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# RADIOACTIVITY SURVEY DATA in Japan

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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<sup>2</sup> 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<sup>3</sup> 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.

\* 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 leaf 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 <sup>3</sup> /month
(3) Service water and freshwater		
1. Service water (source water)	semiyearly	100 ℥
2. Service water (tap water)	semiyearly	100 ℥
3. Freshwater	yearly (fishing season)	100 ℥
(4) Soil		
1. 0~ 5 cm	yearly	4 kg
2. 5~ 20cm	yearly	4 kg
(5) Sea water	yearly	40 ℥
(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 ℥
2. Producing districts for domestic program	semiyearly (February and August)	3 ℥

Sample	Frequency of sampling	Quantity of sample
3. Consuming districts	semiyearly (February and August)	3 ℥
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 0.2 mm in size by a crusher. The sieved sample was ashed in an electric muffle furnace regulated at 450 °C. 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 molybdate phosphate 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-137 per sample aliquot. From the results, concentrations of these nuclides in the original samples were calculated.

6. Results

(1)-1 Strontium-90 and Cesium-137 in Rain and Dry Fallout(for domestic program)  
(from Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

Table (1)-1 Strontium-90 and Cesium-137 in Rain and Dry Fallout

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
				(MBq/km <sup>2</sup> )		(MBq/km <sup>2</sup> )		
<b>Apr, 1999</b>								
Aomori, AOMORI	27	26		0.049	± 0.014		0.029	± 0.011
Morioka, IWATE	35	7.9		0.026	± 0.01		0.014	± 0.013
Onagawa-machi, MIYAGI	29	182		0	± 0.016		0.031	± 0.014
Yamagata, YAMAGATA	30	111.4		0.011	± 0.01		0.027	± 0.014
Okuma-machi, FUKUSHIMA	29	108		0.003	± 0.01		0.024	± 0.014
Mito, IBARAKI	35	256		0.016	± 0.014		0.023	± 0.013
Kawachi-machi, TOCHIGI	35	218.9		0.011	± 0.0076		0.038	± 0.014
Maebashi, GUNMA	29	124		0.015	± 0.0081		0.052	± 0.015
Urawa, SAITAMA	35	240.2		0.017	± 0.037		0.036	± 0.014
Shinjuku, TOKYO	35	252.8		0.017	± 0.0098		0.027	± 0.013
Yokohama, KANAGAWA	30	257.4		0.017	± 0.013		0.037	± 0.015
Kosugi-machi, TOYAMA	29	131.2		0.025	± 0.0081		0.013	± 0.0094
Fukui, FUKUI	35	162.7		0.05	± 0.26		0.53	± 0.2
Kofu, YAMANASHI	29	86		0.0067	± 0.0067		0.024	± 0.013
Gifu, GIFU	35	200		0	± 0.011		0.014	± 0.013
Shizuoka, SHIZUOKA	29	205.5		0.017	± 0.0078		0.1	± 0.017
Nagoya, AICHI	35	172.8		0.01	± 0.0076		0.029	± 0.014
Tsu, MIE	29	232.5		0.017	± 0.012		0.014	± 0.014
Otsu, SHIGA	35	95.4		0.029	± 0.013		0.021	± 0.013
Kyoto, KYOTO	29	67		0.023	± 0.015		0.016	± 0.0085
Kobe, HYOGO	30	44.3		0.011	± 0.012		0.014	± 0.013

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
				±			±	
Nara, NARA	35	84.3	0.029	±	0.0087	0.033	±	0.015
Wakayama, WAKAYAMA	29	72.5	0.015	±	0.015	0.0012	±	0.0082
Tottori, TOTTORI	35	102	0.063	±	0.0092	0.048	±	0.015
Matsue, SHIMANE	29	64.7	0.03	±	0.0057	0.033	±	0.0098
Hirosima, HIROSHIMA	29	111.2	0	±	0.019	0	±	0.016
Ishii-machi, TOKUSHIMA	31	123	0.04	±	0.0099	0.1	±	0.018
Takamatsu, KAGAWA	29	37	0.021	±	0.016	0	±	0.013
Matsuyama, EHIME	29	77	0.006	±	0.0069	0.012	±	0.013
Dazaifu, FUKUOKA	35	131.8	0	±	0.011	0.022	±	0.013
Saga, SAGA	35	113.1	0.036	±	0.0076	0.061	±	0.012
Nagasaki, NAGASAKI	29	105	0.018	±	0.0082	0.005	±	0.01
Uto, KUMAMOTO	29	50.2	0.035	±	0.012	0.003	±	0.012
Oita, OITA	29	139.6	0.017	±	0.012	0	±	0.012
Miyazaki, MIYAZAKI	35	263.8	0.018	±	0.0089	0.022	±	0.013
Yonagusuku-machi, OKINAWA	27	179.7	0.024	±	0.015	0.018	±	0.015
May, 1999								
Sapporo, HOKKAIDO	32	91	0.013	±	0.011	0.028	±	0.014
Aomori, AOMORI	34	148.2	0.033	±	0.013	0.035	±	0.01
Morioka, IWATE	26	88.1	0.019	±	0.01	0.011	±	0.014
Onagawa-machi, MIYAGI	32	99	0.024	±	0.017	0.002	±	0.013
Yamagata, YAMAGATA	31	42.9	0.016	±	0.01	0.027	±	0.014
Okuma-machi, FUKUSHIMA	32	103.5	0.003	±	0.011	0.033	±	0.014
Mito, IBARAKI	26	32.5	0.0087	±	0.0062	0.017	±	0.013
Kawachi-machi, TOCHIGI	26	44.1	0.0092	±	0.0079	0.002	±	0.012
Maebashi, GUNMA	32	63.5	0.027	±	0.0082	0.095	±	0.017
Urawa, SAITAMA	26	29.8	0.043	±	0.019	0.02	±	0.015
Shinjuku, TOKYO	26	111.8	0	±	0.019	0.019	±	0.013

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km <sup>2</sup> )			137Cs (MBq/km <sup>2</sup> )		
			0.07	±	0.016	0.044	±	0.014
Yokohama, KANAGAWA	31	159.5	0.019	±	0.0076	0.031	±	0.01
Kosugi-machi, TOYAMA	32	122.4	0.044	±	0.067	0.2	±	0.13
Fukui, FUKUI	26	101.5	0	±	0.0066	0.012	±	0.013
Kofu, YAMANASHI	32	101	0.006	±	0.011	0.004	±	0.013
Gifu, Gifu	26	183	0.01	±	0.007	0.028	±	0.013
Shizuoka, SHIZUOKA	32	365.5	0.0052	±	0.0073	0.02	±	0.013
Nagoya, AICHI	26	96.9	0	±	0.011	0	±	0.013
Tsu, MIE	32	145.5	0	±	0.012	0.028	±	0.014
Otsu, SHIGA	26	165.8	0.063	±	0.018	0.0012	±	0.0073
Kyoto, KYOTO	32	165	0.018	±	0.012	0.03	±	0.013
Kobe, HYOGO	31	105.6	0.006	±	0.0076	0	±	0.013
Nara, NARA	26	174.2	0.036	±	0.0098	0.053	±	0.019
Wakayama, WAKAYAMA	32	161	0.11	±	0.011	0.041	±	0.014
Tottori, TOTTORI	26	88	0.022	±	0.0065	0.024	±	0.0094
Matsue, SHIMANE	32	137.2	0	±	0.023	0	±	0.016
Hiroshima, HIROSHIMA	31	168	0.065	±	0.018	0.089	±	0.019
Ishii-machi, TOKUSHIMA	32	85.3	0.033	±	0.013	0.022	±	0.014
Takamatsu, KAGAWA	32	65	0	±	0.0065	0.003	±	0.012
Matsuyama, EHIME	32	128	0.015	±	0.013	0	±	0.012
Dazaifu, FUKUOKA	26	79.2	0.042	±	0.016	0.042	±	0.018
Saga, SAGA	26	153.5	0.0023	±	0.0066	0	±	0.0091
Nagasaki, NAGASAKI	32	162.5	0.0099	±	0.0069	0	±	0.012
Uto, KUMAMOTO	32	195.7	0.021	±	0.014	0.022	±	0.014
Oita, OITA	32	97.1	0.0039	±	0.0062	0.016	±	0.013
Miyazaki, MIYAZAKI	26	224.2	0.011	±	0.012	0.01	±	0.014
Yonagusuku-machi, OKINAWA	33	63.4						

