizumi-machi, IWATE	15.4	555	1840	0.061 ± 0.011	0.11 ± 0.02	0.041 ± 0.0061	0.022 ± 0.0033
Iwaizumi-machi, IWATE	14.2	415	1570	0.066 ± 0.011	0.16 ± 0.027	0.015 ± 0.0061	0.0093 ± 0.0039
Morioka, IWATE	115.2	480	1520	0.043 ± 0.0097	0.09 ± 0.02	0.034 ± 0.0065	0.022 ± 0.0043

Location	Ash	Ca	K	90Sr		137Cs	
	(g/p/d)	(mg/p/d)	(mg/p/d)	(Bq/p/d)	(Bq/g Ca)	(Bq/p/d)	(Bq/g K)
Yamagata, YAMAGATA	12.8	380	1510	0.08 ± 0.0077	0.21 ± 0.02	0.0097 ± 0.0044	0.0064 ± 0.0029
Higashine, YAMAGATA	12.8	513	1580	0.086 ± 0.012	0.17 ± 0.024	0.037 ± 0.007	0.023 ± 0.0045
Fukushima, FUKUSHIMA	16.7	613	1770	0.05 ± 0.01	0.082 ± 0.017	0.039 ± 0.0071	0.022 ± 0.004
Ookuma-machi, FUKUSHIMA	13.8	485	1720	0.066 ± 0.011	0.14 ± 0.024	0.03 ± 0.0065	0.017 ± 0.0038
Kashiwazaki, NIIGATA	17.7	590	2240	0.062 ± 0.011	0.1 ± 0.019	0.045 ± 0.0079	0.02 ± 0.0035
Nishikawa-machi, NIIGAT	23.5	743	2870	0.11 ± 0.015	0.021 ± 0.041	0.0081 ± 0.014	0.0081 ± 0.0028
Mito, IBARAKI	14.5	623	2280	0.053 ± 0.0099	0.085 ± 0.016	0.033 ± 0.0068	0.015 ± 0.003
Tokai-mura, IBARAKI	21.1	634	3060	0.086 ± 0.013	0.14 ± 0.02	0.051 ± 0.0079	0.017 ± 0.0027
Utsunomiya, TOCHIGI	17.8	719	2320	0.046 ± 0.0086	0.064 ± 0.012	0.046 ± 0.007	0.02 ± 0.003
minamikawachi-machi, TO	16.9	474	1880	0.043 ± 0.011	0.092 ± 0.022	0.044 ± 0.0078	0.023 ± 0.0042
Chiba, CHIBA	16.1	505	2280	0.029 ± 0.0076	0.057 ± 0.015	0.032 ± 0.0064	0.014 ± 0.0028
Chikura-machi, CHIBA	18.5	530	2500	0.051 ± 0.0093	0.096 ± 0.017	0.034 ± 0.0059	0.014 ± 0.0024
Kumagaya, SAITAMA	14.2	380	1870	0.035 ± 0.011	0.093 ± 0.028	0.019 ± 0.0058	0.01 ± 0.0031
Urawa, SAITAMA	20.1	507	2170	0.065 ± 0.011	0.13 ± 0.021	0.042 ± 0.0076	0.019 ± 0.0035
Maebashi, GUNMA	16.5	663	2420	0.056 ± 0.009	0.084 ± 0.014	0.046 ± 0.0069	0.019 ± 0.0028
Nakanojou-machi, GUNMA	21.2	1090	3100	0.073 ± 0.0069	0.067 ± 0.0063	0.075 ± 0.01	0.024 ± 0.0033
Shinjuku, TOKYO	9.7	223	1120	0.027 ± 0.0075	0.12 ± 0.033	0.06 ± 0.0081	0.054 ± 0.0072
Hachijou-machi, TOKYO	15.2	546	1690	0.03 ± 0.0083	0.055 ± 0.015	0.043 ± 0.0069	0.026 ± 0.0041
Nagano, NAGANO	13.8	480	1790	0.039 ± 0.0087	0.081 ± 0.018	0.0093 ± 0.0049	0.0052 ± 0.0027
Sanada-machi, NAGANO	16	857	2140	0.036 ± 0.0087	0.043 ± 0.01	0.013 ± 0.0049	0.0062 ± 0.0023
Koufu, YAMANASHI	13.2	394	1870	0.02 ± 0.0079	0.052 ± 0.02	0.026 ± 0.0056	0.014 ± 0.003
Toyama, TOYAMA	11.1	570	1620	0.021 ± 0.009	0.037 ± 0.016	0.03 ± 0.0071	0.019 ± 0.0044
Toyama, TOYAMA	12.7	311	1910	0.034 ± 0.0082	0.11 ± 0.026	0.019 ± 0.0056	0.0098 ± 0.0029
Kanazawa, ISHIKAWA	15.2	617	1630	0.045 ± 0.011	0.073 ± 0.018	0.012 ± 0.0062	0.0071 ± 0.0038
Shizuoka, SHIZUOKA	15.6	670	2280	0.056 ± 0.012	0.084 ± 0.018	0.046 ± 0.0079	0.02 ± 0.0035
Hamaoka-machi, SHIZUOKA	12	415	1800	0.018 ± 0.0099	0.043 ± 0.024	0.015 ± 0.0062	0.0085 ± 0.0035
Gifu, GIFU	12.1	370	1710	0.036 ± 0.0095	0.099 ± 0.026	0.036 ± 0.066	0.021 ± 0.0039
Takayama, GIFU	12.4	348	1490	0.05 ± 0.011	0.14 ± 0.032	0.014 ± 0.0056	0.0095 ± 0.0038

