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RADIOACTIVITY SURVEY DATA in Japan

Part 1
= Environmental Materials =

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Contents

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Environmental and Dietary Materials*

(Japan Chemical Analysis Center)

1. Collection and pretreatment of samples

(1) Rain and dry fallout

Rain and dry fallout was collected monthly on a sampling tray, approximately 5000cm^2 in area, which was filled with water to a depth of 1 cm at the beginning of every month.

Strontium and cesium carrier solutions were added after the sample was filtered. The tray was washed with 5ℓ of distilled water and the washing was combined to the filtrate.

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

(2) Airborne dust

Airborne dust was collected by an electrostatic precipitator or a filter air sampler for every three-months at a rate of more than 3000m^3 per month.

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

(3) Service water and freshwater

Service water, 100ℓ each, was collected at the intake of the water-treatment plant and at the tap after water was left running for five minutes. Strontium and cesium carriers were added to the filtered water sample. The subsequent process was the same as that described in the section (1). Freshwater was treated in the same way as the service water.

(4) Soil

Soil was collected from the location in the spacious and flat area without past surface disturbance caused by dust storms, inflow and out flow due to precipitation, etc.. Any places located under trees in a forest, in a stony area or inside of river banks were avoided. Soil was taken from two layers of different depths, 0-5cm and 5-20cm. The soil lumps were crushed by hands and dried in a drying oven regulated 105℃. The soil was then passed through a 2mm sieve to remove plant roots and pebbles.

(5) Sea water

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

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

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

(6) Sea sediments

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

a. The depth of water exceeds 1m at low tide.
b. No significant sedimental movement is observed in the vicinity of concern.
c. Mud, silt and fine sand are preferable.

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

(7) Total diet

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

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

(8) Rice

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

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* Samples were sent to the Center from 46 contracted prefectures.

(9) Milk

Raw milk was collected in producing districts and commercial milk was purchased in consuming districts. Milk in a stainless steel pan or a porcelain dish was evaporated to dryness followed by carbonization and ashing.

(10) Vegetables

Spinach and Japanese radish were selected as the representatives for left vegetables and for nonstarch roots, respectively. After removing soil, the edible part of vegetable sample was dried and carbonized in a stainless steel pan or a porcelain dish.

(11) Tea

Five hundred grams of manufactured green tea was collected, carbonized and ashed in a stainless steel pan or a porcelain dish.

(12) Fish, shellfish and seaweeds

a. Sea fish and freshwater fish

Fish was rinsed with water and blotted with a filter paper. Only the edible part was used in case of larger sized fish, and the whole part was used in case of smaller ones. Each sample was weighed and placed in a stainless steel pan or a porcelain dish. After carbonized, the sample was ashed in an electric muffle furnace.

b. Shellfish

Approximately 4kg of shellfish including the shells was collected or purchased. After removing the shells, it was treated in the same way as that for the sea fish.

c. Seaweeds

Edible seaweeds were collected and rinsed with water to remove sand and other adhering matters on the surface. These were removed of excess water, weighed dried and ashed.

Table 1 shows details of sample collection.

Table 1 Details of sample collection

Sample	Frequency of sampling	Quantity of sample
=Environmental materials=		
(1) Rain and dry fallout		
1. For domestic program	monthly	
2. For WHO program	monthly	
(2) Airborne dust	quarterly	>3000 m^3/month
(3) Service water and freshwater		
1. Service water (source water)	semiyearly	100 ℓ
2. Service water (tap water)	semiyearly	100 ℓ
3. Freshwater	yearly (fishing season)	100 ℓ
(4) Soil		
1. 0～ 5 cm	yearly	4 kg
2. 5～ 20cm	yearly	4 kg
(5) Sea water	yearly	40 ℓ
(6) Sea sediments	yearly	4 kg
=Dietary materials=		
(7) Total diet	semiyearly	daily amount for 5 persons
(8) Rice		
1. Producing districts	yearly (harvesting season)	5 kg (polished rice)
2. Consuming districts	yearly (harvesting season)	5 kg (polished rice)
(9) Milk		
1. Producing districts for WHO program	quarterly (February, May, August and November)	3 ℓ
2. Producing districts for domestic program	semiyearly (February and August)	3 ℓ

Sample	Frequency of sampling	Quantity of sample
3. Consuming districts	semiyearly (February and August)	3 ℓ
4. Powdered milk	semiyearly (April and October)	2～ 3 kg
(10) Vegetables		
1. Producing districts	yearly (harvesting season)	4 kg
2. Consuming districts	yearly (harvesting season)	4 kg
(11) Tea	yearly (the first harvesting season)	500g (manufactured tea)
(12) Fish, shellfish and seaweeds		
1. Sea fish	yearly (fishing season)	4 kg
2. Freshwater fish	yearly (fishing season)	4 kg
3. Shellfish	yearly (fishing season)	4 kg
4. Seaweeds	yearly (fishing season)	2～ 3 kg

2. Preparation of samples for analysis

(1) Rain, service water and freshwater

Strontium and cesium were eluted with hydrochloric acid from the cation exchange column. The residue of rain sample on the filter paper was ashed in an electric muffle furnace and the ash was dissolved in hydrochloric acid. The insoluble part was filtered and washed. The filtrate and the washings were combined to the previous eluate and used for radiochemical analysis.

(2) Soil and Sea sediment

Dried soil was crushed to smaller ones than 0.25mm in size by a crusher. The sieved sample was ashed in an electric muffle furnace regulated at 450 ℃. The sample was then heated with hydrochloric acid, strontium and cesium carrier solutions and the mixture was heated. The insoluble constituent was filtered off and washed with water.

The dried sample was crushed to smaller ones than 0.25mm by a crushing machine. The further preparation of the sample was the same as that described in the section 2-(2).

(3) Rice

The ashed sample was pulverized with a porcelain mortar and passed through a 0.35mm sieve. The sieved sample to which both strontium and cesium carriers were added, was digested with nitric acid by heating. After the sample was heated again with nitric acid to dryness, strontium and cesium were extracted with hydrochloric acid and water. The insoluble constituent was filtered and washed. The filtrate and washings were combined for subsequent radiochemical analysis.

(4) Airborne dust, diet, milk, vegetables, fish and shellfish, seaweeds, tea and others

These ashed samples were treated with the same procedure as that described in the section 2-(4)

3. Separation of strontium-90 and cesium-137

(1) Strontium-90

Sample solutions, prepared as in the foregoing sections 2-(1) through 2-(4), were neutralized with sodium hydroxide. After sodium carbonate was added, the precipitate of strontium and calcium carbonates was separated. The supernatant solution was retained for cesium-137 determination.

The carbonates were dissolved in hydrochloric acid and strontium and calcium were precipitated as oxalates. The precipitate was dissolved in nitric acid and strontium was separated from calcium by successive fuming nitric acid separation. Iron scavenge was made after addition of ferric iron carrier followed by barium chromate separation after addition of barium carrier to remove radium, its daughters and lead. Strontium was recovered as carbonate, and the precipitate was dried and weighed to determine strontium recovery. The strontium carbonate was dissolved in hydrochloric acid and iron carrier was added. The solution was allowed to stand for two weeks for strontium-90 and yttrium-90 to attain equilibrium. Yttrium-90 was coprecipitated with ferric hydroxide and the precipitate was filtered off, washed and counted.

(2) Cesium-137

The supernatant separated from the strontium fraction was acidified with hydrochloric acid. While stirring, cesium was adsorbed on the ammonium molybdophosphate added.

After filtered off and washed with hydrochloric acid the precipitate was dissolved in 2.5N sodium hydroxide solution. The solution was adjusted to pH 8.2 with hydrochloric acid and allowed to cool.

Resultant molybdenum hydroxide which separated

out in the solution, was filtered off and washed with water. EDTA was added to the filtrate and washings. Cesium and rubidium were adsorbed on a cation exchange column and cesium was separated from rubidium by eluting with hydrochloric acid.

The eluate was evaporated to dryness and was dissolved. The solution was filtered.
Chloroplatinic acid was added to precipitate cesium. The precipitate was filtered onto a tared paper using a demountable filter and washed with water and then ethanol. After drying, the chemical yield of cesium was determined by weighing the precipitate. Cesium-137 radioactivity was measured for this precipitate.

4. Determination of stable strontium, calcium and potassium

A weighed amount of soil or sea sediment was heated in a electric muffle furnace at 450℃ and then treated with hydrochloric acid for extraction.
A weighed aliquot of ashed samples of total diet, vegetables, milk, fish, shellfish or seaweeds was digested with hydrofluoric acid and nitric acid.
The extract was made up to an appropriate volume with dilute hydrochloric acid. The sample solution was analyzed for calcium by titration with standard potassium permanganate solution after separating calcium as oxalate. Atomic absorption spectroscopy was applied when appropriate. Stable strontium and potassium were determined by atomic absorption and flame emission spectrometry, respectively.

5. Counting

After the radiochemical separation the mounted precipitates were counted for activity using low background beta counters normally for 60 to 90min. Net sample counting rates were corrected for counter efficiency, recovery, self-absorption and decay to obtain the content of strontium-90 and cesium-137per sample aliquot. From the results, concentrations of these nuclides in the original samples were calculated.