Jun, 1999

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
				(MBq/km2)		(MBq/km2)		
Sapporo, HOKKAIDO	30	43.5	0.021	± 0.012		0.001	± 0.013	
Aomori, AOMORI	30	49.5	0.014	± 0.012		0.024	± 0.011	
Morioka, IWATE	30	116.6	0.014	± 0.0094		0.008	± 0.014	
Onagawa-machi, MIYAGI	30	246	0.006	± 0.016		0.012	± 0.014	
Yamagata, YAMAGATA	30	175.3	0	± 0.0057		0.026	± 0.0093	
Okuma-machi, FUKUSHIMA	30	164	0.029	± 0.014		0	± 0.012	
Mito, IBARAKI	30	208.5	0.003	± 0.035		0.02	± 0.014	
Kawachi-machi, TOCHIGI	30	240.7	0.0035	± 0.0097		0.016	± 0.012	
Maebashi, GUNMA	30	180	0.0098	± 0.0078		0.024	± 0.013	
Urawa, SAITAMA	30	124.4	0.031	± 0.027		0.002	± 0.01	
Shinjuku, TOKYO	30	176	0	± 0.022		0.014	± 0.013	
Yokohama, KANAGAWA	30	183.1	0.039	± 0.014		0.03	± 0.014	
Kosugi-machi, TOYAMA	30	231.2	0.01	± 0.0069		0.011	± 0.0091	
Fukui, FUKUI	30	101.5	0	± 0.055		0	± 0.059	
Kofu, YAMANASHI	30	183.5	0.022	± 0.0071		0	± 0.013	
Gifu, GIFU	30	287	0.016	± 0.013		0.01	± 0.014	
Shizuoka, SHIZUOKA	30	355.5	0.019	± 0.0078		0.053	± 0.015	
Nagoya, AICHI	30	272.4	0.031	± 0.0071		0.011	± 0.012	
Tsu, MIE	30	269	0	± 0.011		0	± 0.013	
Otsu, SHIGA	30	424.8	0.002	± 0.012		0.008	± 0.012	
Kyoto, KYOTO	31	450	0	± 0.015		0.01	± 0.0086	
Kobe, HYOGO	30	323.8	0.015	± 0.014		0	± 0.013	
Nara, NARA	30	514.3	0	± 0.011		0.003	± 0.013	
Wakayama, WAKAYAMA	30	370	0.026	± 0.0093		0.025	± 0.013	
Tottori, TOTTORI	30	251.5	0.11	± 0.012		0.028	± 0.015	
Matsue, SHIMANE	30	347.5	0.07	± 0.0077		0.022	± 0.0096	

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
			(MBq/km2)		(MBq/km2)			
Hiroshima, HIROSHIMA	32	415.8	0.1	± 0.015		0.013	± 0.015	
Ishii-machi, TOKUSHIMA	30	223	0.022	± 0.015		0	± 0.021	
Takamatsu, KAGAWA	30	249	0.0094	± 0.0092		0.027	± 0.013	
Matsuyama, EHIME	30	462.5	0.0039	± 0.0073		0.051	± 0.022	
Dazaifu, FUKUOKA	30	536.3	0.009	± 0.013		0.023	± 0.014	
Saga, SAGA	30	516.7	0.0091	± 0.0081		0.0026	± 0.0088	
Nagasaki, NAGASAKI	30	429.5	0.009	± 0.0073		0	± 0.0089	
Uto, KUMAMOTO	30	344.4	0	± 0.011		0	± 0.012	
Oita, OITA	30	332.7	0.012	± 0.0087		0.013	± 0.013	
Miyazaki, MIYAZAKI	30	445.4	0.0071	± 0.0067		0.005	± 0.013	
Yonagusuku-machi, OKINAWA	31	74.2	0.012	± 0.013		0	± 0.014	
Jul, 1999								
Sapporo, HOKKAIDO	32	147	0.012	± 0.008		0.022	± 0.013	
Aomori, AOMORI	32	121.6	0.041	± 0.014		0.023	± 0.0092	
Morioka, IWATE	32	98.7	0.017	± 0.01		0.003	± 0.013	
Onagawa-machi, MIYAGI	32	235.5	0.0062	± 0.0064		0	± 0.012	
Yamagata, YAMAGATA	32	202.3	0.022	± 0.0073		0.0097	± 0.008	
Okuma-machi, FUKUSHIMA	32	440.5	0.0057	± 0.0059		0.016	± 0.013	
Mito, IBARAKI	32	151	0	± 0.0059		0	± 0.012	
Kawachi-machi, TOCHIGI	32	261.9	0.013	± 0.0063		0	± 0.013	
Maebashi, GUNMA	32	225.5	0.023	± 0.0089		0	± 0.012	
Urawa, SAITAMA	32	280.1	0.067	± 0.035		0.005	± 0.012	
Shinjuku, TOKYO	32	398.6	0	± 0.02		0	± 0.012	
Yokohama, KANAGAWA	33	266.7	0.0046	± 0.0072		0.018	± 0.013	
Kosugi-machi, TOYAMA	29	88.5	0.018	± 0.0083		0	± 0.008	
Fukui, FUKUI	32	113.1	0.017	± 0.058		0.11	± 0.073	
Kofu, YAMANASHI	32	121	0.0092	± 0.0079		0.0053	± 0.0085	

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
				(MBq/km <sup>2</sup> )		(MBq/km <sup>2</sup> )		(MBq/km <sup>2</sup> )
Gifu, Gifu	26	203.5	0	± 0.012		0.0006	± 0.009	
Shizuoka, Shizuoka	32	211.5	0.024	± 0.0076		0.01	± 0.0079	
Nagoya, Aichi	32	121.5	0.013	± 0.0073		0.014	± 0.0086	
Tsu, Mie	31	113.5	0.0022	± 0.0071		0.011	± 0.0075	
Otsu, Shiga	32	79.6	0.002	± 0.012		0.008	± 0.012	
Kyoto, Kyoto	27	81.5	0	± 0.014		0.0098	± 0.0082	
Kobe, Hyogo	30	102	0.004	± 0.011		0.031	± 0.013	
Nara, Nara	32	100	0.0065	± 0.009		0	± 0.013	
Wakayama, Wakayama	32	149.5	0.0053	± 0.0068		0.035	± 0.014	
Tottori, Tottori	32	84.4	0.08	± 0.01		0.021	± 0.012	
Matsue, Shimane	32	99.7	0.027	± 0.0068		0	± 0.0083	
Hiroshima, Hiroshima	28	139.4	0.064	± 0.056		0.002	± 0.012	
Ishii-machi, Tokushima	32	135.2	0.032	± 0.022		0.068	± 0.024	
Takamatsu, Kagawa	32	84	0.0092	± 0.0081		0.008	± 0.012	
Matsuyama, Ehime	32	210	0.035	± 0.008		0.029	± 0.011	
Dazaifu, Fukuoka	32	286.9	0.015	± 0.013		0	± 0.012	
Saga, Saga	32	328.1	0.018	± 0.0081		0.0058	± 0.0082	
Uto, Kumamoto	32	217.6	0	± 0.0051		0.021	± 0.013	
Oita, Oita	32	284.9	0.016	± 0.0075		0	± 0.0089	
Miyazaki, Miyazaki	32	442.8	0.017	± 0.0091		0.034	± 0.014	
Yonagusuku-machi, Okinawa	33	254	0.025	± 0.0096		0	± 0.0096	
Aug. 1999								
Sapporo, Hokkaido	30	43.5	0	± 0.007		0.01	± 0.012	
Aomori, Aomori	30	107.8	0	± 0.012		0.017	± 0.018	
Morioka, Iwate	30	106.1	0.0095	± 0.0078		0	± 0.0085	
Onagawa-machi, Miyagi	30	171.5	0.014	± 0.0088		0	± 0.0076	
Yamagata, Yamagata	30	147.7	0.015	± 0.0069		0.0082	± 0.0077	

