ISSN 0441-2516
NIRS-RSD-136

RADIOACTIVITY SURVEY DATA in Japan

Part 1
= Environmental Materials =

NUMBER 136
October 2002

National Institute of Radiological Sciences
Chiba, Japan

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Contents

Editted by National Institute of Radiological Sciences, under the supervision of Ministry of Education, Culture, Sports, Science and Technology of Japanese Government.

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 montyly 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 manth.

Strontium and cesium carrier solutions were added to the sample.

(2) Airborne dust

Airborne dust was collected by 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, 100 ℓ each , was collected at the intake of the water-treatment plant and at the tap after water was left running for five minutes.

Strontium and cesium carriers were added to the 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 dephes, 0-5cm and 5-20cm.

The soil lumps were crushed by hands and dried in a drying oven regulated 105 ℃ . The soil was then passed through a 2mm sieve to remove plant roots and pebbles.

(5) Sea Water

Sea water was collected at the fixed stations where the effect of terrestrial fresh water from rivers was expected to be negligibly small. A special consideration was also given to weather conditions.

The sampling was carried out when there was no rainfall for the last few days. To prevent contamination, water samples were collected at the bow of a sampling boat just before she stood still by scooping surface water using a polyethylene bucket.

Immediately after the collection, the samples were acidified to a pH lower than 3 by adding concentrated hydrochloric acid in a ratio of 1ml to 1 ℓ of sea water, and then stored in 20 ℓ polyethylene containers. The sampling equipments as well as containers were thoroughly rinsed with dilute hydrochloric acid and then with distilled water before use. Two hundred milliliters of sea water was also collected at the same staions for the demermination of chlorinity.

(6) Sea sediments

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

a. The depth of water exceeds 1m at low tide.

b. No significant sedimental movement is observed in the vicinity of concern.

c. Mud, silt and fine sand are preferable

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

(7) Total diet

A full one day ordinary diet including three meals, water, tea, and other in-between snacks for five persons was collected as a sample of "total diet".

The sample in a large stainless steel pan was carbonized carefully by direct application of gas flame, and was transterred to a porcelain dish and then ashed at 450 ℃ in an electric muffle furnace.

(8) Rice

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

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* Samples were sent to the Center from 47 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 ashing in a stainless steel pan or a procelain 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. Sellfish

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) Airborne dust	quarterly	>3000m^3 /month
(3) Service waterand freshwater		
1. Service water (source water)	semiyearly	100 ℓ
2. Servicewater (tap water)	semiyearly	100 ℓ
3. Freshwater	yearly (fishing season)	100 ℓ
(4) Soil		
1. 0 ~ 5cm	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 domestic program	quarterly (February,May,August and November)	3 ℓ
	semiyearly (February and August)	3 ℓ

Sample	Frequency of sampling	Quantity of sample
3. Consumng districts	semiyearly (February and August)	3 ℓ
4. Powdered milk	semiyearly (January and Jun)	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

The dried sample was decompased with nitric acid and dissolved in hydrochlovic acid 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.

(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, 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 hyfrochloric acid the precipitate was dissolved in 2.5M sodium hydroxide solution. The soluion was adjusted to pH8.2 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 cesiumn 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 pecipitate. Cesium-137 radioactivity was measured for this precipitate.

4. Determination of stable strontium, calcium and potassium

A weighed amount of soil or sea sediment was heated in a electric muffle furnace at 450 ℃ and then treated with hydrochloric acid for extraction. A weighed aliquot of ashed samples of total diet, vegetables, milk, fish, shellfish or seaweeds was digested with hydrofluoric acid and nitric acid.
The extract was made up to an appropriate volume with dilute hydrochloric acid.
Stable calcium and strontium were determined by ICP-AES and potassium were determined by flame emission spectrometry.

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 stontium-90 and cesium-137per sample aliquot. From the results, concentrations of these nuclides in the original samples were calculated.

6. Results

(1) Strontium-90 and Cesium-137 in Rain and Dry Fallout(for domestic program)
(form Oct. 2000 to Mar. 2001)

-continued from No. 134 for this publication-

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

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)	137Cs (MBq/km2)
Oct, 2000				
Sapporo, HOKKAIDO	30	25	0.018 ± 0.015	0 ± 0.0083
Aomori, AOMORI	30	58	0.009 ± 0.016	0.0012 ± 0.0078
Morioka, IWATE	30	50.5	0.016 ± 0.0088	0 ± 0.0082
Onagawa-machi, MIYAGI	30	56	0.011 ± 0.0074	0.0057 ± 0.0086
Akita, AKITA	30	126.1	0 ± 0.011	0.0018 ± 0.0084
Yamagata, YAMAGATA	30	80.7	0.004 ± 0.014	0.0018 ± 0.0085
Okuma-machi, FUKUSHIMA	30	96.5	0.02 ± 0.011	0.0054 ± 0.0079
Mito, IBARAKI	30	122.5	0 ± 0.011	0 ± 0.011
Kawachi-machi, TOCHIGI	30	141	0.014 ± 0.0074	0.0062 ± 0.0085
Maebashi, GUNMA	30	84	0.0049 ± 0.0083	0 ± 0.0076
Urawa, SAITAMA	30	115.5	0 ± 0.009	0.013 ± 0.0065
Chiba, CHIBA	30	138.9	0 ± 0.0079	0.013 ± 0.0084
Ichihara, CHIBA	30	124.3	0.0041 ± 0.0066	0.0066 ± 0.0089
Shinjuku, TOKYO	30	125.1	0.009 ± 0.013	0 ± 0.0078
Yokohama, KANAGAWA	32	172	0.016 ± 0.014	0.02 ± 0.0093
Niigata, NIIGATA	30	124.1	0.027 ± 0.014	0.017 ± 0.0093
Kosugi-machi, TOYAMA	30	177.2	0.012 ± 0.015	0.0074 ± 0.0081
Kanazawa, ISHIKAWA	32	158.5	0.013 ± 0.0082	0 ± 0.0077
Fukui, FUKUI	34	227.3	0.054 ± 0.043	0 ± 0.042
Kofu, YAMANASHI	30	110	0.009 ± 0.0073	0.0006 ± 0.0077
Nagano, NAGANO	30	83.3	0.001 ± 0.012	0.0042 ± 0.0076