Location	Ash	Ca	K	90Sr		137Cs	
	(g/p/d)	(mg/p/d)	(mg/p/d)	(Bq/p/d)	(Bq/g Ca)	(Bq/p/d)	(Bq/g K)
Nagoya, AICHI	19.4	699	2800	0.059 ± 0.01	0.084 ± 0.015	0.036 ± 0.0068	0.013 ± 0.0024
Shinshiro, AICHI	18.1	538	2300	0.041 ± 0.0057	0.077 ± 0.011	0.03 ± 0.0071	0.013 ± 0.0031
Imazu-machi, SHIGA	15.1	610	2230	0.043 ± 0.0093	0.071 ± 0.015	0.039 ± 0.007	0.017 ± 0.0031
Ootsu, SHIGA	13.9	602	1890	0.035 ± 0.0097	0.058 ± 0.016	0.035 ± 0.0068	0.019 ± 0.0036
Owase, MIE	13.6	524	1520	0.04 ± 0.0092	0.077 ± 0.018	0.04 ± 0.0067	0.026 ± 0.0044
Tsu, MIE	15.1	377	1740	0.039 ± 0.0088	0.1 ± 0.023	0.022 ± 0.0056	0.012 ± 0.0032
Kyoto, KYOTO	14.3	502	1630	0.029 ± 0.0046	0.057 ± 0.0091	0.013 ± 0.005	0.008 ± 0.0031
Maizuru, KYOTO	1.9	669	1750	0.05 ± 0.0056	0.074 ± 0.0083	0.01 ± 0.005	0.0059 ± 0.0029
Gojou, NARA	13.4	1440	1630	0.067 ± 0.012	0.046 ± 0.0081	0.023 ± 0.0066	0.014 ± 0.0041
Kashihara, NARA	13.1	698	1540	0.026 ± 0.0089	0.038 ± 0.013	0.02 ± 0.0054	0.013 ± 0.0035
Osaka, OSAKA	16.6	611	2270	0.03 ± 0.0087	0.049 ± 0.014	0.017 ± 0.0052	0.0075 ± 0.0023
Sakai, OSAKA	14.3	473	1770	0.056 ± 0.011	0.12 ± 0.023	0.043 ± 0.0075	0.024 ± 0.0042
Tottori, TOTTORI	12.7	618	1560	0.031 ± 0.0075	0.05 ± 0.012	0.022 ± 0.0058	0.014 ± 0.0037
Fukube-mura, TOTTORI	12.8	446	1530	0.039 ± 0.0098	0.087 ± 0.02	0.034 ± 0.0066	0.023 ± 0.0043
Kakogawa, HYOUGO	9.9	437	1450	0.032 ± 0.0092	0.073 ± 0.021	0.0025 ± 0.0045	0.0017 ± 0.0031
Hamasaka-machi, HYOUGO	14.4	679	1650	0.052 ± 0.0093	0.076 ± 0.014	0.015 ± 0.005	0.0093 ± 0.003
Wakayama, WAKAYAMA	11.6	299	1530	0.018 ± 0.0085	0.061 ± 0.028	0.02 ± 0.0054	0.013 ± 0.0035
Shinguu, WAKAYAMA	8.9	250	910	0.024 ± 0.0076	0.098 ± 0.03	0.014 ± 0.0069	0.015 ± 0.0076
Okayama, OKAYAMA	19.6	537	1530	0.037 ± 0.0056	0.069 ± 0.01	0.036 ± 0.0074	0.023 ± 0.0048
Okayama, OKAYAMA	18	516	2280	0.05 ± 0.011	0.097 ± 0.021	0.041 ± 0.007	0.018 ± 0.0031
Kamisaibara-mura, OKAYA	13.9	537	1530	0.037 ± 0.0056	0.069 ± 0.01	0.036 ± 0.0074	0.023 ± 0.0048
Matsue, SHIMANE	19.7	644	2700	0.043 ± 0.01	0.066 ± 0.016	0.04 ± 0.0073	0.015 ± 0.0027
Kashima-machi, SHIMANE	16.3	1420	2090	0.063 ± 0.012	0.026 ± 0.0081	0.026 ± 0.0065	0.012 ± 0.0031
Kamiita-machi, TOKUSHIM	12.9	536	1750	0.052 ± 0.01	0.096 ± 0.019	0.024 ± 0.0076	0.013 ± 0.0043
Tokushima, TOKUSHIMA	13.3	577	2100	0.023 ± 0.0044	0.04 ± 0.0077	0.031 ± 0.006	0.015 ± 0.0028
Takamatsu, KAGAWA	13.8	662	1500	0.028 ± 0.0092	0.043 ± 0.014	0.03 ± 0.0069	0.02 ± 0.0046
Marugame, KAGAWA	14	418	2300	0.047 ± 0.0088	0.11 ± 0.021	0.025 ± 0.0055	0.011 ± 0.0024
Hiroshima, HIROSHIMA	11.1	300	1320	0.027 ± 0.011	0.089 ± 0.036	0.036 ± 0.0071	0.027 ± 0.0054

Location	Ash	Ca	K	90Sr		137Cs	
	(g/p/d)	(mg/p/d)	(mg/p/d)	(Bq/p/d)	(Bq/g Ca)	(Bq/p/d)	(Bq/g K)
Miyoshi,HIROSHIMA	15	507	1620	0.048 ± 0.012	0.094 ± 0.024	0.02 ± 0.007	0.012 ± 0.0043
Kochi,KOCHI	13.7	486	2070	0.078 ± 0.0068	0.16 ± 0.014	0.047 ± 0.0073	0.023 ± 0.0035
Saga-machi,KOCHI	14.4	477	1840	0.041 ± 0.0094	0.086 ± 0.02	0.04 ± 0.0073	0.022 ± 0.004
Matsuyama,EHIME	12.3	578	1840	0.041 ± 0.0059	0.07 ± 0.01	0.022 ± 0.0067	0.012 ± 0.0036
Ikata-machi,EHIME	7.6	443	891	0.031 ± 0.0053	0.071 ± 0.012	0.0021 ± 0.0052	0.0023 ± 0.0058
Yamaguchi,YAMAGUCHI	11.9	350	1600	0.02 ± 0.0088	0.056 ± 0.025	0.016 ± 0.0053	0.0098 ± 0.0033
Mine,YAMAGUCHI	14.7	419	1550	0.036 ± 0.0094	0.085 ± 0.022	0.024 ± 0.0062	0.016 ± 0.004
Ooita,OOITA	14.7	528	2080	0.023 ± 0.0072	0.043 ± 0.014	0.041 ± 0.0072	0.02 ± 0.0034
Saiki,OOITA	1.7	458	1930	0.033 ± 0.0086	0.073 ± 0.019	0.026 ± 0.0065	0.013 ± 0.0034
Fukuoka,FUKUOKA	14.2	504	1530	0.036 ± 0.0076	0.071 ± 0.015	0.024 ± 0.0053	0.016 ± 0.0035
Dazaifu,FUKUOKA	14.5	432	1830	0.058 ± 0.011	0.13 ± 0.026	0.03 ± 0.0063	0.016 ± 0.0035
Saga,SAGA	12.4	377	1330	0.024 ± 0.0066	0.065 ± 0.018	0.013 ± 0.0043	0.0095 ± 0.0032
Kumamoto,KUMAMOTO	14.4	536	2040	0.021 ± 0.0068	0.04 ± 0.013	0.041 ± 0.0068	0.02 ± 0.0033
Tomiai-machi,KUMAMOTO	15.7	422	1560	0.035 ± 0.01	0.082 ± 0.024	0.03 ± 0.007	0.019 ± 0.0045
Miyazaki,MIYAZAKI	155.5	466	1950	0.033 ± 0.0082	0.07 ± 0.018	0.021 ± 0.0057	0.011 ± 0.0029
Takachiho-machi,MIYAZA	16.9	568	2800	0.065 ± 0.011	0.11 ± 0.019	0.044 ± 0.0075	0.016 ± 0.0027
Nagasaki,NAGASAKI	14.3	479	1600	0.024 ± 0.0068	0.05 ± 0.014	0.014 ± 0.0048	0.009 ± 0.003
Matsuura,NAGASAKI	14.3	377	1800	0.034 ± 0.0085	0.09 ± 0.023	0.02 ± 0.0062	0.011 ± 0.0035
Ookuchi,KAGOSHIMA	11.4	401	1260	0.053 ± 0.011	0.13 ± 0.028	0.021 ± 0.0067	0.016 ± 0.0053
Sendai,KAGOSHIMA	13.4	560	1730	0.068 ± 0.012	0.12 ± 0.022	0.15 ± 0.013	0.089 ± 0.0073