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km <sup>2</sup> )			137Cs (MBq/km <sup>2</sup> )	
Okuma-machi, FUKUSHIMA	30	152	0	±	0.011	0.008	± 0.012
Mito, IBARAKI	30	107.5	0.022	±	0.0068	0.016	± 0.013
Kawachi-machi, TOCHIGI	30	158.6	0.013	±	0.0065	0	± 0.012
Maebashi, GUNMA	30	557.5	0.013	±	0.0082	0.016	± 0.013
Urawa, SAITAMA	30	228.4	0.02	±	0.02	0.023	± 0.014
Shinjuku, TOKYO	30	300.7	0.007	±	0.017	0	± 0.012
Yokohama, KANAGAWA	29	152.2	0.021	±	0.0073	0.009	± 0.013
Kosugi-machi, TOYAMA	33	189.9	0.0093	±	0.008	0.0042	± 0.0086
Fukui, FUKUI	30	198.7	0	±	0.032	0.099	± 0.07
Kofu, YAMANASHI	30	148.5	0.0057	±	0.0078	0.011	± 0.0094
Kagamigahara, GIFU	31	213.5	0.016	±	0.0076	0.0041	± 0.0091
Shizuoka, SHIZUOKA	30	168.5	0	±	0.0065	0.12	± 0.014
Nagoya, AICHI	30	230.6	0	±	0.0066	0.0061	± 0.0092
Yokkaichi, MIE	31	110.5	0.013	±	0.0085	0.0093	± 0.0073
Otsu, SHIGA	30	158.4	0.01	±	0.009	0.012	± 0.0087
Kyoto, KYOTO	32	94.5	0.012	±	0.0076	0.01	± 0.013
Kobe, HYOGO	32	74.4	0.0044	±	0.0064	0	± 0.012
Nara, NARA	30	309.8	0	±	0.0082	0	± 0.0082
Wakayama, WAKAYAMA	30	72.5	0.013	±	0.0087	0.017	± 0.013
Tottori, TOTTORI	30	70.1	0.095	±	0.011	0.008	± 0.011
Matsue, SHIMANE	30	64.4	0.012	±	0.007	0	± 0.0086
Hiroshima, HIROSHIMA	32	142.4	0.045	±	0.046	0.007	± 0.012
Ishii-machi, TOKUSHIMA	28	159.2	0.048	±	0.027	0.12	± 0.025
Takamatsu, KAGAWA	30	42.5	0.001	±	0.0099	0.01	± 0.0082
Matsuyama, EHIME	30	145	0.0027	±	0.0065	0	± 0.0089
Dazaifu, FUKUOKA	30	284.8	0.022	±	0.017	0	± 0.0073

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
				(MBq/km <sup>2</sup> )		(MBq/km <sup>2</sup> )		
Saga, SAGA	30	192.7		0.011	± 0.0074		0	± 0.0074
Nagasaki, NAGASAKI	30	349.5		0	± 0.0057		0	± 0.0079
Uto, KUMAMOTO	30	158.6		0.0004	± 0.0067		0	± 0.0073
Oita, OITA	30	253.4		0.0095	± 0.0085		0	± 0.0099
Miyazaki, MIYAZAKI	30	691		0.015	± 0.009		0.031	± 0.014
Yonagusuku-machi, OKINAWA	28	99.7		0	± 0.0086		0	± 0.0096
Sep, 1999								
Sapporo, HOKKAIDO	30	111.5		0.009	± 0.018		0	± 0.0074
Aomori, AOMORI	30	179.1		0.03	± 0.011		0.003	± 0.012
Morioka, IWATE	30	107.9		0.0013	± 0.007		0	± 0.0092
Onagawa-machi, MIYAGI	30	358		0.018	± 0.014		0	± 0.013
Yamagata, YAMAGATA	30	266.2		0.011	± 0.014		0.008	± 0.013
Okuma-machi, FUKUSHIMA	30	252.5		0.014	± 0.0062		0.009	± 0.013
Mito, IBARAKI	30	113		0.024	± 0.0076		0.004	± 0.013
Kawachi-machi, TOCHIGI	30	203.1		0.002	± 0.01		0.013	± 0.013
Maebashi, GUNMA	33	155		0.011	± 0.007		0.023	± 0.015
Urawa, SAITAMA	30	118.8		0.011	± 0.03		0.008	± 0.021
Shinjuku, TOKYO	30	159.6		0.0065	± 0.009		0.022	± 0.0095
Yokohama, KANAGAWA	30	102		0.014	± 0.0082		0.043	± 0.015
Kosugi-machi, TOYAMA	30	326.9		0.0058	± 0.007		0.003	± 0.0084
Fukui, FUKUI	30	139.9		0	± 0.038		0	± 0.067
Kofu, YAMANASHI	30	155		0	± 0.0068		0.0006	± 0.0082
Kagamigahara, GIFU	30	484		0.018	± 0.0079		0.0018	± 0.0095
Shizuoka, SHIZUOKA	30	257		0.0081	± 0.0069		0.015	± 0.0084
Nagoya, AICHI	30	301.7		0.023	± 0.0076		0.013	± 0.012
Yokkaichi, MIE	30	332.5		0.0016	± 0.0057		0	± 0.0086
Otsu, SHIGA	30	180.6		0.0049	± 0.0061		0	± 0.0083

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
				(MBq/km <sup>2</sup> )		(MBq/km <sup>2</sup> )		
Kyoto, KYOTO	28	171		0.013	± 0.0074		0.02	± 0.013
Kobe, HYOGO	30	199.1		0.0012	± 0.0071		0.0078	± 0.0082
Nara, NARA	30	381.6		0	± 0.029		0	± 0.03
Wakayama, WAKAYAMA	30	221.5		0.017	± 0.0098		0.026	± 0.013
Tottori, TOTTORI	30	215.6		0.061	± 0.01		0.004	± 0.01
Matsue, SHIMANE	30	168.4		0.066	± 0.0088		0.018	± 0.0098
Hirosima, HIROSHIMA	30	370.7		0	± 0.041		0	± 0.012
Ishii-machi, TOKUSHIMA	32	206.8		0.054	± 0.018		0.076	± 0.018
Takamatsu, KAGAWA	30	88.5		0	± 0.011		0.0023	± 0.0077
Matsuyama, EHIME	30	173		0.013	± 0.0073		0	± 0.0084
Dazaifu, FUKUOKA	30	207.8		0	± 0.018		0	± 0.0075
Saga, SAGA	30	335.2		0.01	± 0.0064		0.008	± 0.012
Nagasaki, NAGASAKI	30	490		0.011	± 0.013		0	± 0.0073
Uto, KUMAMOTO	30	236.8		0.0084	± 0.009		0	± 0.012
Oita, OITA	30	444.3		0.005	± 0.0077		0.0089	± 0.0088
Miyazaki, MIYAZAKI	30	807.8		0.0014	± 0.0087		0.022	± 0.013
Yonagusuku-machi, OKINAWA	30	151.5		0.036	± 0.0089		0.011	± 0.015

(1)-2 Strontium-90 and Cesium-137 in Rain and Dry Fallout(for WHO program)  
 (from Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

Table (1)-2 Strontium-90 and Cesium-137 in Rain and Dry Fallout(for WHO program)