6. Results

(1)-1 Strontuim-90 and Cesium-137 in Rain and Dry Fallout (for domestic program)
(from Apr. 1995 to Sep. 1995)

-continued from No. 112 of this publication-

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

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
April, 1995				
Sapporo, HOKKAIDOU	32	90.5	0.035 ± 0.0093	0.025 ± 0.013
Aomori, AOMORI	29	127.5	0.060 ± 0.0097	0.069 ± 0.021
Morioka, IWATE	29	135.8	0.036 ± 0.0094	0.071 ± 0.020
Onagawa-machi, MIYAGI	29	74.1	0.039 ± 0.0097	0.044 ± 0.019
Yamagata, YAMAGATA	29	36.5	0.035 ± 0.0092	0.037 ± 0.016
Ookuma-machi, FUKUSHIMA	29	197.1	0.020 ± 0.0069	0.043 ± 0.015
Mito, IBARAKI	29	79.5	0.027 ± 0.0083	0.016 ± 0.016
Utsunomiya, TOCHIGI	31	73.8	0.0099 ± 0.0094	0.035 ± 0.015
Maebashi, GUNMA	32	36.5	0.034 ± 0.0089	0.065 ± 0.018
Urawa, SAITAMA	29	52.7	0.027 ± 0.0093	0.076 ± 0.016
Ichihara, CHIBA	29	90.4	0.023 ± 0.012	0.039 ± 0.018
Shinjuku, TOKYO	29	114.9	0.020 ± 0.0088	0.023 ± 0.018
Yokohama, KANAGAWA	29	100.3	0.043 ± 0.0098	0.065 ± 0.017
Kosugi-machi, TOYAMA	32	130.9	0.048 ± 0.0093	0.045 ± 0.018
Fukui, FUKUI	29	163.2	0.075 ± 0.040	0.038 ± 0.071
Koufu, YAMANASHI	29	63.0	0.004 ± 0.012	0.007 ± 0.015
Gifu, GIFU	30	283.0	0.024 ± 0.014	0.009 ± 0.015
Shizuoka, SHIZUOKA	29	251.0	0.035 ± 0.015	0.040 ± 0.015
Nagoya, AICHI	29	232.0	0.034 ± 0.010	0.073 ± 0.019
Ootsu, SHIGA	29	94.1	0.038 ± 0.010	0.012 ± 0.013
Tsu, MIE	29	192.5	0.057 ± 0.010	0.046 ± 0.018
Kyoto, KYOTO	29	73.0	0.052 ± 0.012	0.030 ± 0.017
Kobe, HYOUGO	29	87.1	0.040 ± 0.013	0.054 ± 0.016
Nara, NARA	29	124.2	0.062 ± 0.017	0.046 ± 0.018
Wakayama, WAKAYAMA	31	119.0	0.038 ± 0.014	0.040 ± 0.018
Tottori, TOTTORI	29	94.0	0.095 ± 0.012	0.053 ± 0.019

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km^2)	^{137}Cs (MBq/km^2)
Matsue, SHIMANE	29	88.3	0.095 ± 0.0094	0.021 ± 0.0093
Hiroshima, HIROSHIMA	32	157.0	0.023 ± 0.060	0.00 ± 0.11
Ishii-machi, TOKUSHIMA	32	72.5	0.047 ± 0.0091	0.000 ± 0.016
Takamatsu, KAGAWA	32	87.5	0.026 ± 0.014	0.031 ± 0.018
Matsuyama, EHIME	29	129.0	0.020 ± 0.014	0.003 ± 0.016
Dazaifu, FUKUOKA	31	130.5	0.026 ± 0.010	0.027 ± 0.013
Saga, SAGA	29	208.7	0.021 ± 0.0083	0.019 ± 0.012
Nagasaki, NAGASAKI	29	162.5	0.0046 ± 0.0074	0.011 ± 0.012
Uto, KUMAMOTO	30	145.6	0.010 ± 0.0085	0.019 ± 0.013
Ooita, OOITA	29	137.8	0.050 ± 0.012	0.034 ± 0.018
Miyazaki, MIYAZAKI	29	243.5	0.008 ± 0.012	0.025 ± 0.012
Yonagusuku-mura, Okinawa	32	21.5	0.0006 ± 0.0071	0.019 ± 0.018
May, 1995				
Sapporo, HOKKAIDOU	32	60.0	0.023 ± 0.013	0.051 ± 0.019
Aomori, AOMORI	32	96.0	0.063 ± 0.010	0.082 ± 0.021
Morioka, IWATE	32	73.5	0.0024 ± 0.0073	0.044 ± 0.018
Onagawa-machi, MIYAGI	32	124.5	0.033 ± 0.012	0.015 ± 0.018
Yamagata, YAMAGATA	32	70.0	0.028 ± 0.0086	0.026 ± 0.013
Ookuma-machi, FUKUSHIMA	32	384.3	0.0049 ± 0.0058	0.054 ± 0.017
Mito, IBARAKI	32	207.0	0.025 ± 0.022	0.042 ± 0.018
Utsunomiya, TOCHIGI	32	201.3	0.0038 ± 0.0078	0.037 ± 0.019
Maebashi, GUNMA	32	125.0	0.031 ± 0.0093	0.051 ± 0.017
Urawa, SAITAMA	32	183.7	0.021 ± 0.016	0.020 ± 0.0095
Ichihara, CHIBA	32	298.2	0.029 ± 0.013	0.039 ± 0.019
Shinjuku, TOKYO	32	244.5	0.022 ± 0.011	0.054 ± 0.019
Yokohama, KANAGAWA	35	242.9	0.042 ± 0.0095	0.038 ± 0.015
Kosugi-machi, TOYAMA	32	106.8	0.054 ± 0.014	0.045 ± 0.018

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Fukui, FUKUI	32	239.1	0.12 ± 0.17	0.060 ± 0.066
Koufu, YAMANASHI	32	125.5	0.009 ± 0.013	0.000 ± 0.014
Gifu, GIFU	31	273.0	0.035 ± 0.018	0.000 ± 0.014
Shizuoka, SHIZUOKA	32	313.0	0.036 ± 0.016	0.009 ± 0.012
Nagoya, AICHI	32	203.4	0.012 ± 0.0082	0.049 ± 0.018
Ootsu, SHIGA	32	409.1	0.0096 ± 0.0094	0.015 ± 0.019
Tsu, MIE	32	445.0	0.026 ± 0.011	0.043 ± 0.017
Kyoto, KYOTO	34	402.5	0.034 ± 0.012	0.051 ± 0.021
Kobe, HYOUGO	34	314.4	0.0051 ± 0.0083	0.041 ± 0.014
Nara, NARA	32	482.3	0.033 ± 0.015	0.034 ± 0.017
Tottori, TOTTORI	32	229.3	0.072 ± 0.011	0.097 ± 0.021
Matsue, SHIMANE	32	171.7	0.024 ± 0.0058	0.042 ± 0.011
Hiroshima, HIROSHIMA	32	251.8	0.080 ± 0.026	0.048 ± 0.018
Ishii-machi, TOKUSHIMA	31	447.0	0.028 ± 0.0095	0.042 ± 0.018
Takamatsu, KAGAWA	32	198.0	0.016 ± 0.013	0.033 ± 0.018
Matsuyama, EHIME	32	282.5	0.027 ± 0.014	0.040 ± 0.017
Dazaifu, FUKUOKA	32	247.4	0.0053 ± 0.0079	0.028 ± 0.017
Saga, SAGA	32	263.5	0.0000 ± 0.0068	0.031 ± 0.013
Nagasaki, NAGASAKI	33	142.5	0.017 ± 0.0090	0.023 ± 0.013
Uto, KUMAMOTO	32	206.4	0.019 ± 0.0084	0.038 ± 0.017
Ooita, OOITA	32	142.7	0.019 ± 0.010	0.053 ± 0.020
Miyazaki, MIYAZAKI	32	215.4	0.000 ± 0.011	0.017 ± 0.012
Yonagusuku-mura, Okinawa	31	189.0	0.012 ± 0.0083	0.052 ± 0.021
June, 1995				
Sapporo, HOKKAIDOU	30	38.0	0.045 ± 0.015	0.037 ± 0.017
Aomori, AOMORI	33	31.5	0.052 ± 0.0099	0.020 ± 0.017
Morioka, IWATE	33	146.5	0.025 ± 0.0087	0.018 ± 0.016

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Onagawa-machi, MIYAGI	33	169.5	0.019 ± 0.0094	0.000 ± 0.015
Yamagata, YAMAGATA	33	63.5	0.0000 ± 0.0093	0.000 ± 0.014
Ookuma-machi, FUKUSHIMA	33	512.2	0.0019 ± 0.0057	0.000 ± 0.014
Mito, IBARAKI	33	177.5	0.018 ± 0.018	0.017 ± 0.017
Maebashi, GUNMA	33	242.5	0.012 ± 0.0085	0.010 ± 0.013
Urawa, SAITAMA	33	208.0	0.01 ± 0.012	0.009 ± 0.010
Ichihara, CHIBA	33	180.4	0.006 ± 0.010	0.025 ± 0.016
Shinjuku, TOKYO	33	230.2	0.045 ± 0.010	0.006 ± 0.015
Yokohama, KANAGAWA	30	215.9	0.023 ± 0.0095	0.021 ± 0.018
Kosugi-machi, TOYAMA	33	170.4	0.039 ± 0.013	0.030 ± 0.016
Fukui, FUKUI	34	314.1	0.099 ± 0.041	0.019 ± 0.083
Koufu, YAMANASHI	33	70.5	0.006 ± 0.011	0.007 ± 0.013
Gifu, GIFU	34	237.5	0.035 ± 0.028	0.015 ± 0.016
Shizuoka, SHIZUOKA	33	244.0	0.0000 ± 0.0092	0.000 ± 0.010
Nagoya, AICHI	33	112.6	0.021 ± 0.0082	0.025 ± 0.014
Ootsu, SHIGA	31	128.6	0.0000 ± 0.0076	0.007 ± 0.015
Tsu, MIE	33	239.5	0.079 ± 0.016	0.14 ± 0.026
Kyoto, KYOTO	31	138.5	0.0000 ± 0.0088	0.000 ± 0.016
Kobe, HYOUGO	31	63.0	0.0006 ± 0.0065	0.008 ± 0.012
Nara, NARA	33	137.1	0.035 ± 0.016	0.000 ± 0.014
Wakayama, WAKAYAMA	31	114.5	0.011 ± 0.012	0.057 ± 0.019
Tottori, TOTTORI	33	116.3	0.089 ± 0.012	0.022 ± 0.017
Matsue, SHIMANE	33	134.1	0.018 ± 0.0055	0.052 ± 0.012
Hiroshima, HIROSHIMA	30	98.6	0.027 ± 0.034	0.008 ± 0.017
Ishii-machi, TOKUSHIMA	34	144.5	0.035 ± 0.0099	0.046 ± 0.018
Takamatsu, KAGAWA	30	59.0	0.011 ± 0.0079	0.011 ± 0.016
Matsuyama, EHIME	30	112.0	0.041 ± 0.018	0.026 ± 0.016