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Kagamigahara, GIFU	30	137.9	0.031	±	0.01	0	±	0.0097
Shizuoka, SHIZUOKA	31	227	0	±	0.0082	0.055	±	0.011
Nagoya, AICHI	30	150.8	0.025	±	0.014	0.016	±	0.011
Yokkaichi, MIE	30	248.5	0.01	±	0.013	0.0081	±	0.0089
Otsu, SHIGA	30	170.2	0	±	0.008	0	±	0.0073
Kyoto, KYOTO	28	151	0.032	±	0.01	0.013	±	0.0097
Osaka, OSAKA	30	118.4	0.004	±	0.022	0	±	0.01
Kobe, HYOGO	32	190.6	0.021	±	0.016	0	±	0.008
Nara, NARA	30	167.5	0.031	±	0.011	0	±	0.008
Wakayama, WAKAYAMA	34	181	0.024	±	0.0092	0	±	0.0085
Tottori, TOTTORI	31	276.8	0.023	±	0.0095	0.0071	±	0.009
Matsue, SHIMANE	31	112.2	0.014	±	0.0057	0.0041	±	0.005
Okayama, OKAYAMA	30	70.1	0.014	±	0.0078	0	±	0.0066
Hiroshima, HIROSHIMA	30	117.6	0.072	±	0.017	0.014	±	0.01
Yamaguchi, YAMAGUCHI	31	109	0	±	0.011	0.0079	±	0.0092
Ishii-machi, TOKUSHIMA	28	139.7	0.026	±	0.011	0.13	±	0.016
Takamatsu, KAGAWA	30	85	0.014	±	0.012	0.0086	±	0.0084
Matsuyama, EHIME	30	51.5	0.01	±	0.011	0	±	0.0086
Kochi, KOCHI	30	107.2	0.063	±	0.018	0.014	±	0.0097
Dazaifu, FUKUOKA	30	131.9	0.023	±	0.0082	0	±	0.0084
Saga, SAGA	30	92.1	0.041	±	0.014	0.0046	±	0.008
Nagasaki, NAGASAKI	30	113	0.016	±	0.03	0	±	0.0088
Uto, KUMAMOTO	30	173.5	0	±	0.012	0.0057	±	0.0085
Oita, OITA	30	106.2	0.0086	±	0.0084	0	±	0.008
Miyazaki, MIYAZAKI	30	228	0.032	±	0.0097	0.0017	±	0.0079
Kagoshima, KAGOSHIMA	32	198.5	0.019	±	0.0091	0.008	±	0.01

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Yonagusuku-machi, OKINAWA	29	100.5	0.017	±	0.014	0	±	0.0092
Nov, 2000								
Sapporo, HOKKAIDO	30	112	0.017	±	0.0089	0.0047	±	0.0089
Aomori, AOMORI	29	117.8	0	±	0.013	0.0045	±	0.0077
Morioka, IWATE	30	59.7	0	±	0.0043	0	±	0.01
Onagawa-machi, MIYAGI	30	130.5	0.003	±	0.0088	0.0055	±	0.0082
Akita, AKITA	30	181.8	0.025	±	0.0089	0.018	±	0.0092
Yamagata, YAMAGATA	335	118.2	0.026	±	0.0087	0.0098	±	0.0085
Okuma-machi, FUKUSHIMA	30	113.5	0.002	±	0.012	0.0063	±	0.0095
Mito, IBARAKI	30	69.5	0	±	0.0099	0.012	±	0.0091
Kawachi-machi, TOCHIGI	30	80.7	0.016	±	0.0083	0.0036	±	0.0072
Maebashi, GUNMA	30	41	0.0015	±	0.008	0.0081	±	0.0096
Urawa, SAITAMA	30	119.6	0.0051	±	0.0084	0	±	0.0054
Chiba, CHIBA	30	89	0.013	±	0.01	0.013	±	0.0084
Ichihara, CHIBA	30	93.7	0.013	±	0.0073	0	±	0.008
Shinjuku, TOKYO	30	98.4	0.009	±	0.011	0.0012	±	0.0077
Yokohama, KANAGAWA	31	146.9	0.016	±	0.0086	0.0066	±	0.0085
Niigata, NIIGATA	30	183.4	0.023	±	0.014	0.0094	±	0.0084
Kosugi-machi, TOYAMA	30	220.9	0.018	±	0.015	0	±	0.0072
Kanazawa, ISHIKAWA	30	316	0.053	±	0.012	0	±	0.0077
Fukui, FUKUI	27	125.2	0	±	0.032	0	±	0.049
Kofu, YAMANASHI	30	80	0.011	±	0.011	0	±	0.0072
Nagano, NAGANO	30	55.3	0.033	±	0.017	0.0071	±	0.0074
Kagamigahara, GIFU	30	90.7	0.01	±	0.0097	0	±	0.0096
Shizuoka, SHIZUOKA	30	234	0.0074	±	0.0067	0.027	±	0.01
Nagoya, AICHI	30	67.8	0.018	±	0.0079	0.01	±	0.0086
Yokkaichi, MIE	30	61.5	0.003	±	0.014	0	±	0.0081