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km <sup>2</sup> )			137Cs (MBq/km <sup>2</sup> )		
				±			±	
<b>Apr, 1999</b>								
Akita, AKITA	29	123. 3	0.037	±	0.014	0.069	±	0.02
Chiba, CHIBA	29	196. 7	0.03	±	0.0069	0	±	0.013
Ichihara, CHIBA	35	235. 3	0.022	±	0.012	0.022	±	0.009
Niigata, NIIGATA	35	78. 5	0.028	±	0.0072	0.063	±	0.011
Kanazawa, ISHIKAWA	32	100. 5	0.012	±	0.011	0.041	±	0.014
Nagano, NAGANO	29	40. 1	0.018	±	0.0096	0.0048	±	0.0083
Osaka, OSAKA	36	80. 6	0.035	±	0.019	0.031	±	0.015
Okayama, OKAYAMA	35	114. 8	0.022	±	0.012	0	±	0.032
Yamaguchi, YAMAGUCHI	31	122	0.025	±	0.013	0.024	±	0.014
Kochi, KOCHI	28	275. 9	0.054	±	0.02	0.083	±	0.019
Kagoshima, KAGOSHIMA	28	88	0.032	±	0.009	0.016	±	0.009
<b>May, 1999</b>								
Akita, AKITA	32	122. 3	0.006	±	0.011	0.026	±	0.013
Chiba, CHIBA	32	73. 1	0.023	±	0.0067	0.005	±	0.013
Ichihara, CHIBA	26	36. 1	0.014	±	0.014	0.023	±	0.0091
Niigata, NIIGATA	26	31. 8	0.0041	±	0.0075	0.053	±	0.01
Kanazawa, ISHIKAWA	31	124	0.018	±	0.013	0.016	±	0.013
Nagano, NAGANO	32	59. 9	0.019	±	0.0094	0.018	±	0.0094
Osaka, OSAKA	27	77. 8	0.048	±	0.016	0.031	±	0.013
Okayama, OKAYAMA	26	79. 3	0.002	±	0.011	0	±	0.013
Yamaguchi, YAMAGUCHI	30	199	0.016	±	0.016	0	±	0.013
Kochi, KOCHI	33	294. 1	0.018	±	0.016	0.057	±	0.016

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
			(MBq/km <sup>2</sup> )			(MBq/km <sup>2</sup> )		
Kagoshima, KAGOSHIMA	33	269	0.031	±	0.0094	0.013	±	0.0088
Jun, 1999								
Akita, AKITA	30	86	0.014	±	0.013	0	±	0.015
Chiba, CHIBA	30	164.3	0.014	±	0.0064	0.035	±	0.015
Ichihara, CHIBA	30	134.2	0.011	±	0.011	0	±	0.0076
Niigata, NIIGATA	30	172.6	0	±	0.0063	0.018	±	0.0081
Kanazawa, ISHIKAWA	30	227.5	0.015	±	0.013	0.011	±	0.013
Nagano, NAGANO	30	134.3	0	±	0.0078	0	±	0.0077
Osaka, OSAKA	29	410.9	0.082	±	0.018	0.036	±	0.016
Okayama, OKAYAMA	31	281.1	0.018	±	0.013	0	±	0.027
Yamaguchi, YAMAGUCHI	30	441	0.009	±	0.01	0	±	0.012
Kochi, KOCHI	30	576	0.033	±	0.014	0.006	±	0.015
Kagoshima, KAGOSHIMA	30	564.5	0.042	±	0.011	0.0062	±	0.0086
Jul, 1999								
Akita, AKITA	32	183.1	0.016	±	0.0069	0	±	0.013
Chiba, CHIBA	32	274.8	0.032	±	0.0075	0.045	±	0.015
Ichihara, CHIBA	32	206.8	0.029	±	0.014	0	±	0.0077
Niigata, NIIGATA	32	150.5	0.0028	±	0.0067	0.0035	±	0.0079
Kanazawa, ISHIKAWA	30	130.5	0.02	±	0.0077	0	±	0.013
Osaka, OSAKA	32	105.1	0.042	±	0.0085	0.018	±	0.014
Okayama, OKAYAMA	31	143	0.0068	±	0.0079	0.025	±	0.048
Yamaguchi, YAMAGUCHI	32	225.5	0.019	±	0.0077	0.004	±	0.014
Kochi, KOCHI	32	714.6	0.029	±	0.014	0.048	±	0.015
Kagoshima, KAGOSHIMA	30	220.5	0.014	±	0.0087	0.0012	±	0.0081
Aug, 1999								
Akita, AKITA	30	194.4	0.041	±	0.0098	0	±	0.013
Chiba, CHIBA	30	111.9	0.01	±	0.0062	0.015	±	0.014
Ichihara, CHIBA	30	123	0.012	±	0.012	0.012	±	0.0085

Location	Duration (Days)	Precipitation (mm)	90Sr			137Cs		
				(MBq/km <sup>2</sup> )		(MBq/km <sup>2</sup> )		
Niigata, NIIGATA	30	194.1	0.02	±	0.0082	0.0046	±	0.0079
Kanazawa, ISHIKAWA	32	120.5	0.0087	±	0.0068	0	±	0.012
Nagano, NAGANO	29	143.5	0.021	±	0.0094	0	±	0.0079
Osaka, OSAKA	30	149.9	0.063	±	0.011	0	±	0.014
Okayama, OKAYAMA	30	26	0	±	0.014	0	±	0.0086
Yamaguchi, YAMAGUCHI	30	239.5	0.019	±	0.0082	0.0023	±	0.0077
Kochi, KOCHI	30	491.5	0.036	±	0.0094	0.021	±	0.013
Kagoshima, KAGOSHIMA	32	414	0.013	±	0.0075	0.013	±	0.01
Sep. 1999								
Akita, AKITA	30	229.2	0.05	±	0.0083	0	±	0.012
Chiba, CHIBA	30	47.1	0.0031	±	0.0068	0.017	±	0.014
Ichihara, CHIBA	30	75.9	0.021	±	0.013	0	±	0.0073
Niigata, NIIGATA	30	208.1	0.0036	±	0.0076	0.0012	±	0.0076
Kanazawa, ISHIKAWA	30	267	0.015	±	0.0083	0	±	0.013
Nagano, NAGANO	30	188	0	±	0.02	0.01	±	0.012
Osaka, OSAKA	29	161.8	0.056	±	0.013	0	±	0.0079
Okayama, OKAYAMA	30	100.5	0.011	±	0.011	0.014	±	0.036
Yamaguchi, YAMAGUCHI	30	262	0.031	±	0.012	0	±	0.0075
Kochi, KOCHI	30	337.4	0.052	±	0.017	0.0035	±	0.0078
Kagoshima, KAGOSHIMA	31	303.5	0.025	±	0.014	0	±	0.012

## (2) Strontium-90 and Cesium-137 in Airborn Dust

(form Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

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

Location	Sampling period	Absorption (m <sup>2</sup> )	90Sr			137Cs		
				(mBq/m <sup>3</sup> )		(mBq/m <sup>3</sup> )		
<b>April~June, 1999</b>								
Morioka, IWATE	04 ~ 06	10414.0	0.00063	±	0.00031	0	±	0.00044
Akita, AKITA	04 ~ 06	10800.0	0.00028	±	0.00026	0.00002	±	0.00044
Yamagata, YAMAGATA	04 ~ 06	12960.0	0.00006	±	0.00021	0.00029	±	0.00039
Okuma-machi, FUKUSHIMA	04 ~ 06	11752.0	0	±	0.00024	0.00033	±	0.0004
Kawachi-machi, TOCHIGI	04 ~ 06	14452.0	0.00005	±	0.00021	0.00027	±	0.00033
Ichihara, CHIBA	04 ~ 06	10195.0	0.0005	±	0.00037	0	±	0.00034
Yokohama, KANAGAWA	04 ~ 06	10006.0	0.0001	±	0.00061	0	±	0.00044
Niigata, NIIGATA	04 ~ 06	10084.0	0.00045	±	0.00033	0.00043	±	0.00038
Kosugi-machi, TOYAMA	04 ~ 06	15478.0	0.00015	±	0.00026	0.00065	±	0.00023
Fukui, FUKUI	04 ~ 06	11682.0	0.0018	±	0.0006	0.00042	±	0.00041
Kofu, YAMANASHI	04 ~ 06	10487.0	0.00038	±	0.0003	0.00023	±	0.00039
Nagano, NAGANO	04 ~ 06	10800.0	0.00016	±	0.00055	0	±	0.0004
Gifu, GIFU	04 ~ 06	11429.0	0	±	0.00045	0	±	0.00038
Hamaoka-machi, SHIZUOKA	04 ~ 06	10330.0	0	±	0.00047	0.00026	±	0.00032
Nagoya, AICHI	04 ~ 06	9999.0	0.00095	±	0.00036	0.00035	±	0.00048
Tsu, MIE	04 ~ 06	13448.0	0	±	0.00044	0	±	0.00033
Otsu, SHIGA	04 ~ 06	10362.0	0	±	0.00054	0	±	0.00041
Kyoto, KYOTO	04 ~ 06	10382.0	0.00042	±	0.00047	0	±	0.00041
Osaka, OSAKA	04 ~ 06	16734.0	0.00006	±	0.00034	0.00009	±	0.00028
Kobe, HYOGO	04 ~ 06	10447.0	0	±	0.00059	0.00031	±	0.00046
Nara, NARA	04 ~ 06	10843.0	0.00069	±	0.00039	0.00006	±	0.00041
Wakayama, WAKAYAMA	04 ~ 06	7282.0	0.00053	±	0.00051	0.00087	±	0.00046