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Dazaifu, FUKUOKA	33	274.8	0.017 ± 0.0089	0.000 ± 0.015
Saga, SAGA	33	360.7	0.0000 ± 0.0065	0.012 ± 0.011
Nagasaki, NAGASAKI	32	357.0	0.012 ± 0.0070	0.017 ± 0.012
Uto, KUMAMOTO	33	365.4	0.000 ± 0.013	0.001 ± 0.012
Ooita, OOITA	33	282.7	0.014 ± 0.0076	0.021 ± 0.018
Miyazaki, MIYAZAKI	33	545.5	0.006 ± 0.010	0.000 ± 0.011
Yonagusuku-mura, Okinawa	31	364.0	0.013 ± 0.014	0.000 ± 0.017
July, 1995				
Sapporo, HOKKAIDOU	33	97.5	0.050 ± 0.0094	0.008 ± 0.016
Aomori, AOMORI	30	70.0	0.043 ± 0.0095	0.005 ± 0.016
Morioka, IWATE	30	164.4	0.026 ± 0.0097	0.034 ± 0.018
Onagawa-machi, MIYAGI	30	86.5	0.0036 ± 0.0069	0.012 ± 0.019
Yamagata, YAMAGATA	30	190.2	0.004 ± 0.012	0.007 ± 0.017
Ookuma-machi, FUKUSHIMA	30	252.0	0.015 ± 0.0073	0.015 ± 0.014
Mito, IBARAKI	30	146.0	0.025 ± 0.011	0.015 ± 0.017
Utsunomiya, TOCHIGI	30	153.9	0.006 ± 0.012	0.005 ± 0.016
Maebashi, GUNMA	30	215.0	0.005 ± 0.011	0.011 ± 0.016
Urawa, SAITAMA	30	211.7	0.019 ± 0.013	0.012 ± 0.010
Ichihara, CHIBA	30	144.4	0.012 ± 0.012	0.028 ± 0.016
Shinjuku, TOKYO	30	163.4	0.0085 ± 0.0069	0.005 ± 0.015
Yokohama, KANAGAWA	33	185.5	0.047 ± 0.011	0.000 ± 0.015
Kosugi-machi, TOYAMA	30	504.9	0.0090 ± 0.0093	0.052 ± 0.019
Fukui, FUKUI	31	473.5	0.016 ± 0.053	0.079 ± 0.072
Koufu, YAMANASHI	30	157.5	0.0024 ± 0.0073	0.000 ± 0.015
Gifu, GIFU	29	277.5	0.027 ± 0.019	0.008 ± 0.014
Shizuoka, SHIZUOKA	30	130.5	0.014 ± 0.0080	0.000 ± 0.010
Nagoya, AICHI	30	320.1	0.0022 ± 0.0073	0.018 ± 0.014

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Ootsu, SHIGA	32	542.2	0.029 ± 0.023	0.000 ± 0.013
Tsu, MIE	30	284.0	0.0039 ± 0.0087	0.000 ± 0.016
Kyoto, KYOTO	32	439.0	0.020 ± 0.010	0.001 ± 0.017
Kobe, HYOUGO	32	334.4	0.0014 ± 0.0084	0.019 ± 0.011
Nara, NARA	30	619.0	0.015 ± 0.016	0.004 ± 0.018
Wakayama, WAKAYAMA	32	421.0	0.036 ± 0.014	0.005 ± 0.016
Tottori, TOTTORI	30	232.9	0.070 ± 0.011	0.000 ± 0.016
Matsue, SHIMANE	30	361.5	0.029 ± 0.0064	0.019 ± 0.0091
Hiroshima, HIROSHIMA	33	390.6	0.046 ± 0.015	0.0000 ± 0.0098
Ishii-machi, TOKUSHIMA	29	213.0	0.008 ± 0.011	0.004 ± 0.017
Takamatsu, KAGAWA	33	289.0	0.012 ± 0.012	0.036 ± 0.018
Dazaifu, FUKUOKA	30	292.2	0.015 ± 0.012	0.000 ± 0.014
Saga, SAGA	30	346.2	0.0022 ± 0.0071	0.000 ± 0.011
Nagasaki, NAGASAKI	30	245.0	0.028 ± 0.0083	0.002 ± 0.012
Uto, KUMAMOTO	30	542.2	0.011 ± 0.0068	0.0000 ± 0.0099
Ooita, OOITA	30	274.6	0.018 ± 0.0074	0.000 ± 0.017
Miyazaki, MIYAZAKI	30	230.7	0.0012 ± 0.0095	0.002 ± 0.012
Yonagusuku-mura, Okinawa	32	92.0	0.000 ± 0.011	0.005 ± 0.013
August,1995				
Sapporo, HOKKAIDOU	32	178.0	0.041 ± 0.0089	0.033 ± 0.017
Aomori, AOMORI	31	220.5	0.035 ± 0.0092	0.000 ± 0.015
Morioka, IWATE	32	444.5	0.030 ± 0.011	0.013 ± 0.017
Onagawa-machi, MIYAGI	32	164.5	0.012 ± 0.0090	0.000 ± 0.016
Yamagata, YAMAGATA	32	275.0	0.027 ± 0.0085	0.008 ± 0.015
Ookuma-machi, FUKUSHIMA	32	102.5	0.017 ± 0.011	0.002 ± 0.015
Mito, IBARAKI	32	59.0	0.016 ± 0.010	0.026 ± 0.018
Utsunomiya, TOCHIGI	32	173.1	0.004 ± 0.012	0.011 ± 0.013

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Maebashi, GUNMA	32	149.5	0.086 ± 0.018	0.041 ± 0.024
Urawa, SAITAMA	32	71.4	0.0056 ± 0.0099	0.035 ± 0.011
Ichihara, CHIBA	32	21.8	0.034 ± 0.013	0.000 ± 0.014
Shinjuku, TOKYO	32	23.2	0.0075 ± 0.0079	0.000 ± 0.015
Yokohama, KANAGAWA	30	18.6	0.030 ± 0.013	0.008 ± 0.016
Kosugi-machi, TOYAMA	32	215.1	0.019 ± 0.011	0.008 ± 0.016
Fukui, FUKUI	30	153.3	0.000 ± 0.050	0.000 ± 0.078
Koufu, YAMANASHI	32	12.5	0.011 ± 0.0093	0.009 ± 0.017
Gifu, GIFU	32	73.0	0.000 ± 0.012	0.000 ± 0.016
Shizuoka, SHIZUOKA	35	52.0	0.0084 ± 0.0075	0.000 ± 0.011
Nagoya, AICHI	32	42.2	0.029 ± 0.011	0.015 ± 0.013
Ootsu, SHIGA	32	61.4	0.000 ± 0.011	0.012 ± 0.012
Tsu, MIE	32	20.5	0.036 ± 0.0092	0.018 ± 0.017
Kyoto, KYOTO	32	28.5	0.023 ± 0.011	0.022 ± 0.017
Kobe, HYOUGO	32	4.5	0.0038 ± 0.0075	0.11 ± 0.019
Nara, NARA	32	13.7	0.022 ± 0.011	0.000 ± 0.014
Wakayama, WAKAYAMA	32	3.0	0.009 ± 0.012	0.006 ± 0.018
Tottori, TOTTORI	32	81.7	0.24 ± 0.018	0.043 ± 0.018
Matsue, SHIMANE	32	116.8	0.011 ± 0.0051	0.049 ± 0.010
Hiroshima, HIROSHIMA	32	14.1	0.000 ± 0.012	0.004 ± 0.013
Ishii-machi, TOKUSHIMA	32	7.0	0.051 ± 0.010	0.0000 ± 0.0084
Takamatsu, KAGAWA	32	9.5	0.011 ± 0.0076	0.028 ± 0.019
Matsuyama, EHIME	32	68.0	0.016 ± 0.011	0.020 ± 0.017
Dazaifu, FUKUOKA	32	147.1	0.004 ± 0.012	0.000 ± 0.011
Saga, SAGA	32	142.9	0.010 ± 0.0077	0.000 ± 0.011
Nagasaki, NAGASAKI	32	83.5	0.013 ± 0.0076	0.000 ± 0.010
Uto, KUMAMOTO	32	165.5	0.001 ± 0.010	0.002 ± 0.013

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Ooita, OOITA	32	47.6	0.0041 ± 0.0063	0.016 ± 0.016
Miyazaki, MIYAZAKI	32	42.8	0.0000 ± 0.0099	0.016 ± 0.012
Yonagusuku-mura, Okinawa	32	107.5	0.000 ± 0.013	0.000 ± 0.017
September, 1995				
Sapporo, HOKKAIDOU	32	93.5	0.003 ± 0.011	0.002 ± 0.016
Aomori, AOMORI	32	72.0	0.018 ± 0.0079	0.033 ± 0.017
Morioka, IWATE	32	108.5	0.030 ± 0.0097	0.058 ± 0.020
Onagawa-machi, MIYAGI	32	141.0	0.019 ± 0.014	0.007 ± 0.011
Yamagata, YAMAGATA	32	126.4	0.007 ± 0.011	0.003 ± 0.011
Ookuma-machi, FUKUSHIMA	32	177.0	0.002 ± 0.013	0.000 ± 0.016
Mito, IBARAKI	32	192.5	0.015 ± 0.0096	0.024 ± 0.018
Utsunomiya, TOCHIGI	32	134.0	0.017 ± 0.012	0.003 ± 0.017
Maebashi, GUNMA	32	122.5	0.0099 ± 0.0077	0.001 ± 0.010
Urawa, SAITAMA	32	106.1	0.026 ± 0.013	0.038 ± 0.014
Ichihara, CHIBA	32	117.8	0.0025 ± 0.0077	0.010 ± 0.015
Shinjuku, TOKYO	32	175.0	0.010 ± 0.0084	0.015 ± 0.017
Yokohama, KANAGAWA	34	227.8	0.045 ± 0.014	0.040 ± 0.018
Kosugi-machi, TOYAMA	32	134.5	0.019 ± 0.011	0.000 ± 0.015
Fukui, FUKUI	32	108.1	0.017 ± 0.057	0.098 ± 0.084
Koufu, YAMANASHI	32	155.0	0.0094 ± 0.0098	0.000 ± 0.016
Gifu, GIFU	32	147.5	0.000 ± 0.015	0.013 ± 0.016
Shizuoka, SHIZUOKA	29	261.5	0.025 ± 0.0088	0.000 ± 0.011
Nagoya, AICHI	31	88.1	0.010 ± 0.0083	0.004 ± 0.013
Ootsu, SHIGA	32	85.8	0.034 ± 0.014	0.020 ± 0.016
Tsu, MIE	32	207.0	0.020 ± 0.011	0.005 ± 0.017
Kyoto, KYOTO	30	50.0	0.0000 ± 0.0089	0.000 ± 0.016
Kobe, HYOUGO	30	48.4	0.0047 ± 0.0095	0.020 ± 0.012