(2)-1 Strontuim-90 and Cesiumu-137 in Rice(producting districts)
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (2)-1 : Strontuim-90 and Cesiumu-137 in Rice(producting districts)

Location	Component			90Sr		137Cs	
	(%)	(g/kgwet)	(g/kgwet)	(Bq/kgwet)	(Bq/gCa)	(Bq/kgwet)	(Bq/gK)
Aug,1998							
Sadohara-machi,MIYAZAK	0.583	0.028	1.2	0 ± 0.005	0 ± 0.18	0 ± 0.0036	0 ± 0.003
Sep,1998							
Chiba,CHIBA	0.537	0.028	0.72	0.0012 ± 0.0049	0.04 ± 0.17	0 ± 0.0033	0 ± 0.0046
Gifu,GIFU	0.479	0.033	0.762	0.0095 ± 0.006	0.28 ± 0.18	0.0067 ± 0.0045	0.0088 ± 0.006
Shiga-machi,SHIGA	0.582	0.036	0.92	0.0097 ± 0.0062	0.27 ± 0.17	0.39 ± 0.0067	0.042 ± 0.0072
Matsusaka,MIE	0.529	0.031	0.841	0.018 ± 0.0069	0.57 ± 0.22	0.0061 ± 0.0049	0.0073 ± 0.0058
Shinguu,WAKAYAMA	0.376	0.036	0.726	0.0029 ± 0.0043	0.08 ± 0.12	0 ± 0.003	0 ± 0.0041

(3)-1 Strontuim-90 and Cesiumu-137 in Milk(producting districts for domestic program)
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (3)-1 : Strontuim-90 and Cesiumu-137 in Milk(producting districts for domestic program)

Location	Component			90Sr				137Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)		(Bq/g Ca)		(Bq/kgwet)		(Bq/g K)	
Aug,1998											
Mito,IBARAKI	0.72	1.13	1.51	0.052	± 0.0064	0.047	± 0.0058	0.008	± 0.006	0.0052	± 0.0039
Takane-machi,YAMANASHI	0.64	0.99	1.35	0.019	± 0.0062	0.019	± 0.0062	0.022	± 0.0066	0.016	± 0.0049
Tonami,TOYAMA	0.69	1.01	1.55	0.023	± 0.0042	0.022	± 0.0042	0.038	± 0.0065	0.025	± 0.0042
Oshimizu-machi,ISHIKAW	0.77	1.2	1.59	0.0096	± 0.0075	0.008	± 0.0062	0.0022	± 0.0059	0.0014	± 0.0037
Hachijou-machi,TOKYO	0.72	1.04	1.46	0.058	± 0.011	0.056	± 0.01	0.014	± 0.005	0.0099	± 0.0034
Katsuyama,FUKUI	0.75	1.09	1.57	0.021	± 0.005	0.02	± 0.0045	0	± 0.0053	0	± 0.0034
Kasamatsu-machi,GIFU	0.71	1.15	1.44	0.044	± 0.0089	0.038	± 0.0077	0.014	± 0.0064	0.0095	± 0.0044
Kujuu-machi,OOITA	0.78	1.06	1.48	0.018	± 0.007	0.017	± 0.0066	0.086	± 0.0093	0.058	± 0.0063
Fujimi-mura,GUNMA	0.69	1.18	1.46	0.024	± 0.0066	0.02	± 0.0056	0.01	± 0.0041	0.0069	± 0.0028
Yachimata,CHIBA	0.73	1.05	1.55	0.027	± 0.0082	0.026	± 0.0079	0.0093	± 0.0044	0.006	± 0.0029
Kochi,KOCHI	0.72	1.11	1.58	0.034	± 0.0083	0.031	± 0.0075	0.01	± 0.0048	0.0064	± 0.003
Koushi-machi,KUMAMOTO	0.69	1.07	1.49	0.016	± 0.0067	0.015	± 0.0063	0.013	± 0.0044	0.0086	± 0.003
Takahara-machi,MIYAZAK	0.7	1.05	1.6	0.02	± 0.0067	0.02	± 0.0064	0.024	± 0.0069	0.015	± 0.0043
Hachijou-machi,TOKYO	0.7	1.06	1.49	0.044	± 0.0092	0.042	± 0.0087	0.017	± 0.0053	0.012	± 0.0036
Nishinasuno-machi,TOCH	0.63	0.88	1.43	0.024	± 0.0084	0.027	± 0.0095	0.013	± 0.0045	0.0093	± 0.0032
Yasu-machi,FUKUOKA	0.7	1.12	1.46	0.03	± 0.0052	0.026	± 0.0046	0.0047	± 0.0058	0.0032	± 0.004
Iwamuro-mura,NIIGATA	0.74	1.15	1.58	0.041	± 0.0059	0.036	± 0.0051	0.0096	± 0.0057	0.0061	± 0.0036
Hino-machi,SHIGA	0.71	1.08	1.57	0.016	± 0.0037	0.015	± 0.0034	0.0059	± 0.0043	0.0037	± 0.0027
Oouchiyama-mura,MIE	0.72	1.07	1.51	0.015	± 0.0062	0.014	± 0.0058	0	± 0.0036	0	± 0.0024
Oouda-machi,NARA	0.7	1.03	1.52	0.018	± 0.0067	0.018	± 0.0065	0.022	± 0.0068	0.015	± 0.0045
Shijounawate,OSAKA	0.74	1.19	1.43	0.043	± 0.0079	0.037	± 0.0067	0.031	± 0.0085	0.022	± 0.0059