Location	Sampling period	Absorption (m <sup>2</sup> )	90Sr			137Cs		
				(mBq/m <sup>3</sup> )		(mBq/m <sup>3</sup> )		
Tottori, TOTTORI	04 ~ 06	15274.0	0.00051	±	0.00021	0.00018	±	0.00033
Okayama, OKAYAMA	04 ~ 06	12593.0	0.00019	±	0.00023	0.0005	±	0.00041
Hirosima, HIROSHIMA	04 ~ 06	10037.0	0	±	0.00065	0.00037	±	0.00048
Yamaguchi, YAMAGUCHI	04 ~ 06	21600.0	0.00004	±	0.00026	0.00056	±	0.00024
Tokushima, TOKUSHIMA	04 ~ 06	10080.0	0	±	0.00031	0.00031	±	0.00029
Takamatsu, KAGAWA	04 ~ 06	13833.0	0	±	0.00045	0	±	0.00033
Saga, SAGA	04 ~ 06	9537.0	0.00009	±	0.00037	0.00059	±	0.00036
Nagasaki, NAGASAKI	04 ~ 06	10368.0	0.00078	±	0.00038	0.00018	±	0.00031
Uto, KUMAMOTO	04 ~ 06	11452.0	0.00095	±	0.0006	0.00004	±	0.00027
Oita, OITA	04 ~ 06	8737.0	0.00023	±	0.00034	0	±	0.00053
Miyazaki, MIYAZAKI	04 ~ 06	13193.0	0.00018	±	0.00025	0.00018	±	0.0003
April~July, 1999								
Mito, IBARAKI	04 ~ 07	9763.0	0	±	0.00029	0	±	0.00035
June~June, 1999								
Maebashi, GUNMA	06 ~ 06	10395.0	0.0012	±	0.00042	0.00002	±	0.00029
July~September, 1998								
Maebashi, GUNMA	07 ~ 09	9973.0	0.00008	±	0.0004	0	±	0.00028
July~September, 1999								
Morioka, IWATE	07 ~ 09	12700.0	0.00061	±	0.00028	0.00042	±	0.00025
Akita, AKITA	07 ~ 09	10800.0	0.00023	±	0.00031	0	±	0.00033
Yamagata, YAMAGATA	07 ~ 09	12960.0	0.00098	±	0.0003	0	±	0.00027
Okuma-machi, FUKUSHIMA	07 ~ 09	10319.0	0	±	0.00035	0	±	0.00027
Kawachi-machi, TOCHIGI	07 ~ 09	14686.0	0	±	0.00024	0	±	0.0002
Ichihara, CHIBA	07 ~ 09	10266.0	0.0012	±	0.00041	0	±	0.00036
Yokohama, KANAGAWA	07 ~ 09	10085.0	0.00065	±	0.00034	0.00012	±	0.00038
Niigata, NIIGATA	07 ~ 09	9776.0	0.00052	±	0.00059	0.00027	±	0.00045
Kosugi-machi, TOYAMA	07 ~ 09	16394.0	0.00027	±	0.00027	0.00022	±	0.00019
Fukui, FUKUI	07 ~ 09	12998.0	0.00013	±	0.00027	0.00031	±	0.0003

Location	Sampling period	Absorption (m <sup>2</sup> )	90Sr			137Cs	
				(mBq/m <sup>3</sup> )		(mBq/m <sup>3</sup> )	
Kofu, YAMANASHI	07 ~ 09	13725.0	0	± 0.00021	0	± 0.0002	
Nagano, NAGANO	07 ~ 09	11925.0	0	± 0.00049	0	± 0.00037	
Hamaoka-machi, SHIZUOKA	07 ~ 09	10090.0	0.00067	± 0.00057	0	± 0.00043	
Nagoya, AICHI	07 ~ 09	10017.0	0.00033	± 0.00034	0.00012	± 0.00037	
Yokkaichi, MIE	07 ~ 09	13174.0	0.00064	± 0.00031	0	± 0.00028	
Otsu, SHIGA	07 ~ 09	10329.0	0.00025	± 0.00036	0.00019	± 0.00039	
Kyoto, KYOTO	07 ~ 09	10313.0	0.0011	± 0.00053	0	± 0.00042	
Osaka, OSAKA	07 ~ 09	17100.0	0.00027	± 0.00021	0.00013	± 0.00021	
Kobe, HYOGO	07 ~ 09	10416.0	0.0025	± 0.00045	0.00032	± 0.00036	
Nara, NARA	07 ~ 09	11538.0	0.00002	± 0.00027	0	± 0.00021	
Wakayama, WAKAYAMA	07 ~ 09	7282.0	0.00016	± 0.00051	0.00027	± 0.00042	
Tottori, TOTTORI	07 ~ 09	15321.0	0.00006	± 0.00022	0.00035	± 0.00022	
Hirosshima, HIROSHIMA	07 ~ 09	10128.0	0.0011	± 0.00037	0.00003	± 0.00037	
Yamaguchi, YAMAGUCHI	07 ~ 09	21600.0	0.00063	± 0.00019	0.00001	± 0.00017	
Tokushima, TOKUSHIMA	07 ~ 09	10080.0	0.00028	± 0.00036	0.00089	± 0.00034	
Takamatsu, KAGAWA	07 ~ 09	14516.0	0.00028	± 0.00024	0	± 0.00023	
Saga, SAGA	07 ~ 09	9914.0	0.00098	± 0.00044	0	± 0.0003	
Nagasaki, NAGASAKI	07 ~ 09	10368.0	0.00026	± 0.00035	0.00022	± 0.0003	
Uto, KUMAMOTO	07 ~ 09	11705.0	0.00051	± 0.00062	0	± 0.00023	
Oita, OITA	07 ~ 09	10447.0	0.00042	± 0.00038	0	± 0.00028	
Miyazaki, MIYAZAKI	07 ~ 09	13413.0	0.00087	± 0.00043	0.00011	± 0.00034	
July~October, 1999							
Mito, IBARAKI	07 ~ 10	10165.0	0	± 0.00037	0.00044	± 0.0003	
August~September, 1999							
Kagamigahara, Gifu	08 ~ 09	11861.0	0.00048	± 0.00028	0.00025	± 0.00025	

(3) Strontium-90 and Cesium-137 in Service Water  
 (from Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

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

Location	pH (pH)	90Sr (mBq/l)		137Cs (mBq/l)					
<b>(Source Water)</b>									
<b>May, 1999</b>									
Nagano, NAGANO	7.03	0.93	± 0.13	0.067	± 0.064				
<b>Jun, 1999</b>									
Sapporo, HOKKAIDO	6.9	0.98	± 0.11	0.18	± 0.049				
Urawa, SAITAMA	7.3	0.4	± 0.25	0.032	± 0.038				
Kisarazu, CHIBA	7.4	2	± 0.11	0.13	± 0.066				
Katsushika, TOKYO	7.3	1.3	± 0.14	0.12	± 0.084				
Tsukui-machi, KANAGAWA	8.1	0.33	± 0.086	0.029	± 0.04				
Inuyama, AICHI	7	1.7	± 0.14	0.096	± 0.048				
Moriguchi, OSAKA	7.3	2.4	± 0.17	0.043	± 0.046				
Fukuoka, FUKUOKA	7	1.7	± 0.09	0	± 0.057				
<b>Aug, 1999</b>									
Kyoto, KYOTO	8.16	2.4	± 0.15	0.087	± 0.062				
<b>(Tap Water)</b>									
<b>May, 1999</b>									
Yamagata, YAMAGATA	7.3	1.6	± 0.14	0.17	± 0.049				
Nagano, NAGANO	7.37	0.53	± 0.09	0.025	± 0.062				
Wakayama, WAKAYAMA	6.4	1.5	± 0.1	0.02	± 0.043				
<b>Jun, 1999</b>									
Aomori, AOMORI	8	1.5	± 0.23	0.2	± 0.089				
Morioka, IWATE	7	1	± 0.13	0.054	± 0.046				