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Nara, NARA	32	71.5	0.061 ± 0.016	0.055 ± 0.019
Wakayama, WAKAYAMA	32	21.0	0.017 ± 0.0057	0.024 ± 0.018
Tottori, TOTTORI	32	80.7	0.14 ± 0.014	0.066 ± 0.020
Matsue, SHIMANE	32	115.3	0.021 ± 0.0066	0.022 ± 0.0075
Hiroshima, HIROSHIMA	32	142.8	0.043 ± 0.018	0.011 ± 0.012
Ishii-machi, TOKUSHIMA	28	96.0	0.015 ± 0.0095	0.010 ± 0.013
Takamatsu, KAGAWA	29	34.5	0.026 ± 0.0082	0.000 ± 0.017
Matsuyama, EHIME	32	89.5	0.036 ± 0.017	0.000 ± 0.018
Dazaifu, FUKUOKA	32	190.9	0.021 ± 0.0080	0.011 ± 0.020
Saga, SAGA	32	257.6	0.0075 ± 0.0076	0.005 ± 0.011
Nagasaki, NAGASAKI	32	280.0	0.017 ± 0.0088	0.004 ± 0.012
Uto, KUMAMOTO	32	239.0	0.005 ± 0.011	0.009 ± 0.015
Ooita, OOITA	32	268.8	0.020 ± 0.015	0.005 ± 0.015
Miyazaki, MIYAZAKI	32	207.7	0.0083 ± 0.0074	0.054 ± 0.016
Yonagusuku-mura, Okinawa	33	208.0	0.022 ± 0.013	0.016 ± 0.019

6. Results

(1)-2 Strontuim-90 and Cesium-137 in Rain and Dry Fallout (for WHO program) (from Apr. 1995 to Sep. 1995)

-continued from No. 112 of this publication-

Table (1)-2 : Strontium-90 and Cesium-137 in Rain and Dry Fallout

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
April, 1995				
Akita, AKITA	29	155.2	0.049 ± 0.0096	0.066 ± 0.017
Chiba, CHIBA	26	94.1	0.024 ± 0.0084	0.013 ± 0.010
Niigata, NIIGATA	29	95.0	0.038 ± 0.0097	0.055 ± 0.018
Kanazawa, ISHIKAWA	25	170.0	0.042 ± 0.0097	0.060 ± 0.016
Nagano, NAGANO	29	49.0	0.026 ± 0.0087	0.007 ± 0.013
Osaka, OSAKA	39	195.9	0.048 ± 0.013	0.021 ± 0.014
Okayama, OKAYAMA	29	98.8	0.01 ± 0.011	0.006 ± 0.011
Yamaguchi, YAMAGUCHI	29	215.5	0.037 ± 0.0094	0.034 ± 0.016
Kochi, KOCHI	29	226.3	0.078 ± 0.012	0.005 ± 0.013
Kagoshima, KAGOSHIMA	32	366.5	0.021 ± 0.013	0.030 ± 0.020
May, 1995				
Akita, AKITA	32	131.1	0.030 ± 0.014	0.061 ± 0.019
Chiba, CHIBA	35	227.9	0.44 ± 0.027	0.011 ± 0.010
Niigata, NIIGATA	32	26.6	0.033 ± 0.010	0.031 ± 0.018
Kanazawa, ISHIKAWA	34	170.5	0.020 ± 0.0087	0.052 ± 0.018
Nagano, NAGANO	32	70.6	0.018 ± 0.0073	0.020 ± 0.018
Osaka, OSAKA	25	219.7	0.059 ± 0.021	0.026 ± 0.017
Okayama, OKAYAMA	32	218.1	0.006 ± 0.011	0.002 ± 0.017
Yamaguchi, YAMAGUCHI	32	270.5	0.029 ± 0.013	0.027 ± 0.018
Kochi, KOCHI	32	385.7	0.060 ± 0.012	0.058 ± 0.021
Kagoshima, KAGOSHIMA	32	251.0	0.018 ± 0.0072	0.042 ± 0.022
June, 1995				
Akita, AKITA	30	51.4	0.006 ± 0.014	0.005 ± 0.014
Chiba, CHIBA	34	173.0	0.054 ± 0.010	0.021 ± 0.011
Niigata, NIIGATA	33	77.7	0.027 ± 0.0087	0.005 ± 0.012
Kanazawa, ISHIKAWA	30	133.0	0.001 ± 0.011	0.015 ± 0.010

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km^2)	^{137}Cs (MBq/km^2)
Nagano, NAGANO	33	95.5	0.024 ± 0.014	0.013 ± 0.016
Osaka, OSAKA	34	269.5	0.028 ± 0.016	0.022 ± 0.018
Okayama, OKAYAMA	33	199.7	0.027 ± 0.013	0.039 ± 0.017
Yamaguchi, YAMAGUCHI	30	104.0	0.000 ± 0.012	0.002 ± 0.013
Kochi, KOCHI	34	408.9	0.033 ± 0.0095	0.012 ± 0.017
Kagoshima, KAGOSHIMA	30	627.5	0.011 ± 0.0073	0.019 ± 0.019
July, 1995				
Akita, AKITA	32	212.1	0.013 ± 0.014	0.025 ± 0.016
Chiba, CHIBA	30	126.8	0.0051 ± 0.0066	0.0009 ± 0.0090
Niigata, NIIGATA	30	290.8	0.0000 ± 0.0081	0.0000 ± 0.0095
Kanazawa, ISHIKAWA	33	503.5	0.0000 ± 0.0090	0.006 ± 0.011
Nagano, NAGANO	30	290.4	0.007 ± 0.012	0.000 ± 0.014
Osaka, OSAKA	29	253.1	0.034 ± 0.016	0.016 ± 0.020
Okayama, OKAYAMA	30	194.9	0.0000 ± 0.0064	0.000 ± 0.015
Yamaguchi, YAMAGUCHI	33	626.5	0.008 ± 0.010	0.007 ± 0.016
Kochi, KOCHI	29	188.8	0.10 ± 0.022	0.018 ± 0.013
Kagoshima, KAGOSHIMA	32	318.5	0.018 ± 0.0077	0.019 ± 0.016
August, 1995				
Akita, AKITA	33	266.4	0.005 ± 0.016	0.000 ± 0.016
Chiba, CHIBA	32	27.9	0.011 ± 0.0070	0.012 ± 0.010
Niigata, NIIGATA	32	347.2	0.0044 ± 0.0082	0.043 ± 0.013
Kanazawa, ISHIKAWA	32	177.5	0.0000 ± 0.0090	0.009 ± 0.012
Nagano, NAGANO	32	69.1	0.000 ± 0.010	0.013 ± 0.015
Osaka, OSAKA	32	27.8	0.037 ± 0.017	0.000 ± 0.016
Okayama, OKAYAMA	32	54.2	0.015 ± 0.011	0.000 ± 0.016
Yamaguchi, YAMAGUCHI	32	122.0	0.0096 ± 0.0065	0.009 ± 0.018
Kochi, KOCHI	32	127.8	0.096 ± 0.019	0.000 ± 0.016

Location	Duration (days)	Precipitation (mm)	^{90}Sr (MBq/km²)	^{137}Cs (MBq/km²)
Kagoshima, KAGOSHIMA	33	274.0	0.008 ± 0.012	0.000 ± 0.010
September, 1995				
Akita, AKITA	33	151.0	0.072 ± 0.034	0.022 ± 0.019
Chiba, CHIBA	29	166.9	0.017 ± 0.0075	0.0093 ± 0.0095
Niigata, NIIGATA	32	194.4	0.0068 ± 0.0079	0.009 ± 0.011
Kanazawa, ISHIKAWA	29	130.5	0.0080 ± 0.0092	0.016 ± 0.015
Nagano, NAGANO	32	103.9	0.003 ± 0.011	0.001 ± 0.017
Osaka, OSAKA	32	63.3	0.024 ± 0.020	0.008 ± 0.013
Okayama, OKAYAMA	32	85.2	0.008 ± 0.014	0.032 ± 0.027
Yamaguchi, YAMAGUCHI	32	242.0	0.028 ± 0.012	0.000 ± 0.017
Kochi, KOCHI	32	211.3	0.10 ± 0.012	0.000 ± 0.015
Kagoshima, KAGOSHIMA	29	128.5	0.020 ± 0.013	0.010 ± 0.013

(2) Strontium-90 and Cesium-137 in Airborne Dust
(from Apr. 1995 to Sep. 1995)