Location	Component			90Sr				137Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)		(Bq/g Ca)		(Bq/kgwet)		(Bq/g K)	
Takizawa-mura, IWATE	0.72	1.04	1.62	0.03	± 0.0076	0.028	± 0.0073	0.036	± 0.008	0.022	± 0.0049
Mihara-machi, HYOUGO	0.71	1.07	1.47	0.015	± 0.0067	0.014	± 0.0063	0.005	± 0.0038	0.0034	± 0.0026
Aomori, AOMORI	0.72	1.04	1.6	0.059	± 0.01	0.057	± 0.01	0.037	± 0.076	0.023	± 0.047
Sapporo, HOKKAIDOU	0.73	1.15	1.71	0.035	± 0.0058	0.03	± 0.0051	0.038	± 0.0078	0.022	± 0.0046
Takase-machi, KAGAWA	0.71	1.08	1.54	0.039	± 0.0086	0.036	± 0.0079	0.011	± 0.0062	0.0074	± 0.004
kawauchi-machi, EHIME	0.71	11.09	1.51	0.0048	± 0.0058	0.0045	± 0.0054	0.0023	± 0.0062	0.0015	± 0.0041
Kajiki-machi, KAGOSHIMA	0.73	1.11	1.5	0.021	± 0.0083	0.019	± 0.0075	0.012	± 0.0083	0.008	± 0.0055
Jul, 1998											
Kamiita-machi, TOKUSHIM	0.71	1.07	1.56	0.027	± 0.0076	0.025	± 0.0071	0.003	± 0.0038	0.0019	± 0.0024
Hiroshima, HIROSHIMA	0.84	1.29	1.88	0.04	± 0.0063	0.031	± 0.0049	0.032	± 0.0075	0.017	± 0.004
Jun, 1998											
Yamato-machi, SAGA	0.74	1.1	1.6	0.016	± 0.0061	0.015	± 0.0055	0.012	± 0.0045	0.0072	± 0.0028
May, 1998											
Katsuyama, FUKUI	0.74	1.13	1.63	0.025	± 0.005	0.022	± 0.0044	0.021	± 0.0066	0.013	± 0.0041
Tiyoda-machi, HIROSAMA	0.84	1.29	1.88	0.03	± 0.0054	0.023	± 0.0042	0.015	± 0.0066	0.0078	± 0.0035
Kajiki-machi, KAGOSHIMA	0.73	1.13	1.54	0.032	± 0.009	0.028	± 0.0079	0.018	± 0.0083	0.012	± 0.0054
Iwamuro-mura, NIIGATA	0.73	1.15	1.6	0.038	± 0.0059	0.033	± 0.0052	0.0022	± 0.0055	0.0014	± 0.0034
Shijounawate, OSAKA	0.71	1.11	1.53	0.025	± 0.0049	0.023	± 0.0044	0.01	± 0.0059	0.0068	± 0.0039
Matsue, SHIMANE	0.68	1.09	1.37	0.012	± 0.0071	0.011	± 0.0065	0.016	± 0.0078	0.012	± 0.0057
Sapporo, HOKKAIDOU	0.71	1.09	1.67	0.048	± 0.0064	0.044	± 0.0059	0.041	± 0.025	0.0076	± 0.0046
Kochi, KOCHI	0.74	1.16	1.66	0.037	± 0.0059	0.032	± 0.0051	0.023	± 0.0069	0.014	± 0.0041
Yasu-machi, FUKUOKA	0.71	1.11	1.57	0.02	± 0.0051	0.018	± 0.0046	0.012	± 0.0059	0.0078	± 0.0038
Sep, 1998											
Matsue, SHIMANE	0.74	1.17	1.59	0.026	± 0.009	0.022	± 0.0077	0.0024	± 0.0067	0.0015	± 0.0042

(3)-2 Strontuim-90 and Cesiumu-137 in Milk(producting districts for WHO program)
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (3)-2 : Strontuim-90 and Cesiumu-137 in Milk(producting districts for WHO program)

Location	Component			90Sr				137Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)		(Bq/g Ca)		(Bq/kgwet)		(Bq/g K)	
Aug,1998											
Yasu-machi,FUKUOKA	0.7	1.12	1.46	0.03	± 0.0052	0.026	± 0.0046	0.0047	± 0.0058	0.0032	± 0.004
Sapporo,HOKKAIDOU	0.73	1.15	1.71	0.035	± 0.0058	0.03	± 0.0051	0.038	± 0.0078	0.022	± 0.0046
Hachijou-machi,TOKYO	0.72	1.04	1.46	0.058	± 0.011	0.056	± 0.01	0.014	± 0.005	0.0099	± 0.0034
Hachijou-machi,TOKYO	0.7	1.06	1.49	0.044	± 0.0092	0.042	± 0.0087	0.017	± 0.0053	0.012	± 0.0036
Shijounawate,OSAKA	0.74	1.19	1.43	0.043	± 0.0079	0.037	± 0.0067	0.031	± 0.0085	0.022	± 0.0059
Iwamuro-mura,NIIGATA	0.74	1.15	1.58	0.041	± 0.0059	0.036	± 0.0051	0.0096	± 0.0057	0.0061	± 0.0036
Kochi,KOCHI	0.72	1.11	1.58	0.034	± 0.0083	0.031	± 0.0075	0.01	± 0.0048	0.0064	± 0.003
Katsuyama,FUKUI	0.75	1.09	1.57	0.021	± 0.005	0.02	± 0.0045	0	± 0.0053	0	± 0.0034
Jul,1998											
Hiroshima,HIROSHIMA	0.84	1.29	1.88	0.04	± 0.0063	0.031	± 0.0049	0.032	± 0.0075	0.017	± 0.004
May,1998											
Sapporo,HOKKAIDOU	0.71	1.09	1.67	0.048	± 0.0064	0.044	± 0.0059	0.041	± 0.025	0.0076	± 0.0046
Katsuyama,FUKUI	0.74	1.13	1.63	0.025	± 0.005	0.022	± 0.0044	0.021	± 0.0066	0.013	± 0.0041
Tiyoda-machi,HIROSAMA	0.84	1.29	1.88	0.03	± 0.0054	0.023	± 0.0042	0.015	± 0.0066	0.0078	± 0.0035
Iwamuro-mura,NIIGATA	0.73	1.15	1.6	0.038	± 0.0059	0.033	± 0.0052	0.0022	± 0.0055	0.0014	± 0.0034
Shijounawate,OSAKA	0.71	1.11	1.53	0.025	± 0.0049	0.023	± 0.0044	0.01	± 0.0059	0.0068	± 0.0039
Matsue,SHIMANE	0.68	1.09	1.37	0.012	± 0.0071	0.011	± 0.0065	0.016	± 0.0078	0.012	± 0.0057
Kochi,KOCHI	0.74	1.16	1.66	0.037	± 0.0059	0.032	± 0.0051	0.023	± 0.0069	0.014	± 0.0041
Yasu-machi,FUKUOKA	0.71	1.11	1.57	0.02	± 0.0051	0.018	± 0.0046	0.012	± 0.0059	0.0078	± 0.0038
Sep,1998											
Matsue,SHIMANE	0.74	1.17	1.59	0.026	± 0.009	0.022	± 0.0077	0.0024	± 0.0067	0.0015	± 0.0042

(3)-3 Strontuim-90 and Cesiumu-137 in Milk(consuming districts)
(form APR. 1998 to Sep. 1998)

-continued from No. 125 for this publication-

Table (3)-3 : Strontuim-90 and Cesiumu-137 in Milk(consuming districts)