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)	137Cs (MBq/km2)
Otsu, SHIGA	30	157.2	0.007 ± 0.013	0 ± 0.0082
Kyoto, KYOTO	28	177	0.073 ± 0.012	0.0026 ± 0.0089
Osaka, OSAKA	30	151.8	0.027 ± 0.021	0 ± 0.01
Kobe, HYOGO	30	131.1	0.012 ± 0.016	0 ± 0.0075
Nara, NARA	30	136.7	0 ± 0.014	0.016 ± 0.0087
Wakayama, WAKAYAMA	25	56	0.015 ± 0.0088	0 ± 0.0086
Tottori, TOTTORI	29	168.1	0.029 ± 0.0098	0.11 ± 0.015
Matsue, SHIMANE	29	178.7	0.031 ± 0.0091	0.011 ± 0.0049
Okayama, OKAYAMA	30	93	0.0005 ± 0.0078	0.0092 ± 0.0089
Hiroshima, HIROSHIMA	30	98.4	0.026 ± 0.013	0.0007 ± 0.0097
Yamaguchi, YAMAGUCHI	30	122	0.0029 ± 0.0079	0 ± 0.0081
Ishii-machi, TOKUSHIMA	35	97.1	0.044 ± 0.012	0.047 ± 0.012
Takamatsu, KAGAWA	30	89.5	0.019 ± 0.013	0 ± 0.0077
Matsuyama, EHIME	30	133.5	0.001 ± 0.0085	0 ± 0.0074
Kochi, KOCHI	30	188	0.049 ± 0.011	0 ± 0.0074
Dazaifu, FUKUOKA	30	136	0.0075 ± 0.0076	0 ± 0.0078
Saga, SAGA	30	127.9	0.005 ± 0.012	0.0059 ± 0.0083
Nagasaki, NAGASAKI	30	194	0.007 ± 0.014	0 ± 0.0084
Uto, KUMAMOTO	30	187.9	0.016 ± 0.0075	0.0019 ± 0.0083
Oita, OITA	30	81.9	0 ± 0.012	0 ± 0.0067
Miyazaki, MIYAZAKI	30	297.5	0.014 ± 0.008	0 ± 0.0072
Yonagusuku-machi, OKINAWA	30	354.5	0.0034 ± 0.0084	0 ± 0.011
Dec, 2000				
Sapporo, HOKKAIDO	27	59.5	0.026 ± 0.01	0.013 ± 0.0087
Aomori, AOMORI	35	183.6	0 ± 0.013	0.1 ± 0.013
Morioka, IWATE	34	62	0.044 ± 0.017	0 ± 0.01
Onagawa-machi, MIYAGI	35	28.5	0.018 ± 0.0083	0.023 ± 0.0091

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Akita, AKITA	34	141.1	0.031	±	0.015	0.1	±	0.013
Yamagata, YAMAGATA	34	76.9	0.024	±	0.009	0.061	±	0.011
Okuma-machi, FUKUSHIMA	34	4.5	0.002	±	0.013	0	±	0.0087
Mito, IBARAKI	34	4	0.0029	±	0.0071	0	±	0.0082
Kawachi-machi, TOCHIGI	34	3.9	0	±	0.0053	0	±	0.0087
Maebashi, GUNMA	34	0.5	0.017	±	0.0078	0.0094	±	0.0098
Urawa, SAITAMA	35	3	0.016	±	0.0072	0.014	±	0.0068
Chiba, CHIBA	34	12.9	0.0005	±	0.0081	0.038	±	0.01
Ichihara, CHIBA	34	16.8	0.022	±	0.0096	0	±	0.0084
Shinjuku, TOKYO	34	6.8	0	±	0.0087	0	±	0.0073
Yokohama, KANAGAWA	27	9.6	0.024	±	0.0085	0	±	0.0079
Niigata, NIIGATA	34	233.2	0.061	±	0.017	0.088	±	0.013
Kosugi-machi, TOYAMA	34	197.2	0.042	±	0.016	0.17	±	0.016
Kanazawa, ISHIKAWA	35	297	0.036	±	0.0093	0.14	±	0.015
Fukui, FUKUI	31	294.2	0.088	±	0.043	0.078	±	0.045
Kofu, YAMANASHI	34	2	0.017	±	0.013	0.012	±	0.0091
Nagano, NAGANO	34	21.1	0.008	±	0.014	0.03	±	0.0089
Shizuoka, SHIZUOKA	34	21	0.025	±	0.0078	0.04	±	0.011
Nagoya, AICHI	34	35.2	0.018	±	0.0088	0.013	±	0.0095
Yokkaichi, MIE	34	27.5	0.019	±	0.0081	0	±	0.008
Otsu, SHIGA	34	23.4	0.016	±	0.014	0	±	0.0091
Kyoto, KYOTO	30	26	0.014	±	0.0089	0	±	0.0087
Osaka, OSAKA	34	12.7	0.033	±	0.012	0.012	±	0.0088
Kobe, HYOGO	28	20.8	0	±	0.0076	0.007	±	0.0086
Nara, NARA	34	32.6	0.015	±	0.0093	0	±	0.0074
Wakayama, WAKAYAMA	34	28	0.022	±	0.0095	0.0072	±	0.096