-continued from No. 112 of this publication-

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

Location	Sampling period	Absorption volume (m^2)	^{90}Sr (mBq/m^3)	^{137}Cs (mBq/m^3)
April~June, 1995				
Morioka, IWATE	4~ 6	11,090.0	0.00065 ± 0.00037	0.00052 ± 0.00041
Akita, AKITA	4~ 6	10,800.0	0.00045 ± 0.00031	0.00045 ± 0.00051
Yamagata, YAMAGATA	4~ 6	12,960.0	0.00000 ± 0.00042	0.00000 ± 0.00039
Ookuma-machi, FUKUSHIMA	4~ 6	9,905.0	0.00045 ± 0.00041	0.00004 ± 0.00043
Mito, IBARAKI	4~ 6	9,007.5	0.00068 ± 0.00041	0.00047 ± 0.00047
Utsunomiya, TOCHIGI	4~ 6	14,797.0	0.00000 ± 0.00024	0.00029 ± 0.00029
Maebashi, GUNMA	4~ 6	12,626.0	0.00037 ± 0.00030	0.00003 ± 0.00030
Ichihara, CHIBA	4~ 6	12,960.0	0.00078 ± 0.00039	0.0010 ± 0.00046
Yokohama, KANAGAWA	4~ 6	10,393.0	0.00021 ± 0.00034	0.00026 ± 0.00037
Niigata, NIIGATA	4~ 6	10,567.0	0.00052 ± 0.00034	0.00004 ± 0.00038
Kosugi-machi, TOYAMA	4~ 6	18,358.0	0.00000 ± 0.00017	0.00004 ± 0.00028
Fukui, FUKUI	4~ 6	12,953.9	0.00000 ± 0.00027	0.00000 ± 0.00032
Koufu, YAMANASHI	4~ 6	10,084.0	0.00047 ± 0.00038	0.00012 ± 0.00039
Nagano, NAGANO	4~ 6	10,886.0	0.00090 ± 0.00034	0.00029 ± 0.00043
Gifu, GIFU	4~ 6	11,157.0	0.00000 ± 0.00028	0.00000 ± 0.00035
Hamaoka-machi, SHIZUOKA	4~ 6	10,263.0	0.00066 ± 0.00037	0.0020 ± 0.00068
Nagoya, AICHI	4~ 6	10,991.0	0.00058 ± 0.00035	0.00000 ± 0.00039
Ootsu, SHIGA	4~ 6	12,078.0	0.00000 ± 0.00027	0.00003 ± 0.00034
Tsu, MIE	4~ 6	14,083.0	0.00059 ± 0.00027	0.00000 ± 0.00027
Kyoto, KYOTO	4~ 6	10,247.0	0.0011 ± 0.00060	0.00093 ± 0.00063
Osaka, OSAKA	4~ 6	16,373.0	0.00007 ± 0.00024	0.00040 ± 0.00027
Kobe, HYOUGO	4~ 6	10,494.0	0.00075 ± 0.00041	0.00060 ± 0.00063
Nara, NARA	4~ 6	8,458.8	0.00083 ± 0.00048	0.00000 ± 0.00044
Wakayama, WAKAYAMA	4~ 6	10,368.0	0.00000 ± 0.00027	0.00063 ± 0.00040

Location	Sampling period	Absorption volume (m^2)	^{90}Sr (mBq/m^3)	^{137}Cs (mBq/m^3)
Tottori, TOTTORI	4～ 6	13,681.0	0.00061 ± 0.00028	0.00000 ± 0.00031
Okayama, OKAYAMA	4～ 6	12,499.0	0.00002 ± 0.00029	0.00052 ± 0.00040
Hiroshima, HIROSHIMA	4～ 6	11,166.0	0.00022 ± 0.00034	0.00076 ± 0.00045
Yamaguchi, YAMAGUCHI	4～ 6	19,370.0	0.00014 ± 0.00019	0.00002 ± 0.00021
Tokushima, TOKUSHIMA	4～ 6	10,080.0	0.00022 ± 0.00032	0.00000 ± 0.00056
Takamatsu, KAGAWA	4～ 6	16,710.1	0.00024 ± 0.00021	0.00000 ± 0.00026
Saga, SAGA	4～ 6	10,128.7	0.00000 ± 0.00028	0.00004 ± 0.00045
Nagasaki, NAGASAKI	4～ 6	10,389.0	0.00021 ± 0.00032	0.00012 ± 0.00045
Ooita, OOITA	4～ 6	10,658.0	0.0013 ± 0.00051	0.00072 ± 0.00052
Miyazaki, MIYAZAKI	4～ 6	11,904.0	0.00037 ± 0.00029	0.00010 ± 0.00038
May~June, 1995				
Uto, KUMAMOTO	5～ 6	11,006.0	0.00021 ± 0.00030	0.00011 ± 0.00038
July~September, 1995				
Morioka, IWATE	7～ 9	10,843.0	0.00048 ± 0.00030	0.00000 ± 0.00045
Akita, AKITA	7～ 9	10,800.0	0.00021 ± 0.00029	0.00000 ± 0.00046
Yamagata, YAMAGATA	7～ 9	12,960.0	0.00000 ± 0.00022	0.00045 ± 0.00040
Ookuma-machi, FUKUSHIMA	7～ 9	10,443.4	0.00000 ± 0.00028	0.00019 ± 0.00042
Mito, IBARAKI	7～ 9	9,273.3	0.00034 ± 0.00033	0.00000 ± 0.00054
Utsunomiya, TOCHIGI	7～ 9	15,156.0	0.00000 ± 0.00038	0.00013 ± 0.00031
Maebashi, GUNMA	7～ 9	12,622.0	0.00000 ± 0.00044	0.00000 ± 0.00033
Ichihara, CHIBA	7～ 9	12,960.0	0.0011 ± 0.00043	0.00000 ± 0.00038
Yokohama, KANAGAWA	7～ 9	10,161.0	0.00054 ± 0.00034	0.00043 ± 0.00039
Niigata, NIIGATA	7～ 9	10,311.0	0.00036 ± 0.00027	0.00000 ± 0.00048
Kosugi-machi, TOYAMA	7～ 9	18,732.0	0.0001 ± 0.00017	0.00041 ± 0.00029
Fukui, FUKUI	7～ 9	12,864.0	0.00000 ± 0.00023	0.00012 ± 0.00034

Location	Sampling period	Absorption volume (m^2)	^{90}Sr (mBq/m^3)		^{137}Cs (mBq/m^3)	
Koufu, YAMANASHI	7～ 9	12,080.0	0.00053	± 0.00027	0.00000	± 0.00031
Nagano, NAGANO	7～ 9	11,241.0	0.00026	± 0.00030	0.00018	± 0.00048
Gifu, GIFU	7～ 9	10,592.0	0.00055	± 0.00031	0.00011	± 0.00051
Hamaoka-machi, SHIZUOKA	7～ 9	10,707.0	0.00000	± 0.00031	0.0015	± 0.00061
Nagoya, AICHI	7～ 9	10,549.8	0.00034	± 0.00032	0.00000	± 0.00037
Ootsu, SHIGA	7～ 9	11,550.0	0.00000	± 0.00025	0.00000	± 0.00040
Tsu, MIE	7～ 9	14,197.0	0.00000	± 0.00036	0.00026	± 0.00041
Kyoto, KYOTO	7～ 9	10,373.0	0.00041	± 0.00053	0.00000	± 0.00050
Osaka, OSAKA	7～ 9	16,327.0	0.00000	± 0.00019	0.00000	± 0.00021
Kobe, HYOUGO	7～ 9	10,498.0	0.00000	± 0.00032	0.0013	± 0.00057
Nara, NARA	7～ 9	10,205.0	0.00043	± 0.00037	0.00000	± 0.00056
Wakayama, WAKAYAMA	7～ 9	10,368.0	0.00000	± 0.00027	0.00000	± 0.00031
Tottori, TOTTORI	7～ 9	13,751.0	0.00054	± 0.00048	0.00000	± 0.00031
Okayama, OKAYAMA	7～ 9	13,219.0	0.0001	± 0.00047	0.00000	± 0.00027
Hiroshima, HIROSHIMA	7～ 9	12,030.0	0.00000	± 0.00029	0.0011	± 0.00042
Yamaguchi, YAMAGUCHI	7～ 9	18,563.0	0.00000	± 0.00013	0.00007	± 0.00025
Tokushima, TOKUSHIMA	7～ 9	10,080.0	0.00045	± 0.00035	0.00000	± 0.00038
Takamatsu, KAGAWA	7～ 9	15,684.5	0.00021	± 0.00021	0.00026	± 0.00034
Saga, SAGA	7～ 9	10,417.9	0.00021	± 0.00033	0.00000	± 0.00052
Nagasaki, NAGASAKI	7～ 9	10,381.0	0.00021	± 0.00031	0.00000	± 0.00039
Uto, KUMAMOTO	7～ 9	10,899.0	0.00000	± 0.00047	0.00000	± 0.00047
Ooita, OOITA	7～ 9	10,375.0	0.00017	± 0.00038	0.00008	± 0.00045
Miyazaki, MIYAZAKI	7～ 9	13,275.0	0.00017	± 0.00025	0.00042	± 0.00033

(3) Strontium-90 and cesium-137 in Service Water
(from Apr. 1995 to Sep. 1995)

-continued from No. 112 of this publication-

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

Location	pH	^{90}Sr (mBq/ ℓ)		^{137}Cs (mBq/ ℓ)	
(Source Water)					
June, 1995					
Urawa, SAITAMA	7.8	0.012	± 0.036	0.000	± 0.072
Katsushika, TOKYO	6.9	1.6	± 0.11	0.54	± 0.11
Tsukui-machi, KANAGAWA	6.9	0.39	± 0.091	0.000	± 0.064
Nagano, NAGANO	7.17	1.1	± 0.09	0.079	± 0.074
Inuyama, AICHI	6.9	1.7	± 0.17	0.22	± 0.088
Moriguchi, OSAKA	7.2	3.3	± 0.27	0.068	± 0.074
Fukuoka, FUKUOKA	8.9	2.0	± 0.11	0.000	± 0.068
July, 1995					
Sapporo, HOKKAIDOU	6.9	1.4	± 0.14	0.19	± 0.079
Kisarazu, CHIBA	7.4	2.1	± 0.11	0.046	± 0.062
August, 1995					
Kyoto, KYOTO	7.24	3.2	± 0.13	0.16	± 0.064
(Tap Water)					
May, 1995					
Yamagata, YAMAGATA	7.0	1.6	± 0.17	0.092	± 0.079
Nagano, NAGANO	7.27	0.49	± 0.068	0.012	± 0.072
Hiroshima, HIROSHIMA	6.85	1.6	± 0.15	0.000	± 0.058
June, 1995					
Wakkanai, HOKKAIDOU	6.3	1.2	± 0.09	0.000	± 0.070
Aomori, AOMORI	7.51	1.4	± 0.09	0.35	± 0.10
Fukushima, FUKUSHIMA	8.01	1.8	± 0.10	0.050	± 0.063
Mito, IBARAKI	7.7	1.2	± 0.10	0.000	± 0.066
Utsunomiya, TOCHIGI	7.13	0.69	± 0.068	0.046	± 0.070
Maebashi, GUNMA	7.1	1.3	± 0.10	0.041	± 0.057