Location	Component			90Sr				137Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)		(Bq/g Ca)		(Bq/kgwet)		(Bq/g K)	
Aug, 1998											
Oshimizu-machi, ISHIKAW	0.77	1.2	1.59	0.0096	± 0.0075	0.008	± 0.0062	0.0022	± 0.0059	0.0014	± 0.0037
Chikushino, FUKUOKA	0.67	1.02	1.46	0.019	± 0.0062	0.018	± 0.0061	0.022	± 0.0065	0.015	± 0.0044
Hachijou-machi, TOKYO	0.72	1.04	1.46	0.058	± 0.011	0.056	± 0.01	0.014	± 0.005	0.0099	± 0.0034
Hachijou-machi, TOKYO	0.7	1.06	1.49	0.044	± 0.0092	0.042	± 0.0087	0.017	± 0.0053	0.012	± 0.0036
Nagano, NAGANO	0.68	1.06	1.49	0.032	± 0.0045	0.031	± 0.0042	0.014	± 0.0047	0.0095	± 0.0031
Yokohama, KANAGAWA	0.72	1.1	1.56	0.0065	± 0.0068	0.0059	± 0.0062	0.035	± 0.006	0.022	± 0.0039
Fujimi-mura, GUNMA	0.69	1.18	1.46	0.024	± 0.0066	0.02	± 0.0056	0.01	± 0.0041	0.0069	± 0.0028
Tonami, TOYAMA	0.69	1.01	1.55	0.023	± 0.0042	0.022	± 0.0042	0.038	± 0.0065	0.025	± 0.0042
Urawa, SAITAMA	0.73	1.12	1.57	0.019	± 0.0061	0.017	± 0.0054	0.0096	± 0.0042	0.0061	± 0.0027
Shizuoka, SHIZUOKA	0.7	1.06	1.51	0.02	± 0.0067	0.019	± 0.0063	0.013	± 0.0051	0.0087	± 0.0034
Fukui, FUKUI	0.72	1.13	1.51	0.025	± 0.0052	0.022	± 0.0046	0.0065	± 0.0064	0.0043	± 0.0043
Katsuyama, FUKUI	0.75	1.09	1.57	0.021	± 0.005	0.02	± 0.0045	0	± 0.0053	0	± 0.0034
Kasamatsu-machi, GIFU	0.71	1.15	1.44	0.044	± 0.0089	0.038	± 0.0077	0.014	± 0.0064	0.0095	± 0.0044
Yamaguchi, YAMAGUCHI	0.7	1.07	1.55	0.034	± 0.0084	0.032	± 0.0078	0.031	± 0.0073	0.02	± 0.0047
Kochi, KOCHI	0.72	1.11	1.58	0.034	± 0.0083	0.031	± 0.0075	0.01	± 0.0048	0.0064	± 0.003
Takane-machi, YAMANASHI	0.64	0.99	1.35	0.019	± 0.0062	0.019	± 0.0062	0.022	± 0.0066	0.016	± 0.0049
Akita, AKITA	0.87	1.32	1.88	0.056	± 0.011	0.042	± 0.0085	0.0052	± 0.0043	0.0028	± 0.0023
Tiyoda-machi, HIROSAMA	0.7	1.03	1.53	0.038	± 0.0089	0.037	± 0.0086	0.12	± 0.012	0.077	± 0.0078
kawauchi-machi, EHIME	0.71	11.09	1.51	0.0048	± 0.0058	0.0045	± 0.0054	0.0023	± 0.0062	0.0015	± 0.0041
kawauchi-machi, EHIME	0.7	1.08	1.5	0.012	± 0.0066	0.011	± 0.0061	0.013	± 0.0073	0.0089	± 0.0049
Sapporo, HOKKAIDOU	0.72	1.14	1.54	0.045	± 0.0062	0.039	± 0.0054	0.044	± 0.0087	0.029	± 0.0056

Location	Component			90Sr				137Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)		(Bq/g Ca)		(Bq/kgwet)		(Bq/g K)	
Sapporo,HOKKAIDOU	0.73	1.15	1.71	0.035	± 0.0058	0.03	± 0.0051	0.038	± 0.0078	0.022	± 0.0046
Shinjuku,TOKYO	0.67	0.99	1.48	0.027	± 0.0078	0.027	± 0.0079	0.011	± 0.0043	0.0072	± 0.0029
Takizawa-mura,IWATE	0.72	1.04	1.62	0.03	± 0.0076	0.028	± 0.0073	0.036	± 0.008	0.022	± 0.0049
Kujuu-machi,OOITA	0.78	1.06	1.48	0.018	± 0.007	0.017	± 0.0066	0.086	± 0.0093	0.058	± 0.0063
Yamagata,YAMAGATA	0.67	1.02	1.44	0.024	± 0.0067	0.023	± 0.0066	0.016	± 0.0062	0.011	± 0.0043
Fukushima,FUKUSHIMA	0.73	1.14	1.61	0.018	± 0.0062	0.016	± 0.0054	0.017	± 0.0054	0.011	± 0.0034
Niigata,NIIGATA	0.76	1.13	1.64	0.033	± 0.0099	0.029	± 0.0087	0.018	± 0.0054	0.011	± 0.0033
Mito,IBARAKI	0.72	1.13	1.51	0.052	± 0.0064	0.047	± 0.0058	0.008	± 0.006	0.0052	± 0.0039
Nishinasuno-machi,TOCH	0.63	0.88	1.43	0.024	± 0.0084	0.027	± 0.0095	0.013	± 0.0045	0.0093	± 0.0032
Yachimata,CHIBA	0.73	1.05	1.55	0.027	± 0.0082	0.026	± 0.0079	0.0093	± 0.0044	0.006	± 0.0029
Aomori,AOMORI	0.72	1.04	1.6	0.059	± 0.01	0.057	± 0.01	0.037	± 0.076	0.023	± 0.047
Oouda-machi,NARA	0.7	1.03	1.52	0.018	± 0.0067	0.018	± 0.0065	0.022	± 0.0068	0.015	± 0.0045
Kochi,KOCHI	0.72	1.13	1.62	0.046	± 0.0066	0.041	± 0.0059	0.0067	± 0.0057	0.0041	± 0.0035
Takase-machi,KAGAWA	0.71	1.08	1.54	0.039	± 0.0086	0.036	± 0.0079	0.011	± 0.0062	0.0074	± 0.004
Matsue,SHIMANE	0.72	1.11	1.53	0.014	± 0.0081	0.013	± 0.0073	0.022	± 0.0075	0.014	± 0.0049
Okayama,OKAYAMA	0.7	1.05	1.5	0.02	± 0.0071	0.019	± 0.0068	0.006	± 0.004	0.004	± 0.0027
Mihara-machi,HYOUGO	0.71	1.07	1.47	0.015	± 0.0067	0.014	± 0.0063	0.005	± 0.0038	0.0034	± 0.0026
Yonago,TOTTORI	0.71	1.08	1.52	0.02	± 0.0071	0.019	± 0.0066	0.019	± 0.0053	0.012	± 0.0035
Nagoya,AICHI	0.74	1.13	1.58	0.041	± 0.0049	0.036	± 0.0043	0.28	± 0.015	0.17	± 0.01
Osaka,OSAKA	0.74	1.06	1.52	0.026	± 0.0073	0.024	± 0.0069	0.015	± 0.0066	0.0098	± 0.0044
Oouchiyama-mura,MIE	0.72	1.07	1.51	0.015	± 0.0062	0.014	± 0.0058	0	± 0.0036	0	± 0.0024
Hino-machi,SHIGA	0.71	1.08	1.57	0.016	± 0.0037	0.015	± 0.0034	0.0059	± 0.0043	0.0037	± 0.0027
Iwamuro-mura,NIIGATA	0.74	1.15	1.58	0.041	± 0.0059	0.036	± 0.0051	0.0096	± 0.0057	0.0061	± 0.0036
Takahara-machi,MIYAZAK	0.7	1.05	1.6	0.02	± 0.0067	0.02	± 0.0064	0.024	± 0.0069	0.015	± 0.0043
Kajiki-machi,KAGOSHIMA	0.73	1.11	1.5	0.021	± 0.0083	0.019	± 0.0075	0.012	± 0.0083	0.008	± 0.0055
Kagoshima,KAGOSHIMA	0.72	1.11	1.59	0.028	± 0.0092	0.025	± 0.0083	0.02	± 0.0085	0.013	± 0.0053
Nagasaki,NAGASAKI	0.65	0.98	1.39	0.014	± 0.0056	0.015	± 0.0057	0.0052	± 0.006	0.0037	± 0.0043
Koushi-machi,KUMAMOTO	0.69	1.07	1.49	0.016	± 0.0067	0.015	± 0.0063	0.013	± 0.0044	0.0086	± 0.003