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Tottori, TOTTORI	39	93.5	0.089	±	0.014	0.16	±	0.018
Matsue, SHIMANE	35	56.6	0.03	±	0.0064	0.092	±	0.0093
Okayama, OKAYAMA	34	33.4	0.021	±	0.011	0.015	±	0.0077
Hiroshima, HIROSHIMA	34	22.6	0.035	±	0.013	0	±	0.009
Yamaguchi, YAMAGUCHI	34	33.5	0.028	±	0.013	0.018	±	0.0095
Ishii-machi, TOKUSHIMA	32	35.8	0.077	±	0.016	0.18	±	0.019
Takamatsu, KAGAWA	34	37	0.043	±	0.018	0	±	0.0086
Matsuyama, EHIME	34	46.5	0.0037	±	0.0072	0.014	±	0.0086
Kochi, KOCHI	34	58.4	0.039	±	0.0086	0.0031	±	0.0082
Dazaifu, FUKUOKA	34	37	0.015	±	0.0071	0.033	±	0.01
Saga, SAGA	34	21.8	0.007	±	0.012	0.013	±	0.009
Nagasaki, NAGASAKI	34	42	0.017	±	0.0077	0.0081	±	0.0089
Uto, KUMAMOTO	34	62.1	0.0072	±	0.0075	0.0006	±	0.0098
Oita, OITA	34	39.5	0.0081	±	0.0069	0	±	0.0078
Miyazaki, MIYAZAKI	34	116.7	0.017	±	0.0084	0.0028	±	0.0079
Kagoshima, KAGOSHIMA	28	69.5	0.018	±	0.0095	0.006	±	0.007
Yonagusuku-machi, OKINAWA	35	232.5	0.0067	±	0.0089	0	±	0.0097
Jan, 2001								
Sapporo, HOKKAIDO	35	54	0.019	±	0.0087	0.0063	±	0.0081
Aomori, AOMORI	28	86.4	0.016	±	0.0085	0.0078	±	0.0087
Morioka, IWATE	28	41.3	0	±	0.0093	0.0041	±	0.0078
Onagawa-machi, MIYAGI	27	65	0.024	±	0.0079	0.0037	±	0.0093
Akita, AKITA	28	146.3	0	±	0.012	0.029	±	0.0099
Yamagata, YAMAGATA	28	124.7	0.025	±	0.0088	0.04	±	0.0097
Okuma-machi, FUKUSHIMA	28	85.5	0.044	±	0.0093	0.031	±	0.0098
Mito, IBARAKI	28	98	0.017	±	0.013	0	±	0.0073
Kawachi-machi, TOCHIGI	28	77.1	0.0073	±	0.0077	0.0017	±	0.0077

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Maebashi, GUNMA	28	61	0.0029	±	0.0071	0.015	±	0.0093
Urawa, SAITAMA	28	109.5	0.016	±	0.0063	0.012	±	0.0066
Chiba, CHIBA	28	147.9	0	±	0.0094	0.01	±	0.0082
Ichihara, CHIBA	28	180.8	0.019	±	0.0076	0.0017	±	0.0082
Shinjuku, TOKYO	28	155.8	0.008	±	0.013	0.0058	±	0.0077
Yokohama, KANAGAWA	34	158.5	0.022	±	0.0091	0.025	±	0.0089
Niigata, NIIGATA	28	142.3	0.025	±	0.016	0.019	±	0.0088
Toyama, TOYAMA	28	247.6	0.029	±	0.013	0.071	±	0.012
Kanazawa, ISHIKAWA	27	298	0.027	±	0.0087	0.089	±	0.013
Fukui, FUKUI	34	476.5	0.057	±	0.074	0.012	±	0.047
Kofu, YAMANASHI	28	126	0.02	±	0.011	0.033	±	0.0095
Nagano, NAGANO	28	57.9	0.019	±	0.015	0.027	±	0.0088
Kagamigahara, GIFU	28	143.1	0.019	±	0.0092	0	±	0.0079
Shizuoka, SHIZUOKA	29	185	0.023	±	0.0078	0.1	±	0.014
Nagoya, AICHI	28	147.5	0.034	±	0.0093	0.024	±	0.01
Yokkaichi, MIE	28	148.5	0.04	±	0.013	0.031	±	0.0089
Otsu, SHIGA	28	124.8	0.028	±	0.076	0.0096	±	0.0082
Kyoto, KYOTO	34	107.5	0.01	±	0.0076	0.0037	±	0.0087
Osaka, OSAKA	28	125.2	0.1	±	0.029	0.03	±	0.013
Kobe, HYOGO	34	86.2	0.025	±	0.013	0.0098	±	0.0089
Nara, NARA	28	152.1	0.026	±	0.011	0.0091	±	0.0095
Wakayama, WAKAYAMA	28	94	0.03	±	0.011	0.023	±	0.0099
Tottori, TOTTORI	23	198.3	0.059	±	0.011	0.039	±	0.012
Matsue, SHIMANE	27	140.4	0.035	±	0.0063	0.053	±	0.0082
Okayama, OKAYAMA	28	116.1	0.046	±	0.011	0.045	±	0.0097
Hiroshima, HIROSHIMA	27	96.7	0.058	±	0.02	0.01	±	0.0098

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Yamaguchi, YAMAGUCHI	28	160	0.042	±	0.013	0.083	±	0.013
Ishii-machi, TOKUSHIMA	28	102	0.1	±	0.015	0.27	±	0.021
Takamatsu, KAGAWA	28	78	0.025	±	0.016	0.061	±	0.011
Matsuyama, EHIME	28	68.5	0.019	±	0.0081	0.06	±	0.012
Kochi, KOCHI	28	113.8	0.022	±	0.016	0.02	±	0.01
Dazaifu, FUKUOKA	28	149.4	0.037	±	0.0086	0.081	±	0.012
Saga, SAGA	28	107.7	0.06	±	0.016	0.086	±	0.013
Nagasaki, NAGASAKI	28	94	0.049	±	0.009	0.12	±	0.014
Uto, KUMAMOTO	28	87.8	0.043	±	0.009	0.073	±	0.012
Oita, OITA	28	148.4	0.051	±	0.017	0.061	±	0.011
Miyazaki, MIYAZAKI	28	150.4	0.018	±	0.0086	0.06	±	0.012
Kagoshima, KAGOSHIMA	34	92.5	0.019	±	0.0094	0.03	±	0.0079
Yonagusuku-machi, OKINAWA	27	118.5	0.0094	±	0.0096	0	±	0.0086
Feb, 2001								
Sapporo, HOKKAIDO	28	36.5	0	±	0.007	0.004	±	0.0089
Aomori, AOMORI	28	77.5	0.021	±	0.0089	0.037	±	0.011
Morioka, IWATE	28	13.2	0.004	±	0.0074	0	±	0.0082
Onagawa-machi, MIYAGI	28	18	0.01	±	0.0075	0.013	±	0.0086
Akita, AKITA	28	53.3	0	±	0.012	0.01	±	0.0087
Yamagata, YAMAGATA	28	50.3	0	±	0.0066	0.024	±	0.0092
Okuma-machi, FUKUSHIMA	28	19	0.01	±	0.011	0.0047	±	0.0081
Mito, IBARAKI	28	17	0.004	±	0.011	0.015	±	0.0085
Kawachi-machi, TOCHIGI	28	23.2	0.026	±	0.0084	0.0057	±	0.0078
Maebashi, GUNMA	28	27	0.016	±	0.0082	0.051	±	0.011
Urawa, SAITAMA	26	12.4	0.013	±	0.0061	0.039	±	0.0094
Chiba, CHIBA	28	47.5	0.018	±	0.009	0.022	±	0.088
Ichihara, CHIBA	28	56.3	0.012	±	0.0078	0	±	0.0082