Location	pH	^{90}Sr (mBq/ ℓ)		^{137}Cs (mBq/ ℓ)	
Urawa, SAITAMA	7.2	1.9	± 0.10	0.13	± 0.077
Ichihara, CHIBA	7.1	1.9	± 0.11	0.011	± 0.063
Katsushika, TOKYO	7.1	1.4	± 0.12	0.10	± 0.092
Yokohama, KANAGAWA	7.0	0.40	± 0.091	0.000	± 0.064
Niigata, NIIGATA	7.43	2.9	± 0.21	0.070	± 0.079
Kosugi-machi, TOYAMA	6.8	1.2	± 0.09	0.000	± 0.046
Kanazawa, ISHIKAWA	7.24	2.2	± 0.11	0.10	± 0.075
Fukui, FUKUI	6.26	0.55	± 0.065	0.080	± 0.064
Gifu, GIFU	6.96	1.2	± 0.10	0.000	± 0.064
Shizuoka, SHIZUOKA	7.38	0.61	± 0.067	0.000	± 0.055
Nagoya, AICHI	6.6	1.8	± 0.11	0.058	± 0.062
Ootsu, SHIGA	6.8	3.2	± 0.15	0.11	± 0.077
Tsu, MIE	6.8	2.5	± 0.13	0.12	± 0.081
Osaka, OSAKA	7.2	3.0	± 0.24	0.077	± 0.076
Kobe, HYOUGO	7.12	1.4	± 0.10	0.012	± 0.077
Nara, NARA	7.4	3.2	± 0.27	0.080	± 0.086
Tottori, TOTTORI	7.3	2.2	± 0.11	0.048	± 0.080
Matsue, SHIMANE	—	3.4	± 0.15	0.12	± 0.061
Okayama, OKAYAMA	6.7	1.9	± 0.18	0.000	± 0.080
Ube, YAMAGUCHI	7.2	2.8	± 0.23	0.000	± 0.069
Takamatsu, KAGAWA	7.6	2.1	± 0.11	0.000	± 0.070
Matsuyama, EHIME	7.8	1.6	± 0.10	0.000	± 0.059
Kochi, KOCHI	7.3	1.4	± 0.10	0.000	± 0.085
Fukuoka, FUKUOKA	7.3	2.4	± 0.12	0.000	± 0.065
Nagasaki, NAGASAKI	7.3	2.2	± 0.14	0.21	± 0.079
Uto, KUMAMOTO	6.44	0.043	± 0.039	0.000	± 0.059

Location	pH	^{90}Sr (mBq/ ℓ)		^{137}Cs (mBq/ ℓ)	
Ooita, OOITA	7.51	0.84	± 0.081	0.17	± 0.085
Miyazaki, MIYAZAKI	6.90	1.5	± 0.09	0.000	± 0.058
Kagoshima, KAGOSHIMA	7.6	0.76	± 0.12	0.036	± 0.076
July, 1995					
Morioka, IWATE	7.1	1.2	± 0.11	0.000	± 0.073
Akita, AKITA	6.10	2.0	± 0.26	0.20	± 0.064
Koufu, YAMANASHI	6.8	1.2	± 0.16	0.000	± 0.067
Naha, Okinawa	7.76	2.9	± 0.12	0.023	± 0.055
August, 1995					
Sendai, MIYAGI	—	2.2	± 0.23	0.000	± 0.069
Kyoto, KYOTO	6.84	2.6	± 0.12	0.15	± 0.056
Shinguu, WAKAYAMA	6.0	1.1	± 0.09	0.14	± 0.067
Saga, SAGA	7.72	1.9	± 0.12	0.000	± 0.046

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

-continued from No. 112 of this publication-

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

Location	pH	^{90}Sr (mBq/ ℓ)		^{137}Cs (mBq/ ℓ)	
(FreshWater)					
May, 1995					
Kasumigaura-lake, IBARAKI	8.1	2.8	± 0.12	0.33	± 0.092
July, 1995					
Ishikari-machi, HOKKAIDOU	7.0	2.1	± 0.17	0.42	± 0.095
August, 1995					
Akita, AKITA	6.49	4.4	± 0.20	0.47	± 0.093
Tsuruga, FUKUI	8.58	3.7	± 0.25	2.1	± 0.17

(5) Strontium-90 and Cesium-137 in Soil
(from Apr. 1995 to Sep. 1995)
-continued from No. 112 of this publication-

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

Location	Sampling Depth (cm)	^{90}Sr (Bq/kg) (dried Soil)	^{90}Sr (MBq/km²)	^{137}Cs (Bq/kg) (dried Soil)	^{137}Cs (MBq/km²)
May, 1995					
Tokai-mura, IBARAKI	0～ 5	8.7 ± 0.23	480 ± 13	56 ± 0.8	3100 ± 40
	5～20	7.9 ± 0.22	1100 ± 30	7.9 ± 0.32	1100 ± 50
Akabane-machi, AICHI	0～ 5	0.63 ± 0.066	25 ± 2.6	6.0 ± 0.29	240 ± 11
	5～20	0.70 ± 0.072	100 ± 11	3.3 ± 0.22	480 ± 32
June, 1995					
Fukushima, FUKUSHIMA	0～ 5	6.3 ± 0.19	310 ± 9	25 ± 0.6	1200 ± 30
	5～20	2.8 ± 0.14	400 ± 20	7.9 ± 0.32	1100 ± 50
Katsushika, TOKYO	0～ 5	0.53 ± 0.064	30 ± 3.6	4.7 ± 0.24	260 ± 13
	5～20	0.63 ± 0.068	76 ± 8.3	2.1 ± 0.17	250 ± 20
July, 1995					
Mutsu, AOMORI	0～ 5	3.6 ± 0.16	150 ± 6	13 ± 0.4	510 ± 15
	5～20	3.3 ± 0.15	320 ± 15	2.8 ± 0.19	270 ± 18
Aomori, AOMORI	0～ 5	1.0 ± 0.09	32 ± 2.7	0.77 ± 0.11	24 ± 3.4
	5～20	0.87 ± 0.083	96 ± 9.2	0.95 ± 0.12	100 ± 13
Maebashi, GUNMA	0～ 5	1.2 ± 0.08	48 ± 3.4	2.9 ± 0.21	120 ± 8
	5～20	1.7 ± 0.10	210 ± 12	3.3 ± 0.21	400 ± 26
Urawa, SAITAMA	0～ 5	1.4 ± 0.10	32 ± 2.2	7.9 ± 0.31	180 ± 7
	5～20	0.73 ± 0.075	54 ± 5.6	0.76 ± 0.12	57 ± 9.0
Kashiwazaki, NIIGATA	0～ 5	5.6 ± 0.29	570 ± 29	14 ± 0.4	1400 ± 40
	5～20	0.64 ± 0.064	97 ± 9.7	6.6 ± 0.29	990 ± 44
Nagano, NAGANO	0～ 5	1.1 ± 0.09	39 ± 3.1	8.2 ± 0.33	280 ± 11
	5～20	2.2 ± 0.12	130 ± 7	3.0 ± 0.20	180 ± 12
Gifu, GIFU	0～ 5	0.80 ± 0.077	18 ± 1.8	11 ± 0.4	240 ± 8
	5～20	0.88 ± 0.076	68 ± 5.9	8.2 ± 0.33	630 ± 25
Gotenba, SHIZUOKA	0～ 5	4.5 ± 0.16	120 ± 4	11 ± 0.4	280 ± 9
	5～20	7.1 ± 0.22	940 ± 29	5.1 ± 0.27	660 ± 35

Location	Sampling Depth (cm)	^{90}Sr (Bq/kg) (dried Soil)	^{90}Sr (MBq/km²)	^{137}Cs (Bq/kg) (dried Soil)	^{137}Cs (MBq/km²)
Yasu-machi, FUKUOKA	0～ 5	0.11 ± 0.042	6.3 ± 2.3	0.32 ± 0.10	18 ± 5.8
	5～20	0.072 ± 0.038	13 ± 6.9	0.21 ± 0.098	38 ± 18
Tsu, MIE	0～ 5	0.24 ± 0.048	17 ± 3.5	1.3 ± 0.15	97 ± 11
	5～20	0.23 ± 0.048	38 ± 7.9	1.8 ± 0.17	290 ± 27
Kyoto, KYOTO	0～ 5	1.4 ± 0.10	38 ± 2.7	3.2 ± 0.20	90 ± 5.6
	5～20	0.87 ± 0.081	40 ± 3.7	5.1 ± 0.25	240 ± 12
Osaka, OSAKA	0～ 5	0.39 ± 0.087	19 ± 4.3	5.3 ± 0.27	260 ± 13
	5～20	1.1 ± 0.12	170 ± 19	2.5 ± 0.19	400 ± 30
Kasai, HYOUGO	0～ 5	6.7 ± 0.30	210 ± 9	47 ± 0.7	1500 ± 20
	5～20	0.83 ± 0.11	96 ± 13	5.0 ± 0.26	580 ± 30
Kashihara, NARA	0～ 5	1.3 ± 0.09	81 ± 5.5	4.7 ± 0.25	290 ± 15
	5～20	1.1 ± 0.08	150 ± 11	5.5 ± 0.26	740 ± 36
Kokufu-machi, TOTTORI	0～ 5	0.20 ± 0.047	13 ± 3.2	1.2 ± 0.14	81 ± 9.6
	5～20	0.18 ± 0.046	20 ± 5.0	0.69 ± 0.12	75 ± 13
Oota, SHIMANE	0～ 5	1.2 ± 0.13	18 ± 2.0	34 ± 0.7	530 ± 10
	5～20	0.41 ± 0.089	32 ± 7.0	16 ± 0.4	1200 ± 30
Asahi-machi, OKAYAMA	0～ 5	0.35 ± 0.065	21 ± 4.0	0.22 ± 0.10	14 ± 6.3
	5～20	0.086 ± 0.063	11 ± 8.1	0.22 ± 0.095	29 ± 12
Hagi, YAMAGUCHI	0～ 5	2.1 ± 0.17	110 ± 9	6.0 ± 0.28	340 ± 15
	5～20	2.3 ± 0.18	490 ± 38	3.3 ± 0.21	700 ± 45
Sakaide, KAGAWA	0～ 5	2.5 ± 0.18	92 ± 6.6	24 ± 0.5	870 ± 20
	5～20	2.2 ± 0.18	190 ± 16	7.4 ± 0.30	650 ± 27
Matsuyama, EHIME	0～ 5	1.2 ± 0.13	39 ± 4.3	27 ± 0.6	900 ± 19
	5～20	1.0 ± 0.13	80 ± 9.8	13 ± 0.4	1000 ± 30
Kochi, KOCHI	0～ 5	5.1 ± 0.30	260 ± 15	27 ± 0.6	1400 ± 30
	5～20	5.0 ± 0.26	790 ± 41	13 ± 0.4	2000 ± 60
Fukuoka, FUKUOKA	0～ 5	3.8 ± 0.15	230 ± 9	5.5 ± 0.27	330 ± 16