Location	Component			90Sr				137Cs			
	Ash(%)	Ca(g/kg)	K(g/kg)	(Bq/kgwet)		(Bq/g Ca)		(Bq/kgwet)		(Bq/g K)	
Yasu-machi,FUKUOKA	0.7	1.12	1.46	0.03	± 0.0052	0.026	± 0.0046	0.0047	± 0.0058	0.0032	± 0.004
Shijounawate,OSAKA	0.74	1.19	1.43	0.043	± 0.0079	0.037	± 0.0067	0.031	± 0.0085	0.022	± 0.0059
Jul,1998											
Kamiita-machi,TOKUSHIM	0.71	1.07	1.56	0.027	± 0.0076	0.025	± 0.0071	0.003	± 0.0038	0.0019	± 0.0024
Hiroshima,HIROSHIMA	0.84	1.29	1.88	0.04	± 0.0063	0.031	± 0.0049	0.032	± 0.0075	0.017	± 0.004
Jun,1998											
Kyoto,KYOTO	0.76	1.09	1.56	0.027	± 0.0076	0.024	± 0.007	0.012	± 0.0046	0.008	± 0.003
Yamato-machi,SAGA	0.74	1.1	1.6	0.016	± 0.0061	0.015	± 0.0055	0.012	± 0.0045	0.0072	± 0.0028
May,1998											
Sapporo,HOKKAIDOU	0.71	1.09	1.67	0.048	± 0.0064	0.044	± 0.0059	0.041	± 0.025	0.0076	± 0.0046
Tiyoda-machi,HIROSAMA	0.84	1.29	1.88	0.03	± 0.0054	0.023	± 0.0042	0.015	± 0.0066	0.0078	± 0.0035
Matsue,SHIMANE	0.68	1.09	1.37	0.012	± 0.0071	0.011	± 0.0065	0.016	± 0.0078	0.012	± 0.0057
Sendai,MIYAGI	0.78	1.18	1.64	0.019	± 0.0082	0.016	± 0.007	0	± 0.0064	0	± 0.0039
Katsuyama,FUKUI	0.74	1.13	1.63	0.025	± 0.005	0.022	± 0.0044	0.021	± 0.0066	0.013	± 0.0041
Shijounawate,OSAKA	0.71	1.11	1.53	0.025	± 0.0049	0.023	± 0.0044	0.01	± 0.0059	0.0068	± 0.0039
Yasu-machi,FUKUOKA	0.71	1.11	1.57	0.02	± 0.0051	0.018	± 0.0046	0.012	± 0.0059	0.0078	± 0.0038
Kajiki-machi,KAGOSHIMA	0.73	1.13	1.54	0.032	± 0.009	0.028	± 0.0079	0.018	± 0.0083	0.012	± 0.0054
Kochi,KOCHI	0.74	1.16	1.66	0.037	± 0.0059	0.032	± 0.0051	0.023	± 0.0069	0.014	± 0.0041
Iwamuro-mura,NIIGATA	0.73	1.15	1.6	0.038	± 0.0059	0.033	± 0.0052	0.0022	± 0.0055	0.0014	± 0.0034
Sep,1998											
Matsue,SHIMANE	0.74	1.17	1.59	0.026	± 0.009	0.022	± 0.0077	0.0024	± 0.0067	0.0015	± 0.0042
Shinguu,WAKAYAMA	0.66	0.99	1.41	0.023	± 0.0069	0.023	± 0.007	0.012	± 0.0062	0.0088	± 0.0044
Yonagusuku-machi,Okina	0.69	1.04	1.5	0.024	± 0.0068	0.023	± 0.0066	0.01	± 0.0057	0.0066	± 0.0038
Sendai,MIYAGI	0.72	1.12	1.58	0.024	± 0.0089	0.022	± 0.008	0.012	± 0.0079	0.0074	± 0.005

(3)-4 Strontuim-90 and Cesiumu-137 in Milk(powdered milk)
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (3)-4 : Strontuim-90 and Cesiumu-137 in Milk(powdered milk)

Location	Component			90Sr		137Cs	
	(%)	(g/kg)	(g/kg)	(Bq/kg)	(Bq/g Ca)	(Bq/Kg)	(Bq/g K)
Jul,1998							
Sample A,サンプルA	7.86	13.1	17.2	0.33 ± 0.017	0.025 ± 0.0013	0.34 ± 0.022	0.019 ± 0.0013
Jun,1998							
Sample B,サンプルB	2.59	3.65	6.24	0.056 ± 0.00611	0.015 ± 0.0017	0.11 ± 0.011	0.018 ± 0.0017
Sample C,サンプルC	7.91	12.5	17.7	0.55 ± 0.035	0.044 ± 0.0028	1.2 ± 0.04	0.068 ± 0.0023
Sample D,サンプルD	2.51	3.97	5.77	0.033 ± 0.0052	0.0084 ± 0.0013	0.044 ± 0.0076	0.0076 ± 0.0013
Sample E,サンプルE	2.51	4.24	5.37	0.086 ± 0.0075	0.02 ± 0.0018	0.14 ± 0.011	0.025 ± 0.0021
Sample F,サンプルF	2.53	3.8	5.62	0.049 ± 0.006	0.013 ± 0.0016	0.098 ± 0.01	0.017 ± 0.0018

(4)-1 Strontuim-90 and Cesiumu-137 in Vegetables(produccing districts)
(form APR. 1998 to Sep. 1998)

-continued from No. 125 for this publication-

Table (4)-1 : Strontuim-90 and Cesiumu-137 in Vegetables(producing districts)

Location	Component			90Sr		137Cs	
	Ash(%)	(g/kg)	(g/kg)	(Bq/kgwet)	(Bq/gCa)	(Bq/kgwet)	(Bq/kgK)
Aug, 1998							
Kitahiroshima, HOKKAIDO	1	0.12	2.24	0.18 ± 0.013	1.5 ± 0.11	0.019 ± 0.006	0.0085 ± 0.0027
Kitahiroshima, HOKKAIDO	2	0.559	8.02	0.15 ± 0.011	0.27 ± 0.02	0.0093 ± 0.0049	0.0012 ± 0.00061
Jul, 1998							
Mutsu, AOMORI	1	0.015	3.48	0.018 ± 0.006	1.2 ± 0.4	0.043 ± 0.0065	0.013 ± 0.0019
Kumatori-machi, OSAKA	0	0.1	1.47	0.025 ± 0.0062	0.25 ± 0.062	0.008 ± 0.0045	0.0054 ± 0.0031
Oota, SHIMANE	1	1.05	2.08	0.68 ± 0.02	0.65 ± 0.019	0.63 ± 0.022	0.3 ± 0.011
Oota, SHIMANE	2	0.257	3.04	0.13 ± 0.01	0.49 ± 0.039	0.15 ± 0.012	0.05 ± 0.0038
Jun, 1998							
Koushi-machi, KUMAMOTO	2	0.979	6.28	0.14 ± 0.012	0.14 ± 0.012	0.0021 ± 0.0052	0.00033 ± 0.00083
Koushi-machi, KUMAMOTO	1	0.29	2.16	0.043 ± 0.006	0.15 ± 0.021	0 ± 0.0038	0 ± 0.0018
May, 1998							
Tahara-machi, AICHI	1	0.728	5.15	0.024 ± 0.0057	0.0033 ± 0.0078	0 ± 0.0043	0 ± 0.00084
Tahara-machi, AICHI	1	0.186	2.81	0.062 ± 0.0075	0.33 ± 0.04	0.004 ± 0.0044	0.0014 ± 0.0016