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Shinjuku, TOKYO	28	44.5	0.019	±	0.0091	0.01	±	0.0083
Yokohama, KANAGAWA	28	39.9	0.016	±	0.0077	0.018	±	0.0092
Niigata, NIIGATA	28	161.6	0.029	±	0.013	0.022	±	0.0096
Toyama, TOYAMA	28	116	0.028	±	0.015	0.05	±	0.011
Kanazawa, ISHIKAWA	28	127	0.016	±	0.013	0.057	±	0.012
Fukui, FUKUI	27	157.7	0.085	±	0.075	0.2	±	0.057
Kofu, YAMANASHI	28	34.5	0.019	±	0.011	0.0048	±	0.0081
Nagano, NAGANO	29	31.4	0.021	±	0.0075	0.027	±	0.01
Kagamigahara, GIFU	28	40.6	0.013	±	0.013	0.0096	±	0.0091
Shizuoka, SHIZUOKA	27	95	0.025	±	0.0079	0.062	±	0.012
Nagoya, AICHI	28	54.8	0.021	±	0.0087	0.0086	±	0.0093
Yokkaichi, MIE	28	54	0.03	±	0.014	0.033	±	0.0095
Otsu, SHIGA	28	62	0.013	±	0.0075	0.03	±	0.0099
Kyoto, KYOTO	28	51	0.015	±	0.0083	0.035	±	0.011
Osaka, OSAKA	29	50.6	0.038	±	0.018	0	±	0.0076
Kobe, HYOGO	28	43.6	0.022	±	0.0088	0.043	±	0.01
Nara, NARA	28	70.7	0.032	±	0.01	0.012	±	0.0099
Wakayama, WAKAYAMA	28	50	0.048	±	0.014	0	±	0.0083
Tottori, TOTTORI	28	101.7	0.07	±	0.011	0.05	±	0.012
Matsue, SHIMANE	29	94.8	0.057	±	0.0079	0.15	±	0.012
Okayama, OKAYAMA	29	69.7	0.01	±	0.012	0	±	0.0085
Hiroshima, HIROSHIMA	29	84.3	0.056	±	0.021	0.098	±	0.015
Yamaguchi, YAMAGUCHI	28	93.5	0.023	±	0.015	0.035	±	0.0093
Ishii-machi, TOKUSHIMA	31	24.5	0.012	±	0.013	0.11	±	0.015
Takamatsu, KAGAWA	28	48	0.027	±	0.016	0.023	±	0.0091
Matsuyama, EHIME	28	93.5	0.012	±	0.0089	0.0036	±	0.008

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)	137Cs (MBq/km2)
Kochi, KOCHI	28	80.7	0.024 ± 0.014	0.044 ± 0.011
Dazaifu, FUKUOKA	28	89.3	0.017 ± 0.008	0.015 ± 0.0088
Saga, SAGA	28	86.2	0.033 ± 0.014	0.011 ± 0.0092
Nagasaki, NAGASAKI	28	96	0.01 ± 0.0067	0.017 ± 0.0095
Uto, KUMAMOTO	28	99.2	0.015 ± 0.0076	0.0096 ± 0.0081
Oita, OITA	28	65.2	0.004 ± 0.013	0.017 ± 0.0086
Miyazaki, MIYAZAKI	28	136.6	0.012 ± 0.0086	0.018 ± 0.0089
Kagoshima, KAGOSHIMA	28	70	0.041 ± 0.008	0.044 ± 0.011
Naha, OKINAWA	29	40.5	0.004 ± 0.01	0.014 ± 0.0098
Mar, 2001				
Sapporo, HOKKAIDO	32	59	0.017 ± 0.0078	0.036 ± 0.012
Aomori, AOMORI	32	43.1	0.035 ± 0.0096	0.057 ± 0.012
Morioka, IWATE	32	83.8	0.031 ± 0.0097	0.085 ± 0.014
Onagawa-machi, MIYAGI	31	77	0.021 ± 0.0081	0.045 ± 0.011
Akita, AKITA	32	122.8	0.044 ± 0.0091	0.25 ± 0.019
Yamagata, YAMAGATA	32	77.3	0.035 ± 0.0092	0.18 ± 0.016
Okuma-machi, FUKUSHIMA	32	77.5	0.032 ± 0.0096	0.15 ± 0.02
Mito, IBARAKI	32	111.5	0.018 ± 0.0076	0.015 ± 0.0096
Kawachi-machi, TOCHIGI	32	96.6	0 ± 0.0072	0.019 ± 0.0088
Maebashi, GUNMA	33	46	0.038 ± 0.0092	0.07 ± 0.012
Urawa, SAITAMA	33	112.8	0.025 ± 0.0062	0.038 ± 0.0089
Chiba, CHIBA	32	109.4	0.016 ± 0.0083	0.061 ± 0.012
Ichihara, CHIBA	32	105.3	0.022 ± 0.0094	0.027 ± 0.0094
Shinjuku, TOKYO	32	99.2	0.049 ± 0.016	0.018 ± 0.0094
Yokohama, KANAGAWA	30	106.7	0.018 ± 0.0073	0.022 ± 0.0098
Niigata, NIIGATA	32	102.5	0.056 ± 0.015	0.14 ± 0.015
Toyama, TOYAMA	29	149	0.076 ± 0.017	0.14 ± 0.015