Location	Sampling Depth (cm)	^{90}Sr (Bq/kg) (dried Soil)		^{90}Sr (MBq/km²)		^{137}Cs (Bq/kg) (dried Soil)		^{137}Cs (MBq/km²)	
	5～20	2.1	± 0.11	350	± 18	2.2	± 0.18	360	± 30
Saga, SAGA	0～ 5	27	± 0.4	780	± 11	6.9	± 0.30	190	± 9
	5～20	7.3	± 0.20	1200	± 30	5.2	± 0.27	850	± 43
Obama-machi, NAGASAKI	0～ 5	4.0	± 0.15	140	± 5	45	± 0.7	1600	± 30
	5～20	5.6	± 0.18	590	± 19	26	± 0.6	2700	± 60
Nishihara-mura, KUMAMOTO	0～ 5	4.8	± 0.17	130	± 4	67	± 0.9	1800	± 20
	5～20	6.3	± 0.20	370	± 12	12	± 0.4	700	± 23
Sadohara-machi, MIYAZAKI	0～ 5	0.84	± 0.070	60	± 5.0	7.1	± 0.30	500	± 22
	5～20	0.74	± 0.066	98	± 8.8	7.5	± 0.31	1000	± 40
Kaimon-machi, KAGOSHIMA	0～ 5	0.32	± 0.053	18	± 2.8	0.97	± 0.14	52	± 7.5
	5～20	0.45	± 0.053	60	± 7.0	1.2	± 0.15	160	± 19
August, 1995									
Sapporo, HOKKAIDOU	0～ 5	8.8	± 0.22	320	± 8	26	± 0.6	950	± 20
	5～20	6.5	± 0.19	770	± 23	9.4	± 0.35	1100	± 40
Takizawa-mura, IWATE	0～ 5	15	± 0.3	490	± 9	46	± 0.7	1500	± 20
	5～20	8.8	± 0.22	770	± 20	4.2	± 0.24	370	± 21
Yamagata, YAMAGATA	0～ 5	2.5	± 0.13	130	± 7	14	± 0.4	720	± 22
	5～20	0.61	± 0.070	71	± 8.3	1.5	± 0.16	180	± 19
Imaichi, TOCHIGI	0～ 5	10	± 0.2	170	± 4	31	± 0.6	510	± 10
	5～20	3.8	± 0.15	190	± 8	7.1	± 0.30	350	± 15
Ichihara, CHIBA	0～ 5	0.19	± 0.045	10	± 2.5	2.2	± 0.18	120	± 10
	5～20	0.39	± 0.055	65	± 9.2	2.1	± 0.18	350	± 30
Yokohama, KANAGAWA	0～ 5	4.7	± 0.27	160	± 9	11	± 0.4	390	± 13
	5～20	5.6	± 0.29	680	± 35	10	± 0.4	1300	± 40
Kosugi-machi, TOYAMA	0～ 5	0.18	± 0.047	18	± 4.8	0.48	± 0.11	49	± 11
	5～20	0.17	± 0.050	31	± 8.7	0.65	± 0.12	110	± 21
Kanazawa, ISHIKAWA	0～ 5	2.6	± 0.14	130	± 7	22	± 0.5	1100	± 30

Location	Sampling Depth (cm)	^{90}Sr (Bq/kg) (dried Soil)	^{90}Sr (MBq/km²)	^{137}Cs (Bq/kg) (dried Soil)	^{137}Cs (MBq/km²)
	5～20	3.4 ± 0.15	610 ± 26	21 ± 0.5	3800 ± 90
Fukui, FUKUI	0～ 5	0.51 ± 0.062	49 ± 5.9	9.6 ± 0.35	910 ± 33
	5～20	0.71 ± 0.077	120 ± 14	2.1 ± 0.18	360 ± 32
Takane-machi, YAMANASHI	0～ 5	7.9 ± 0.22	180 ± 5	28 ± 0.6	640 ± 14
	5～20	5.9 ± 0.22	400 ± 15	14 ± 0.4	930 ± 28
Shinguu, WAKAYAMA	0～ 5	0.19 ± 0.051	9.0 ± 2.4	2.3 ± 0.19	110 ± 9
	5～20	0.13 ± 0.041	21 ± 6.6	0.65 ± 0.12	100 ± 19
Hiroshima, HIROSHIMA	0～ 5	0.16 ± 0.071	7.3 ± 3.2	0.60 ± 0.11	27 ± 5.1
	5～20	1.5 ± 0.14	350 ± 33	6.3 ± 0.29	1400 ± 70
Kamiita-machi, TOKUSHIMA	0～ 5	0.50 ± 0.096	47 ± 9.1	3.1 ± 0.21	290 ± 19
	5～20	0.46 ± 0.095	100 ± 21	2.4 ± 0.19	550 ± 43
Kujuu-machi, OOITA	0～ 5	2.9 ± 0.13	78 ± 3.6	75 ± 0.9	2000 ± 30
	5～20	3.1 ± 0.14	160 ± 7	22 ± 0.5	1200 ± 30
September, 1995					
Naha, Okinawa	0～ 5	0.89 ± 0.080	48 ± 4.3	5.0 ± 0.25	270 ± 14
	5～20	1.4 ± 0.09	170 ± 11	4.2 ± 0.23	510 ± 28

(6) Strontium-90 and Cesium-137 in Sea Water
(from Apr. 1995 to Sep. 1995)
-continued from No. 112 of this publication-

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

Location	Sample volume analyzed (ℓ)	Cl (ℓ)	^{90}Sr (mBq/ℓ)		^{137}Cs (mBq/ℓ)	
July, 1995						
Yoichi-bay, HOKKAIDOU	40.0	18.69	2.0	± 0.18	3.4	± 0.38
Mutsu, AOMORI	60.0	18.7	1.9	± 0.19	3.0	± 0.35
Tokai, IBARAKI	40.0	14.91	2.2	± 0.18	1.8	± 0.31
Niigata, NIIGATA	45.9	17.2	2.0	± 0.21	3.1	± 0.36
Tokoname, AICHI	40.0	14.9	2.0	± 0.18	2.4	± 0.33
Osaka-Port, OSAKA	40.0	11.33	2.4	± 0.19	1.2	± 0.28
Yamaguchi-bay, YAMAGUCHI	40.0	16.5	1.8	± 0.17	2.7	± 0.35
Moji-Port, FUKUOKA	40.0	19.56	2.1	± 0.18	3.8	± 0.40
Kaseda, KAGOSHIMA	40.0	17.5	1.9	± 0.18	3.2	± 0.38
August, 1995						
Mutsu, AOMORI	60.0	18.1	1.6	± 0.18	3.3	± 0.37
Ichihara, CHIBA	40.0	15.19	1.4	± 0.16	2.4	± 0.33
Yokosuka, KANAGAWA	40.0	16.3	2.1	± 0.18	2.9	± 0.35
September, 1995						
Souma, FUKUSHIMA	40.0	13.6	2.2	± 0.20	3.2	± 0.41

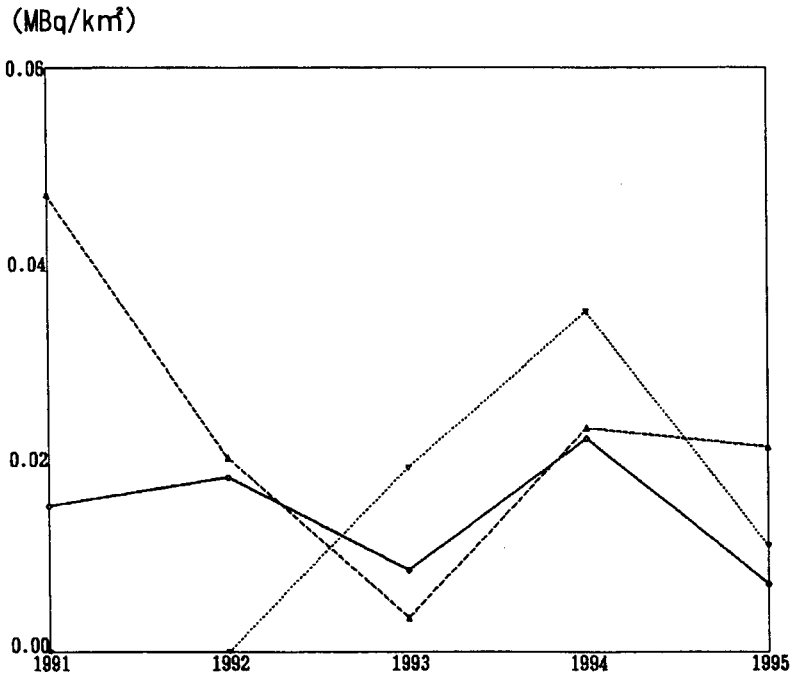
(7) Strontium-90 and Cesium-137 in Sea Sediments
(from Apr. 1995 to Sep. 1995)
-continued from No. 112 of this publication-