(4)-2 Strontuim-90 and Cesiumu-137 in Vegetables(consuming districts)
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (4)-2 : Strontuim-90 and Cesiumu-137 in Vegetables(consuming districts)

Location	Component			90Sr		137Cs	
	Ash(%)	(g/kg)	(g/kg)	(Bq/kgwet)	(Bq/gCa)	(Bq/kgwet)	(Bq/kgK)
Jun,1998							
Niigata,NIIGATA	1	0.861	3.51	0.06 ± 0.008	0.69 ± 0.0093	0.015 ± 0.0051	0.0042 ± 0.0015
May,1998							
Rifu-machi,MIYAGI	2	0.564	6.35	0.05 ± 0.0063	0.89 ± 0.011	0.0094 ± 0.0042	0.0015 ± 0.00066
Sep,1998							
Rifu-machi,MIYAGI	0	0.269	1.13	0.8 ± 0.022	3 ± 0.08	0.075 ± 0.0083	0.067 ± 0.0074
Urawa,SAITAMA	1	0.206	2.65	0.13 ± 0.009	0.62 ± 0.045	0.0454 ± 0.007	0.017 ± 0.0026
Urawa,SAITAMA	1	0.229	5.53	0.017 ± 0.0047	0.073 ± 0.021	0.0049 ± 0.0048	0.00088 ± 0.00086

(5) Strontuim-90 and Cesiumu-137 in Tea (Japanese Tea)
(form APR. 1998 to Sep. 1998)

-continued from No. 125 for this publication-

Table (5) : Strontuim-90 and Cesiumu-137 in Tea (Japanese Tea)

Location	Component			90Sr		137Cs	
	(%)	(g/kg)	(g/kg)	(Bq/kg)	(Bq/g Ca)	(Bq/kg)	(Bq/g K)
Apr, 1998							
Iwata, SHIZUOKA	1.29	0.752	4.5	0.039 ± 0.0046	0.052 ± 0.0062	0.008 ± 0.0052	0.0018 ± 0.0011
Mifune-machi, KUMAMOTO	5.52	2.98	19	0.3 ± 0.049	0.1 ± 0.016	0.17 ± 0.035	0.0087 ± 0.0018
Jun, 1998							
Iruma, SAITAMA	5.18	1.59	17.5	0.43 ± 0.056	0.27 ± 0.035	0.22 ± 0.035	0.013 ± 0.002
Tokorozawa, SAITAMA	5.3	3.43	17.5	0.27 ± 0.045	0.079 ± 0.013	0.38 ± 0.041	0.022 ± 0.0023
Uji, KYOTO	5.07	2.47	15.9	0.19 ± 0.036	0.077 ± 0.015	0.014 ± 0.016	0.0009 ± 0.001
Kaya-machi, KYOTO	5.63	2.74	17.7	0.88 ± 0.075	0.32 ± 0.028	0.2 ± 0.03	0.011 ± 0.0017
Miyanojou-machi, KAGOSH	5.86	2.99	20.5	0.36 ± 0.054	0.12 ± 0.018	0.69 ± 0.058	0.034 ± 0.0028
Chiran-machi, KAGOSHIMA	5.5	1.98	20.6	0.15 ± 0.037	0.076 ± 0.019	1.7 ± 0.08	0.082 ± 0.0041
May, 1998							
Shuzenji-machi, SHIZUOK	1.44	0.814	4.99	0.55 ± 0.017	0.68 ± 0.021	0.11 ± 0.01	0.022 ± 0.002
Ikeda-machi, GIFU	5.01	3.78	16.4	2.1 ± 0.12	0.56 ± 0.033	0.15 ± 0.032	0.0095 ± 0.002
Shirakawa-machi, GIFU	4.79	2.21	18	0.43 ± 0.068	0.19 ± 0.031	0.048 ± 0.026	0.0027 ± 0.0014
Kameyama, MIE	5.46	3.51	17.6	1.6 ± 0.1	0.46 ± 0.029	0.14 ± 0.033	0.008 ± 0.0019
Oodai-machi, MIE	5.05	1.88	17.3	0.11 ± 0.03	0.61 ± 0.016	0.11 ± 0.028	0.0064 ± 0.0016
Nara, NARA	5.3	3.29	19.9	1 ± 0.08	0.31 ± 0.025	0.72 ± 0.058	0.036 ± 0.0029
Nara, NARA	5.8	2.46	19.4	0.29 ± 0.044	0.12 ± 0.018	0.53 ± 0.05	0.027 ± 0.0026
Nachikatsuura-machi, WA	5.18	1.94	18.5	1.2 ± 0.09	0.62 ± 0.044	0.6 ± 0.047	0.032 ± 0.0025
Ue-mura, KUMAMOTO	4.48	2.69	15.1	1.1 ± 0.1	0.4 ± 0.036	0.21 ± 0.052	0.014 ± 0.0034
Kawaminami-machi, MIYAZ	5.21	1.88	19.2	0.26 ± 0.051	0.14 ± 0.027	1.6 ± 0.08	0.082 ± 0.004
Miyakonojou, MIYAZAKI	5.18	2.66	17.9	0.08 ± 0.041	0.03 ± 0.015	1.7 ± 0.08	0.096 ± 0.0046

(6) Strontuim-90 and Cesiumu-137 in Sea Fish
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (5) : Strontuim-90 and Cesiumu-137 in Sea Fish

Location	Component			90Sr				137Cs			
	(%)	(g/kgwet)	(g/kgwet)	(Bq/kgwet)		(Bq/gCa)		(Bq/kgwet)		(Bq/gK)	
(Ammodytes personatus)											
Apr, 1998											
Harimanada, HYOUGO	22.4	3.52	3.93	0.0051	± 0.0036	0.0014	± 0.001	0.055	± 0.01	0.014	± 0.0026
(Katsuwonus pelamis)											
May, 1998											
Tosa, KOCHI	1.13	0.077	3.35	0	± 0.0028	0	± 0.037	0.24	± 0.016	0.072	± 0.0049
(Limanda herzensteini)											
Jun, 1998											
Sendai, MIYAGI	3.01	6.03	3.78	0	± 0.0069	0	± 0.001	0.06	± 0.0095	0.016	± 0.0025
Aug, 1998											
Iyonada, EHIME	1.38	0.797	3.58	0.0049	± 0.0059	0.0061	± 0.0074	0.12	± 0.012	0.032	± 0.0033
(Mugil cephalus)											
Aug, 1998											
Morodomi-machi, SAGA	1.28	0.741	3.35	0.0027	± 0.0055	0.0036	± 0.0075	0.061	± 0.008	0.018	± 0.0024
(Oncorhynchus keta)											
Sep, 1998											
Urakawa-machi, HOKKAIDO	1.28	0.35	3.84	0	± 0.0044	0	± 0.012	0.095	± 0.011	0.025	± 0.0029
(Pagrus sp)											
May, 1998											
Kumanonada, MIE	1.3	0.274	4.02	0.0015	± 0.0034	0.005	± 0.012	0.26	± 0.017	0.064	± 0.0041