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)			137Cs (MBq/km2)		
Kanazawa, ISHIKAWA	33	194.5	0.11	±	0.019	0.38	±	0.023
Fukui, FUKUI	27	97.2	0.066	±	0.056	0.16	±	0.05
Kofu, YAMANASHI	32	95.5	0.016	±	0.013	0.046	±	0.0097
Nagano, NAGANO	31	70.7	0.018	±	0.008	0.033	±	0.01
Kagamigahara, GIFU	32	97.5	0.019	±	0.0087	0.011	±	0.0091
Shizuoka, SHIZUOKA	32	102	0.059	±	0.0098	0.11	±	0.015
Nagoya, AICHI	32	66.3	0.066	±	0.01	0.055	±	0.012
Yokkaichi, MIE	32	130.5	0.068	±	0.0093	0.067	±	0.012
Otsu, SHIGA	32	120	0.045	±	0.0086	0.027	±	0.01
Kyoto, KYOTO	31	68.5	0.035	±	0.0094	0.02	±	0.01
Osaka, OSAKA	28	50.3	0.08	±	0.014	0.034	±	0.011
Kobe, HYOGO	30	73.6	0.023	±	0.0083	0.026	±	0.01
Nara, NARA	31	109.9	0.025	±	0.01	0.053	±	0.011
Wakayama, WAKAYAMA	32	56	0.082	±	0.039	0.016	±	0.01
Tottori, TOTTORI	32	174.2	0.12	±	0.016	0.35	±	0.024
Matsue, SHIMANE	32	102.4	0.081	±	0.0082	0.38	±	0.018
Okayama, OKAYAMA	31	41.1	0.023	±	0.013	0.028	±	0.01
Hiroshima, HIROSHIMA	32	49.2	0.042	±	0.014	0.04	±	0.012
Yamaguchi, YAMAGUCHI	31	87.5	0.066	±	0.01	0.21	±	0.017
Ishii-machi, TOKUSHIMA	29	40.8	0.032	±	0.012	0.18	±	0.017
Takamatsu, KAGAWA	32	34.5	0.023	±	0.0093	0.035	±	0.01
Matsuyama, EHIME	33	50.5	0.036	±	0.0095	0.039	±	0.01
Kochi, KOCHI	32	72.3	0.036	±	0.0084	0.034	±	0.0098
Dazaifu, FUKUOKA	32	75.6	0.027	±	0.0081	0.1	±	0.013
Saga, SAGA	33	49.1	0.02	±	0.014	0.083	±	0.013
Nagasaki, NAGASAKI	32	42.5	0.027	±	0.0085	0.037	±	0.011

Location	Duration (Days)	Precipitation (mm)	90Sr (MBq/km2)	137Cs (MBq/km2)
Uto, KUMAMOTO	32	91	0.028 ± 0.014	0.025 ± 0.01
Oita, OITA	32	90.1	0.028 ± 0.0095	0.028 ± 0.011
Miyazaki, MIYAZAKI	32	105.1	0.023 ± 0.0093	0.061 ± 0.012
Kagoshima, KAGOSHIMA	30	66	0.022 ± 0.013	0.095 ± 0.013
Yonagusuku-machi, OKINAWA	33	124.5	0 ± 0.015	0.025 ± 0.011

(2) Strontium-90 and Cesium-137 in Airborn Dust
(form Oct. 2000 to Mar. 2001)

-continued from No. 134 for this publication-

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

Location	Sampling period	Absorption (m3)	90Sr (mBq/m3)			137Cs (mBq/m3)		
October～December, 2000								
Morioka, IWATE	10 ～ 12	10020.0	0	±	0.00055	0	±	0.00026
Akita, AKITA	10 ～ 12	10800.0	0.0012	±	0.00062	0.00033	±	0.00032
Yamagata, YAMAGATA	10 ～ 12	12960.0	0	±	0.00042	0	±	0.00029
Okuma-machi, FUKUSHIMA	10 ～ 12	10920.0	0.00028	±	0.00055	0	±	0.00028
Kawachi-machi, TOCHIGI	10 ～ 12	13688.0	0.00013	±	0.00042	0.00016	±	0.00025
Maebashi, GUNMA	10 ～ 12	10019.0	0	±	0.00043	0.00009	±	0.0003
Ichihara, CHIBA	10 ～ 12	10310.4	0.00056	±	0.00069	0	±	0.00025
Yokohama, KANAGAWA	10 ～ 12	10325.0	0.00072	±	0.00056	0.00032	±	0.00032
Niigata, NIIGATA	10 ～ 12	10894.0	0.00027	±	0.00037	0	±	0.00027
Kosugi-machi, TOYAMA	10 ～ 12	18093.0	0.0005	±	0.00031	0.00013	±	0.00018
Fukui, FUKUI	10 ～ 12	13304.7	0.00015	±	0.00038	0.00013	±	0.00024
Kofu, YAMANASHI	10 ～ 12	13544.0	0.00011	±	0.00036	0.00002	±	0.00025
Nagano, NAGANO	10 ～ 12	9654.0	0.00076	±	0.00044	0	±	0.00029
Kagamigahara, GIFU	10 ～ 12	12443.4	0.00078	±	0.00056	0	±	0.00027
Hamaoka-machi, SHIZUOKA	10 ～ 12	10252.0	0.00017	±	0.00041	0.00042	±	0.00032
Nagoya, AICHI	10 ～ 12	10209.0	0.00048	±	0.00053	0	±	0.0003
Yokkaichi, MIE	10 ～ 12	14474.0	0	±	0.00037	0	±	0.00019
Otsu, SHIGA	10 ～ 12	10527.0	0.0015	±	0.00066	0.00042	±	0.00033
Kyoto, KYOTO	10 ～ 12	10533.0	0.0008	±	0.00036	0	±	0.00026
Osaka, OSAKA	10 ～ 12	14272.0	0.00099	±	0.0005	0.0004	±	0.00024
Kobe, HYOGO	10 ～ 12	10349.5	0.0001	±	0.0005	0.00035	±	0.00031