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)	
Fukushima, FUKUSHIMA	7.67	1.7	±	0.14	0.003	± 0.035
Mito, IBARAKI	7.8	1.5	±	0.09	0.08	± 0.062
Kawachi-machi, TOCHIGI	7.44	0.33	±	0.075	0.083	± 0.043
Maebashi, GUNMA	6.9	1.2	±	0.09	0.12	± 0.051
Urawa, SAITAMA	6.8	1.3	±	0.12	0.1	± 0.048
Ichihara, CHIBA	7.7	2	±	0.12	0.093	± 0.064
Katsushika, TOKYO	6.9	1.3	±	0.16	0.17	± 0.082
Yokohama, KANAGAWA	7.2	0.43	±	0.089	0	± 0.033
Niigata, NIIGATA	7.35	2.3	±	0.11	0.089	± 0.068
Kosugi-machi, TOYAMA	7.2	1.2	±	0.08	0.041	± 0.057
Kanazawa, ISHIKAWA	7.99	2.2	±	0.16	0	± 0.038
Fukui, FUKUI	6.5	0.39	±	0.074	0.042	± 0.045
Kofu, YAMANASHI	7.7	0.9	±	0.12	0.035	± 0.038
Gifu, GIFU	7.14	1.1	±	0.15	0	± 0.035
Nagoya, AICHI	6.9	1.7	±	0.15	0.09	± 0.045
Tsu, MIE	7.4	1.6	±	0.13	0.069	± 0.042
Otsu, SHIGA	6.7	2.2	±	0.15	0	± 0.039
Osaka, OSAKA	7.4	2.3	±	0.16	0	± 0.042
Kobe, HYOGO	7.81	1.8	±	0.14	0.026	± 0.037
Nara, NARA	7.3	1.9	±	0.17	0.032	± 0.041
Tottori, TOTTORI	7.6	2.1	±	0.18	0.039	± 0.04
Okayama, OKAYAMA	6.6	2.1	±	0.16	0.028	± 0.041
Hiroshima, HIROSHIMA	6.62	1.2	±	0.15	0.026	± 0.038
Yamaguchi, YAMAGUCHI	7.3	1.9	±	0.15	0.041	± 0.041
Tokushima, TOKUSHIMA	7.19	1.6	±	0.1	0.12	± 0.066
Takamatsu, KAGAWA	7.7	2	±	0.22	0	± 0.045

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)		
			±	0.14		±	0.039
Matsuyama, EHIME	7.59	1.6	±	0.14	0.052	±	0.039
Kochi, KOCHI	6.97	1.2	±	0.13	0	±	0.039
Fukuoka, FUKUOKA	6.92	2.3	±	0.1	0.04	±	0.061
Nagasaki, NAGASAKI	7.22	1.5	±	0.1	0	±	0.066
Uto, KUMAMOTO	7.6	0.037	±	0.057	0.05	±	0.061
Oita, OITA	7.9	0.73	±	0.11	0.16	±	0.048
Miyazaki, MIYAZAKI	7.1	1.3	±	0.13	0.018	±	0.043
Kagoshima, KAGOSHIMA	7.04	0.56	±	0.057	0.069	±	0.067
Naha, OKINAWA	7.05	2.2	±	0.16	0.038	±	0.039
Jul, 1999							
Wakkanai, HOKKAIDO	6.9	0.97	±	0.12	0.018	±	0.037
Sendai, MIYAGI	0	1.3	±	0.13	0.013	±	0.046
Akita, AKITA	6.66	2.2	±	0.17	0.21	±	0.058
Aug, 1999							
Shizuoka, SHIZUOKA	7.78	0.47	±	0.055	0	±	0.038
Kyoto, KYOTO	7.95	2.4	±	0.2	0.14	±	0.064
Saga, SAGA	7.8	1	±	0.14	0	±	0.065

## (4) Strontium-90 and Cesium-137 in Freshwater

(from Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

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

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)		
<b>(Fresh Water)</b>							
May, 1999							
Kasumigaura-lake, IBARAKI	8. 2	2. 4	±	0. 13	0. 4	±	0. 077
Jul, 1999							
Barato-lake, HOKKAIDO	6. 9	1. 7	±	0. 15	0. 24	±	0. 051
Aug, 1999							
Akita, AKITA	7. 23	3. 1	±	0. 19	0. 31	±	0. 055
Inogaike, FUKUI	8. 09	3. 3	±	0. 19	2	±	0. 11
Sep, 1999							
Fukushima, FUKUSHIMA	7. 51	0. 19	±	0. 04	0. 022	±	0. 058

## (5) Strontium-90 and Cesium-137 in Soil

(from Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

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

Location	Sampling period	90Sr				137Cs			
		(Bq/kg)	(MBq/km <sup>2</sup> )		(Bq/kg)	(MBq/km <sup>2</sup> )			
<b>May~,</b>									
Tokai-mura, IBARAKI	0 ~ 5	9.8 ± 0.34	520 ±	18	52 ± 0.8	2800 ±	40		
Tokai-mura, IBARAKI	5 ~ 20	8.3 ± 0.32	1200 ±	50	9.8 ± 0.35	1400 ±	50		
Akabane-machi, AICHI	0 ~ 5	1.3 ± 0.14	54 ±	6	13 ± 0.4	570 ±	17		
Akabane-machi, AICHI	5 ~ 20	0.76 ± 0.11	130 ±	19	11 ± 0.4	1900 ±	60		
<b>June~,</b>									
Fukushima, FUKUSHIMA	0 ~ 5	7.3 ± 0.31	200 ±	9	38 ± 0.7	1000 ±	20		
Fukushima, FUKUSHIMA	5 ~ 20	5.7 ± 0.28	620 ±	31	11 ± 0.4	1200 ±	40		
Katsushika, TOKYO	0 ~ 5	0.78 ± 0.12	26 ±	3.9	2.9 ± 0.19	95 ±	6.3		
Katsushika, TOKYO	5 ~ 20	1.5 ± 0.16	150 ±	17	4 ± 0.23	410 ±	23		
<b>July~,</b>									
Aomori, AOMORI	0 ~ 5	0.75 ± 0.11	27 ±	4	1.3 ± 0.13	48 ±	4.7		
Aomori, AOMORI	5 ~ 20	0.25 ± 0.074	29 ±	8.7	0.43 ± 0.086	51 ±	10		
Mutsu, AOMORI	0 ~ 5	6.9 ± 0.3	200 ±	9	55 ± 0.8	1600 ±	20		
Mutsu, AOMORI	5 ~ 20	5.3 ± 0.27	400 ±	20	34 ± 0.6	2500 ±	50		
Imaichi, TOCHIGI	0 ~ 5	30 ± 0.7	460 ±	10	48 ± 0.8	740 ±	12		
Imaichi, TOCHIGI	5 ~ 20	7.5 ± 0.34	180 ±	8	26 ± 0.6	650 ±	14		
Maebashi, GUNMA	0 ~ 5	0.68 ± 0.11	44 ±	7.3	1.6 ± 0.16	100 ±	11		
Maebashi, GUNMA	5 ~ 20	1.1 ± 0.13	130 ±	16	1.4 ± 0.15	170 ±	18		
Urawa, SAITAMA	0 ~ 5	1.1 ± 0.14	25 ±	3.2	7.9 ± 0.32	180 ±	7		
Urawa, SAITAMA	5 ~ 20	0.86 ± 0.14	78 ±	13	1.3 ± 0.15	120 ±	14		
Ichihara, CHIBA	0 ~ 5	0.25 ± 0.069	8.4 ±	2.3	2.1 ± 0.16	69 ±	5.4		
Ichihara, CHIBA	5 ~ 20	0.15 ± 0.066	18 ±	8	1.2 ± 0.13	150 ±	16		