Location	Component			90Sr				137Cs			
	(%)	(g/kgwet)	(g/kgwet)	(Bq/kgwet)		(Bq/gCa)		(Bq/kgwet)		(Bq/gK)	
Jul, 1998											
Tennou-machi, AKITA	1.59	2.211	3.19	0.0082	± 0.0035	0.0037	± 0.0016	0.099	± 0.011	0.031	± 0.0035
Fukuoka, FUKUOKA	1.41	0.471	4.1	0.0079	± 0.0038	0.017	± 0.008	0.14	± 0.013	0.035	± 0.0031
(Sardinops melanostictus)											
Sep, 1998											
Yamagata, YAMAGATA	2.75	6.21	2.57	0.0007	± 0.0064	0.0001	± 0.001	0.046	± 0.0084	0.018	± 0.0033
(Sebastiscus marmoratus)											
Apr, 1998											
Hamada, SHIMANE	6.11	19.8	3.34	0.016	± 0.0064	0.0008	± 0.00032	0.096	± 0.011	0.029	± 0.0033
(Sillago sp)											
Jun, 1998											
Minamichita-machi, AICH	3.48	8.73	3.01	0.0044	± 0.0041	0.0005	± 0.00047	0.076	± 0.011	0.025	± 0.0035

Sea Fish

Japanese name	English name	Scientific name
Bora	Gray mullet	Mugil cephalus
Ikanago	Japanese sand lance	Ammodytes personatus
Kasago	Scorpion-fish	Sebastiscus marmoratus
Katsuo	Skipjack tuna	Katsuwonus pelamis
Kisu	Whiting	Sillago sp
Magarei	Brown sole	Limanda herzensteini
Maiwashi	Japanese pilchard	Sardinops melanostictus
Sake	Chum Salmon	Oncorhynchus keta
Tai	Sea bream	Pagrus sp

(7) Strontuim-90 and Cesiumu-137 in Freshwater Fish
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (6) : Strontuim-90 and Cesiumu-137 in Freshwater Fish

Location	Component			90Sr		137Cs	
	(%)	(g／kg生)	(g／kg生)	(Bq／kg生)	(Bq／gCa)	(Bq／kg生)	()
(Carassius auratus)							
Jul,1998 Barato-lake,HOKKAIDOU	5.11	11.6	2.53	0.52 ± 0.017	0.044 ± 0.0015	0.07 ± 0.01	0 ± 0
(Cyprinus carpio)							
Aug,1998 Akita,AKITA	2.49	7.09	2.03	1.5 ± 0.05	0.21 ± 0.006	0.12 ± 0.011	0 ± 0
May,1998 Kasumigaura-lake,IBARA	1.09	0.283	3.34	0.014 ± 0.0043	0.049 ± 0.015	0.11 ± 0.011	0 ± 0
(Salvelinus leucomaeni							
Sep,1998 Fukushima,FUKUSHIMA	1.34	0.828	4.05	0.0038 ± 0.0054	0.0046 ± 0.0065	0.1 ± 0.011	0 ± 0

Freshwater Fish

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

(8) Strontuim-90 and Cesiumu-137 in Shellfish
(form APR.1998 to Sep.1998)

-continued from No. 125 for this publication-

Table (7) : Strontuim-90 and Cesiumu-137 in Shellfish

Location	Component			90Sr				137Cs			
	(%)	(g/kgwet)	(g/kgwet)	(Bq/kgwet)		(Bq/gCa)		(Bq/kgwet)		(Bq/gK)	
(Mytilus edulis)											
Jun, 1998											
Mutsu, AOMORI	2.53	0.63	1.06	0.0042	± 0.0064	0.007	± 0.01	0.0013	± 0.0058	0.0012	± 0.0054
(Ruditapes phillipinarum)											
May, 1998											
Konagai-machi, NAGASAKI	3.58	1.48	1.48	0.0034	± 0.0032	0.0023	± 0.0022	0.019	± 0.0067	0.013	± 0.0045
Jun, 1998											
Minamichita-machi, AICH	11.8	0.607	3.03	0	± 0.0059	0	± 0.0097	0.041	± 0.0094	0.014	± 0.0031
(Turbo cornutus)											
Apr, 1998											
Ryotsu, NIIGATA	2.21	0.537	2.28	0.0091	± 0.0055	0.017	± 0.01	0.03	± 0.0072	0.01	± 0.0025
May, 1998											
Monzen-machi, ISHIKAWA	3.17	1.52	2.01	0.0036	± 0.0038	0.0023	± 0.0025	0.014	± 0.0071	0.007	± 0.0036
Jun, 1998											
Sakata, YAMAGATA	2.99	2.67	30	0.0045	± 0.0037	0.0017	± 0.0014	0.028	± 0.0077	0.011	± 0.003

Shellfish

Japanese name	English name	Scientific name
Asari	Japanese littleneck	Ruditapes phillipinarum
Murasakiigai	Common blue mussel	Mytilus edulis
Sazae	Horned turban	Turbo cornutus

(9) Strontuim-90 and Cesiumu-137 in Seaweeds
(form APR. 1998 to Sep. 1998)

-continued from No. 125 for this publication-

Table (8) : Strontuim-90 and Cesiumu-137 in Seaweeds

Location	Component			90Sr		137Cs	
	(%)	(g/kgwet)	(g/kgwet)	(Bq/kgwet)	(Bq/gCa)	(Bq/kgwet)	(Bq/gK)
(Undaria pinnatifida)							
Apr, 1998							
Ryotsu, NIIGATA	3.78	1.03	8.33	0.017 ± 0.0048	0.017 ± 0.0047	0.025 ± 0.0075	0.0031 ± 0.00089
Monzen-machi, ISHIKAWA	4.75	1.15	7.36	0.026 ± 0.0053	0.023 ± 0.0046	0.025 ± 0.0077	0.0034 ± 0.0011
Jun, 1998							
Sakata, YAMAGATA	2.01	0.98	3.67	0.023 ± 0.0049	0.024 ± 0.005	0.017 ± 0.007	0.0046 ± 0.0019
May, 1998							
Fukaura-machi, AOMORI	2.59	0.963	5.76	0.026 ± 0.0046	0.027 ± 0.0048	0.019 ± 0.0074	0.0033 ± 0.0013
Mutsu, AOMORI	3.28	1.01	8.08	0.021 ± 0.0043	0.021 ± 0.0042	0.032 ± 0.0079	0.0039 ± 0.00098

Seaweeds

Japanese name	English name	Scientific name
Wakame	Wakame seaweed	Undaria pinnatifida

* * 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