Location	Sampling period	Absorption (m3)	90Sr (mBq/m3)			137Cs (mBq/m3)		
Nara, NARA	10 ~ 12	11499.8	0.001	±	0.00049	0	±	0.00029
Wakayama, WAKAYAMA	10 ~ 12	7281.9	0.00032	±	0.00047	0	±	0.00041
Tottori, TOTTORI	10 ~ 12	14334.0	0.00073	±	0.00053	0	±	0.00021
Okayama, OKAYAMA	10 ~ 12	12888.0	0.00059	±	0.00046	0.00027	±	0.00025
Hiroshima, HIROSHIMA	10 ~ 12	10183.5	0.00086	±	0.00062	0	±	0.00031
Yamaguchi, YAMAGUCHI	10 ~ 12	21738.0	0.00055	±	0.0003	0	±	0.00013
Tokushima, TOKUSHIMA	10 ~ 12	10080.0	0	±	0.00049	0	±	0.00026
Takamatsu, KAGAWA	10 ~ 12	14978.0	0.00043	±	0.00044	0.00004	±	0.0002
Saga, SAGA	10 ~ 12	9326.8	0.0016	±	0.00072	0	±	0.0003
Nagasaki, NAGASAKI	10 ~ 12	10385.0	0.00019	±	0.00038	0	±	0.00025
Uto, KUMAMOTO	10 ~ 12	13739.7	0.00015	±	0.00026	0	±	0.00021
Oita, OITA	10 ~ 12	10583.0	0.00087	±	0.00055	0	±	0.00028
Miyazaki, MIYAZAKI	10 ~ 12	13441.0	0.00062	±	0.00032	0.00011	±	0.00024
January~March, 2001								
Morioka, IWATE	01 ~ 03	14742.0	0.00002	±	0.00024	0.00073	±	0.00026
Akita, AKITA	01 ~ 03	10800.0	0.00092	±	0.00041	0.00014	±	0.00028
Yamagata, YAMAGATA	01 ~ 03	12960.0	0.00016	±	0.00032	0.00015	±	0.00024
Okuma-machi, FUKUSHIMA	01 ~ 03	10091.0	0.00084	±	0.00058	0.00031	±	0.00032
Kawachi-machi, TOCHIGI	01 ~ 03	13172.0	0.0006	±	0.00033	0	±	0.00022
Maebashi, GUNMA	01 ~ 03	10024.0	0.00042	±	0.00046	0.00069	±	0.00036
Ichihara, CHIBA	01 ~ 03	10170.0	0.00022	±	0.00036	0.00031	±	0.00033
Yokohama, KANAGAWA	01 ~ 03	10422.0	0.00064	±	0.00057	0	±	0.00031
Niigata, NIIGATA	01 ~ 03	10583.0	0.00014	±	0.00036	0.00029	±	0.0003
Kosugi-machi, TOYAMA	01 ~ 03	18102.0	0.00018	±	0.00021	0.00057	±	0.0002
Fukui, FUKUI	01 ~ 03	13116.8	0	±	0.00027	0.0001	±	0.00023
Kofu, YAMANASHI	01 ~ 03	11858.0	0.0018	±	0.0004	0.00032	±	0.00027
Nagano, NAGANO	01 ~ 03	9991.0	0.0012	±	0.00047	0	±	0.0003
Kagamigahara, GIFU	01 ~ 03	12821.3	0.00022	±	0.00041	0.00051	±	0.00029

Location	Sampling period	Absorption (m3)	90Sr (mBq/m3)			137Cs (mBq/m3)		
Hamaoka-machi, SHIZUOKA	01 ~ 03	10288.0	0.0019	±	0.00043	0.0014	±	0.00037
Nagoya, AICHI	01 ~ 03	10293.0	0.00009	±	0.00042	0.00057	±	0.00034
Yokkaichi, MIE	01 ~ 03	14481.0	0.00082	±	0.00043	0.00094	±	0.00027
Otsu, SHIGA	01 ~ 03	10665.0	0.00013	±	0.00035	0.00045	±	0.00032
Kyoto, KYOTO	01 ~ 03	10969.0	0.0007	±	0.00035	0.00048	±	0.00029
Osaka, OSAKA	01 ~ 03	15248.0	0.00042	±	0.00027	0.00023	±	0.00022
Kobe, HYOGO	01 ~ 03	10180.0	0.00037	±	0.00036	0.00015	±	0.00031
Nara, NARA	01 ~ 03	11430.9	0.0007	±	0.00029	0.00012	±	0.00029
Wakayama, WAKAYAMA	01 ~ 03	7281.9	0.00078	±	0.00048	0	±	0.00042
Tottori, TOTTORI	01 ~ 03	14334.0	0.00026	±	0.00026	0.0018	±	0.00031
Okayama, OKAYAMA	01 ~ 03	13168.0	0	±	0.00031	0.00081	±	0.00028
Hiroshima, HIROSHIMA	01 ~ 03	10267.4	0.00081	±	0.00039	0.0002	±	0.00031
Yamaguchi, YAMAGUCHI	01 ~ 03	21839.0	0.00006	±	0.00017	0.00001	±	0.00014
Tokushima, TOKUSHIMA	01 ~ 03	10080.0	0	±	0.00036	0	±	0.0003
Takamatsu, KAGAWA	01 ~ 03	14172.0	0.0002	±	0.00026	0.001	±	0.00026
Saga, SAGA	01 ~ 03	9913.7	0.0002	±	0.00041	0.00069	±	0.00035
Nagasaki, NAGASAKI	01 ~ 03	10759.0	0.00091	±	0.00042	0.00082	±	0.00032
Uto, KUMAMOTO	01 ~ 03	11171.8	0.00058	±	0.00035	0.0019	±	0.00038
Oita, OITA	01 ~ 03	10772.0	0.0013	±	0.00062	0.00082	±	0.00033
Miyazaki, MIYAZAKI	01 ~ 03	13664.0	0.00073	±	0.0003	0.00036	±	0.00025
January~April, 2001								
Mito, IBARAKI	01 ~ 04	10130.2	0.00041	±	0.00058	0	±	0.00032
Mito, IBARAKI	01 ~ 04	10898.9	0	±	0.00029	0	±	0.00026