Location	Sampling period	90Sr			137Cs		
		(Bq/kg)	(MBq/km <sup>2</sup> )	(Bq/kg)	(MBq/km <sup>2</sup> )		
Kashiwazaki, NIIGATA	0 ~ 5	0.67 ± 0.11	47 ± 7.5	15 ± 0.4	1100 ± 30		
Kashiwazaki, NIIGATA	5 ~ 20	0.75 ± 0.11	120 ± 18	17 ± 0.4	2600 ± 70		
Kosugi-machi, TOYAMA	0 ~ 5	0.2 ± 0.078	11 ± 4.3	1 ± 0.12	57 ± 6.5		
Kosugi-machi, TOYAMA	5 ~ 20	0.028 ± 0.06	5 ± 10	0.17 ± 0.063	29 ± 11		
Kanazawa, ISHIKAWA	0 ~ 5	4.8 ± 0.25	210 ± 11	19 ± 0.5	830 ± 21		
Kanazawa, ISHIKAWA	5 ~ 20	6 ± 0.29	810 ± 39	21 ± 0.5	2900 ± 70		
Nagano, NAGANO	0 ~ 5	4.6 ± 0.27	130 ± 8	150 ± 1	4400 ± 40		
Yasu-machi, SHIGA	0 ~ 5	0.13 ± 0.065	7.3 ± 3.5	0.43 ± 0.091	24 ± 4.9		
Yasu-machi, SHIGA	5 ~ 20	0.15 ± 0.069	19 ± 8.7	0.23 ± 0.076	29 ± 9.7		
Kyoto, KYOTO	0 ~ 5	0.88 ± 0.12	15 ± 2.1	2.9 ± 0.2	49 ± 3.5		
Kyoto, KYOTO	5 ~ 20	0.43 ± 0.1	31 ± 7.3	15 ± 0.4	1100 ± 30		
Kasai, HYOGO	0 ~ 5	2.6 ± 0.2	130 ± 10	28 ± 0.6	1400 ± 30		
Kasai, HYOGO	5 ~ 20	0.58 ± 0.11	89 ± 17	3.3 ± 0.2	520 ± 31		
Kashihara, NARA	0 ~ 5	0.45 ± 0.1	21 ± 4.8	4 ± 0.22	190 ± 11		
Kashihara, NARA	5 ~ 20	0.78 ± 0.13	67 ± 11	4.9 ± 0.24	420 ± 21		
Kokufu-machi, TOTTORI	0 ~ 5	0.21 ± 0.081	8.8 ± 3.4	1.9 ± 0.16	81 ± 6.7		
Kokufu-machi, TOTTORI	5 ~ 20	0.27 ± 0.079	21 ± 6	0.41 ± 0.086	32 ± 6.6		
Ota, SHIMANE	0 ~ 5	7.7 ± 0.32	160 ± 7	39 ± 0.7	830 ± 14		
Ota, SHIMANE	5 ~ 20	3.4 ± 0.22	340 ± 21	22 ± 0.5	2200 ± 50		
Kamiita-machi, TOKUSHIMA	0 ~ 5	0.51 ± 0.092	39 ± 7	1.9 ± 0.16	150 ± 12		
Kamiita-machi, TOKUSHIMA	5 ~ 20	0.87 ± 0.11	130 ± 17	2.2 ± 0.17	320 ± 24		
Sakaide, KAGAWA	0 ~ 5	2.3 ± 0.17	79 ± 6.1	29 ± 0.6	1000 ± 20		
Sakaide, KAGAWA	5 ~ 20	2.7 ± 0.19	150 ± 11	4.4 ± 0.23	250 ± 13		
Matsuyama, EHIME	0 ~ 5	3.3 ± 0.21	35 ± 2.2	34 ± 0.6	360 ± 7		
Matsuyama, EHIME	5 ~ 20	0.71 ± 0.11	33 ± 5	33 ± 0.6	1500 ± 30		
Kochi, KOCHI	0 ~ 5	3.4 ± 0.22	110 ± 7	18 ± 0.5	580 ± 15		
Kochi, KOCHI	5 ~ 20	4.3 ± 0.25	400 ± 23	13 ± 0.4	1200 ± 40		
Fukuoka, FUKUOKA	0 ~ 5	4.7 ± 0.26	290 ± 16	2.1 ± 0.16	130 ± 10		

Location	Sampling period	90Sr				137Cs			
		(Bq/kg)		(MBq/km2)		(Bq/kg)		(MBq/km2)	
Fukuoka, FUKUOKA	5 ~ 20	1.5	± 0.15	220	± 22	0.23	± 0.076	33	± 11
Obama-machi, NAGASAKI	0 ~ 5	2.2	± 0.18	85	± 7	42	± 0.7	1700	± 30
Obama-machi, NAGASAKI	5 ~ 20	2	± 0.18	150	± 13	22	± 0.5	1700	± 40
Kuju-machi, OITA	0 ~ 5	1.9	± 0.17	26	± 2.3	74	± 1	990	± 13
Kuju-machi, OITA	5 ~ 20	1.7	± 0.16	72	± 6.9	16	± 0.4	700	± 19
Sadohara-machi, MIYAZAKI	0 ~ 5	0.8	± 0.12	56	± 8.2	4.9	± 0.24	350	± 17
Sadohara-machi, MIYAZAKI	5 ~ 20	1	± 0.13	170	± 22	3.5	± 0.21	600	± 35
Naha, OKINAWA	0 ~ 5	0.81	± 0.11	44	± 6.3	4.3	± 0.24	240	± 13
Naha, OKINAWA	5 ~ 20	1.1	± 0.13	200	± 24	2.2	± 0.17	400	± 31
August~,									
Sapporo, HOKKAIDO	0 ~ 5	5.7	± 0.3	180	± 10	6.6	± 0.29	210	± 9
Sapporo, HOKKAIDO	5 ~ 20	5.5	± 0.3	710	± 38	8.3	± 0.35	1100	± 40
Takizawa-mura, IWATE	0 ~ 5	5.6	± 0.3	160	± 8	32	± 0.6	900	± 18
Takizawa-mura, IWATE	5 ~ 20	7.7	± 0.34	1000	± 50	16	± 0.5	2100	± 60
Yamagata, YAMAGATA	0 ~ 5	2.7	± 0.2	190	± 14	14	± 0.4	990	± 31
Yamagata, YAMAGATA	5 ~ 20	0.9	± 0.13	84	± 12	1.7	± 0.17	160	± 15
Fukui, FUKUI	0 ~ 5	0.26	± 0.073	11	± 3.1	8.1	± 0.31	350	± 13
Fukui, FUKUI	5 ~ 20	0.43	± 0.089	98	± 20	4.1	± 0.23	940	± 51
Takane-machi, YAMANASHI	0 ~ 5	10	± 0.4	280	± 11	40	± 0.7	1100	± 20
Takane-machi, YAMANASHI	5 ~ 20	8.7	± 0.37	670	± 28	14	± 0.4	1100	± 30
Gifu, GIFU	0 ~ 5	1	± 0.13	48	± 6	9.4	± 0.33	440	± 16
Gifu, GIFU	5 ~ 20	1.2	± 0.13	180	± 20	6.7	± 0.28	1000	± 40
Gotenba, SHIZUOKA	0 ~ 5	1	± 0.12	29	± 3.5	11	± 0.4	310	± 11
Gotenba, SHIZUOKA	5 ~ 20	0.97	± 0.13	72	± 9.8	6.8	± 0.3	510	± 23
Tsu, MIE	0 ~ 5	0.32	± 0.083	23	± 5.8	1.5	± 0.14	110	± 10
Tsu, MIE	5 ~ 20	0.34	± 0.084	41	± 10	0.99	± 0.12	120	± 15
Osaka, OSAKA	0 ~ 5	0.35	± 0.084	18	± 4.4	2.7	± 0.19	140	± 10
Osaka, OSAKA	5 ~ 20	1	± 0.13	180	± 23	1.7	± 0.15	310	± 28