(3) Strontium-90 and Cesium-137 in Service Water
(form Oct. 2000 to Mar. 2001)

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

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)		
(Source Water)							
Dec, 2000							
Urawa, SAITAMA	7.4	0.041	±	0.037	0	±	0.039
Kisarazu, CHIBA	7.6	1.2	±	0.012	0	±	0.037
Katsushika, TOKYO	7.1	1.2	±	0.016	0.11	±	0.052
Tsukui-machi, KANAGAWA	6.8	0.4	±	0.058	0.017	±	0.041
Nagano, NAGANO	6.3	0.77	±	0.06	0	±	0.037
Inuyama, AICHI	6.8	2	±	0.09	0.91	±	0.047
Moriguchi, OSAKA	7.4	2.1	±	0.12	0.1	±	0.05
Fukuoka, FUKUOKA	7.1	1.7	±	0.1	0.018	±	0.043
Jan, 2001							
Sapporo, HOKKAIDO	6.9	1.3	±	0.013	0.068	±	0.05
Kyoto, KYOTO	7.52	2.1	±	0.16	0.069	±	0.047
(Tap Water)							
Oct, 2000							
Kagoshima, KAGOSHIMA	7.2	0.36	±	0.079	0.064	±	0.046
Nov, 2000							
Sendai, MIYAGI	0	1.7	±	0.1	0.038	±	0.046
Yamagata, YAMAGATA	7.4	2.1	±	0.1	0.036	±	0.047
Fukushima, FUKUSHIMA	7.2	1.7	±	0.11	0	±	0.067
Nagano, NAGANO	6.98	0.94	±	0.072	0	±	0.038
Dec, 2000							

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)		
Wakkanai, HOKKAIDO	7	1.1	±	0.08	0	±	0.038
Aomori, AOMORI	7.51	0.88	±	0.081	0.13	±	0.047
Morioka, IWATE	7	0.93	±	0.086	0.003	±	0.045
Akita, AKITA	6.85	2.2	±	0.12	0.12	±	0.049
Mito, IBARAKI	7.8	1.2	±	0.08	0.024	±	0.041
Kawachi-machi, TOCHIGI	7.76	0.36	±	0.048	0.038	±	0.041
Urawa, SAITAMA	6.9	1.3	±	0.09	0	±	0.042
Ichihara, CHIBA	7.9	1.5	±	0.22	0.035	±	0.041
Katsushika, TOKYO	7.1	1.3	±	0.11	0.066	±	0.049
Yokohama, KANAGAWA	7.1	0.39	±	0.056	0	±	0.039
Niigata, NIIGATA	7.7	2.1	±	0.2	0.013	±	0.046
Kosugi-machi, TOYAMA	7.2	1.5	±	0.13	0.006	±	0.041
Kanazawa, ISHIKAWA	7.45	2.6	±	0.18	0.11	±	0.05
Fukui, FUKUI	0	0.54	±	0.083	0.086	±	0.044
Kofu, YAMANASHI	7.5	1	±	0.07	0	±	0.045
Kagamigahara, GIFU	7.55	1.2	±	0.08	0	±	0.036
Matsue, SHIMANE	0	2.4	±	0.19	0	±	0.044
Okayama, OKAYAMA	6.8	1.8	±	0.11	0.006	±	0.043
Hiroshima, HIROSHIMA	7	1.6	±	0.1	0.04	±	0.042
Ube, YAMAGUCHI	7.81	1.7	±	0.09	0	±	0.036
Tokushima, TOKUSHIMA	6.37	2.1	±	0.13	0	±	0.042
Takamatsu, KAGAWA	7.4	2.3	±	0.16	0.029	±	0.044
Matsuyama, EHIME	7.65	1.3	±	0.08	0	±	0.038
Kochi, KOCHI	6.99	1.3	±	0.08	0	±	0.036
Fukuoka, FUKUOKA	6.9	2.4	±	0.12	0.012	±	0.042
Saga, SAGA	8	2.8	±	0.11	0	±	0.041

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)		
Nagasaki, NAGASAKI	7.48	1.1	±	0.08	0.035	±	0.04
Uto, KUMAMOTO	7.51	0.025	±	0.063	0	±	0.036
Oita, OITA	7.7	0.71	±	0.066	0.036	±	0.042
Miyazaki, MIYAZAKI	7.11	0.92	±	0.11	0	±	0.037
Naha, OKINAWA	7.69	3.4	±	0.14	0.078	±	0.044
Jan, 2001							
Maebashi, GUNMA	6.9	1.4	±	0.09	0.17	±	0.048
Feb, 2001							
Kagoshima, KAGOSHIMA	7.3	0.44	±	0.09	0.071	±	0.048

(4) Strontium-90 and Cesium-137 in Freshwater
(form Oct. 2000 to Mar. 2001)

-continued from No. 134 for this publication-

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

Location	pH (pH)	90Sr (mBq/l)			137Cs (mBq/l)		
(Fresh Water)							
Oct, 2000							
Shobara, HIROSHIMA	6.9	1.1	±	0.2	0	±	0.047
Nov, 2000							
Toyanogata, NIIGATA	7.21	2.2	±	0.12	0.2	±	0.061
Suwa-lake, NAGANO	9.04	0.94	±	0.071	0.092	±	0.048
Dec, 2000							
Uji, KYOTO	7.71	0	±	0.063	0	±	0.039

＊＊Sampling Locations in Japan＊＊

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