Location	Sampling period	90Sr			137Cs		
		(Bq/kg)	(MBq/km <sup>2</sup> )	(Bq/kg)	(MBq/km <sup>2</sup> )		
Shingu, WAKAYAMA	0 ~ 5	0.17 ± 0.08	7 ± 3.3	1.5 ± 0.15	59 ± 6		
Shingu, WAKAYAMA	5 ~ 20	0.15 ± 0.08	19 ± 10	0.59 ± 0.1	76 ± 13		
Asahi-machi, OKAYAMA	0 ~ 5	1 ± 0.16	54 ± 8.1	0.57 ± 0.099	29 ± 5.1		
Asahi-machi, OKAYAMA	5 ~ 20	0.65 ± 0.12	78 ± 14	0.25 ± 0.08	29 ± 9.5		
Hiroshima, HIROSHIMA	0 ~ 5	0.62 ± 0.11	26 ± 4.4	3.2 ± 0.2	130 ± 8		
Hiroshima, HIROSHIMA	5 ~ 20	1.8 ± 0.17	340 ± 32	7.9 ± 0.31	1500 ± 60		
Hagi, YAMAGUCHI	0 ~ 5	1.1 ± 0.13	70 ± 8.8	5.7 ± 0.27	380 ± 18		
Hagi, YAMAGUCHI	5 ~ 20	1.1 ± 0.14	140 ± 19	5.3 ± 0.25	720 ± 34		
Nishihara-mura, KUMAMOTO	0 ~ 5	3.4 ± 0.21	85 ± 5.3	58 ± 0.8	1500 ± 20		
Nishihara-mura, KUMAMOTO	5 ~ 20	4.3 ± 0.25	270 ± 16	13 ± 0.4	830 ± 24		
September~,							
Iwadeyama-machi, MIYAGI	0 ~ 5	1.6 ± 0.15	65 ± 5.9	5 ± 0.25	200 ± 10		
Iwadeyama-machi, MIYAGI	5 ~ 20	1.5 ± 0.15	230 ± 23	3 ± 0.19	450 ± 29		
Akita, AKITA	0 ~ 5	5.9 ± 0.3	250 ± 13	37 ± 0.7	1600 ± 30		
Akita, AKITA	5 ~ 20	5.9 ± 0.3	620 ± 32	34 ± 0.7	3500 ± 70		
Yokohama, KANAGAWA	0 ~ 5	4.9 ± 0.27	150 ± 8	16 ± 0.4	480 ± 13		
Yokohama, KANAGAWA	5 ~ 20	4.6 ± 0.26	450 ± 26	10 ± 0.3	980 ± 34		
Saga, SAGA	0 ~ 5	0.12 ± 0.064	5.2 ± 2.8	2.2 ± 0.17	99 ± 7.4		
Saga, SAGA	5 ~ 20	0.25 ± 0.079	43 ± 14	0.66 ± 0.1	110 ± 17		
Kaimon-machi, KAGOSHIMA	0 ~ 5	0.22 ± 0.075	15 ± 5	0.46 ± 0.087	31 ± 5.8		
Kaimon-machi, KAGOSHIMA	5 ~ 20	0.31 ± 0.081	48 ± 13	0.98 ± 0.12	150 ± 18		

## (6) Strontium-90 and Cesium-137 in Seawater

(from Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

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

Location	Sample volume analyzed (l)	Cl (l)	90Sr (mBq/l)			137Cs (mBq/l)	
<b>Jul, 1999</b>							
Yoichi-bay, HOKKAIDO	40	18.7	1.5	± 0.2		2.2	± 0.26
Mutsu, AOMORI	60	18.6	1.8	± 0.24		2.4	± 0.29
Soma, FUKUSHIMA	40	16.3	1.6	± 0.21		2.3	± 0.27
Tokai, IBARAKI	40	11.3	1.7	± 0.23		1.5	± 0.24
Ichihara, CHIBA	40	13.9	2	± 0.23		1.7	± 0.25
Niigata, NIIGATA	40	17.9	1.7	± 0.21		2.2	± 0.27
Tokoname, AICHI	40	13.5	2	± 0.24		1.9	± 0.26
Osaka-Port, OSAKA	40	9.5	1.7	± 0.24		1.7	± 0.25
<b>Aug, 1999</b>							
Mutsu, AOMORI	60	16.9	1.5	± 0.24		2.2	± 0.29

Location	Sample volume analyzed	Cl (l)	90Sr			137Cs	
				(mBq/l)		(mBq/l)	
Odawa-bay, KANAGAWA	40	17.9	2	± 0.23		2.5	± 0.27
Yamaguchi-bay, YAMAGUCHI	40	16.7	1.8	± 0.22		2.4	± 0.27
Moji-Port, FUKUOKA	40	16.7	2	± 0.25		2.3	± 0.27

## (7) Strontium-90 and Cesium-137 in Sea Sediments

(form Apr. 1999 to Sep. 1999 )

-continued from No. 128 for this publication-

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

Location	(m)		90Sr (Bq/kg)		137Cs (Bq/kg)
<b>Jul, 1999</b>					
Yoichi-bay, HOKKAIDO	13	0	0.045	0.7	0.1
Mutsu, AOMORI	12	0.037	0.05	0.24	0.073
Soma, FUKUSHIMA	5	0.05	0.05	1.9	0.16
Tokai, IBARAKI	10	0	0.039	0.42	0.086
Ichihara, CHIBA	15	0.083	0.071	2.3	0.17
Niigata, NIIGATA	19. 4	0.021	0.052	0.75	0.1
Tokoname, AICHI	22	0.13	0.061	3.8	0.21
Osaka-Port, OSAKA	15. 4	0.08	0.056	1.4	0.14
<b>Aug, 1999</b>					
Mutsu-bay, AOMORI	12	0.11	0.062	5.1	0.25
Odawa-bay, KANAGAWA	7	0.15	0.063	1.7	0.15
Yamaguchi-bay, YAMAGUCHI	13. 5	0.19	0.068	3.1	0.19
Moji-Port, FUKUOKA	6. 2	0.051	0.053	1.7	0.15

## \* \* Sampling Locations in Japan \* \*

- |                |                 |
|----------------|-----------------|
| 1 : Sapporo    | 2 8 : Kobe      |
| 2 : Aomori     | 2 9 : Nara      |
| 3 : Morioka    | 3 0 : Wakayama  |
| 4 : Sendai     | 3 1 : Tottori   |
| 5 : Akita      | 3 2 : Matsue    |
| 6 : Yamagata   | 3 3 : Okayama   |
| 7 : Fukushima  | 3 4 : Hiroshima |
| 8 : Mito       | 3 5 : Yamaguchi |
| 9 : Utsunomiya | 3 6 : Tokushima |
| 1 0 : Maebashi | 3 7 : Takamatsu |
| 1 1 : Urawa    | 3 8 : Matsuyama |
| 1 2 : Chiba    | 3 9 : Kochi     |
| 1 3 : Shinjuku | 4 0 : Fukuoka   |
| 1 4 : Yokohama | 4 1 : Saga      |
| 1 5 : Niigata  | 4 2 : Nagasaki  |
| 1 6 : Toyama   | 4 3 : Kumamoto  |
| 1 7 : Kanazawa | 4 4 : Oita      |
| 1 8 : Fukui    | 4 5 : Miyazaki  |
| 1 9 : Kofu     | 4 6 : Kagoshima |
| 2 0 : Nagano   | 4 7 : Naha      |
| 2 1 : Gifu     |                 |
| 2 2 : Shizuoka |                 |
| 2 3 : Nagoya   |                 |
| 2 4 : Tsu      |                 |
| 2 5 : Otsu     |                 |
| 2 6 : Kyoto    |                 |
| 2 7 : Osaka    |                 |