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

Location	Depth (m)	^{90}Sr (Bq/kg·dried Soil)	^{137}Cs (Bq/kg·dried Soil)
July, 1995			
Yoichi-bay, HOKKAIDOU	13	0.000 ± 0.030	0.51 ± 0.11
Mutsu, AOMORI	15	0.019 ± 0.034	0.25 ± 0.098
Tokai-mura, IBARAKI	7	0.003 ± 0.031	0.22 ± 0.099
Niigata, NIIGATA	26	0.040 ± 0.034	2.3 ± 0.19
Tokoname, AICHI	23.0	0.17 ± 0.045	4.3 ± 0.24
Osaka-Port, OSAKA	15.3	0.092 ± 0.042	3.4 ± 0.22
Yamaguchi-bay, YAMAGUCHI	10	0.092 ± 0.040	3.6 ± 0.22
Moji-Port, FUKUOKA	6.5	0.097 ± 0.045	1.4 ± 0.15
Kaseda, KAGOSHIMA	5	0.024 ± 0.037	0.73 ± 0.12
August, 1995			
Mutsu, AOMORI	14	0.46 ± 0.060	6.4 ± 0.29
Ichihara, CHIBA	11.0	0.23 ± 0.045	4.5 ± 0.25
Yokosuka, KANAGAWA	7	0.057 ± 0.041	2.0 ± 0.18
September, 1995			
Souma, FUKUSHIMA	5	0.065 ± 0.039	1.1 ± 0.14

＊＊ Rain and Dry Fallout (for domestic program) ＊＊

<Strontium-90>



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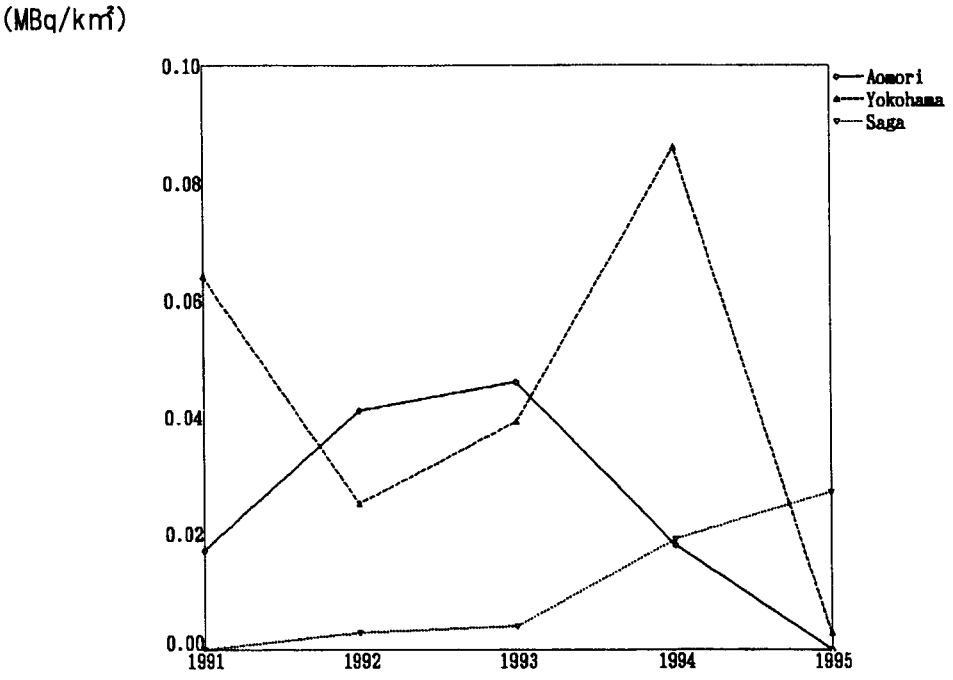
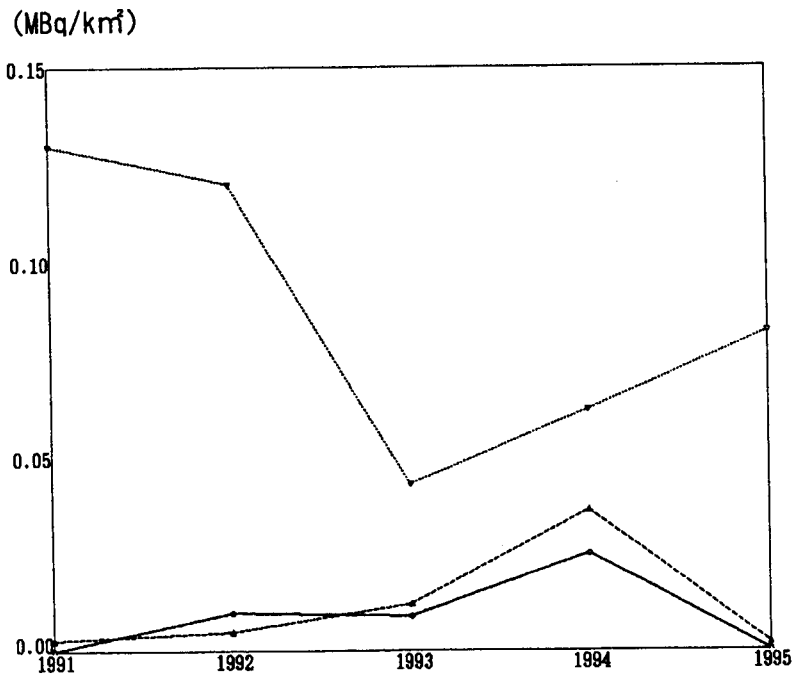


Fig.1—1

* * Rain and Dry Fallout (for WHO program) * *

<Strontium-90>



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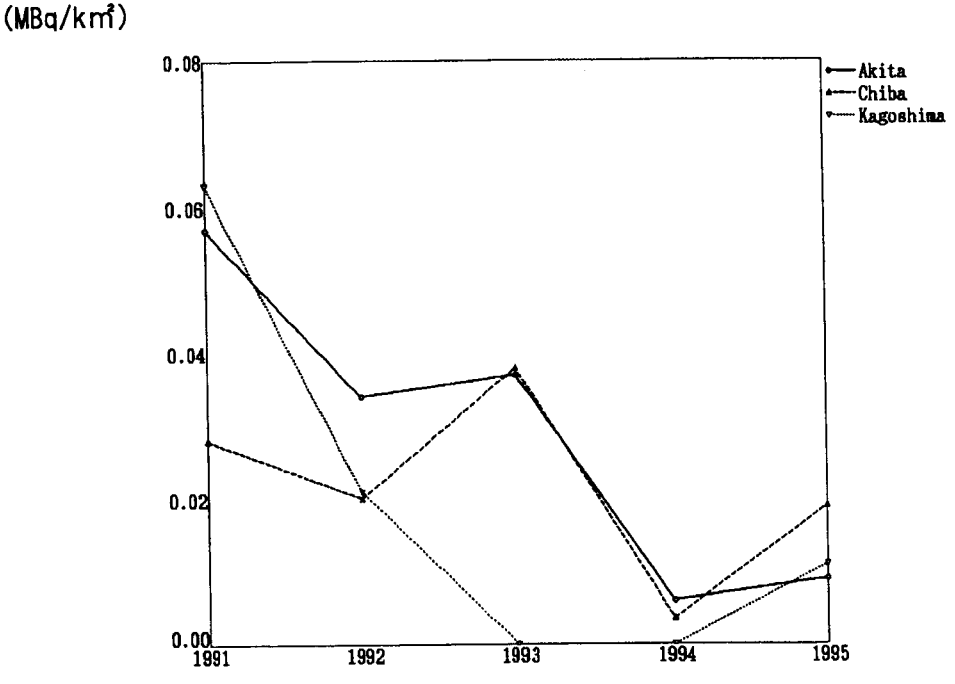

Fig.1—2

* * Airborne Dust * *

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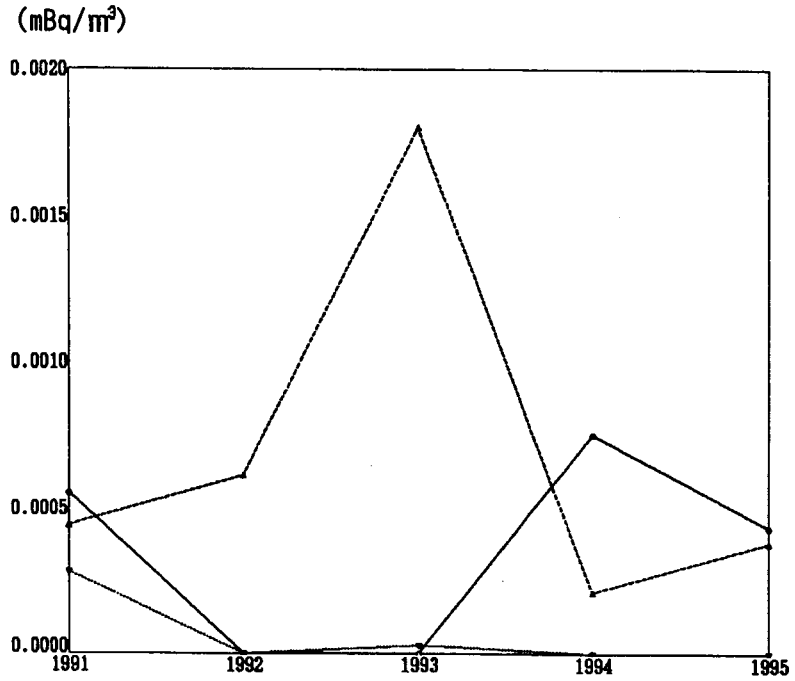

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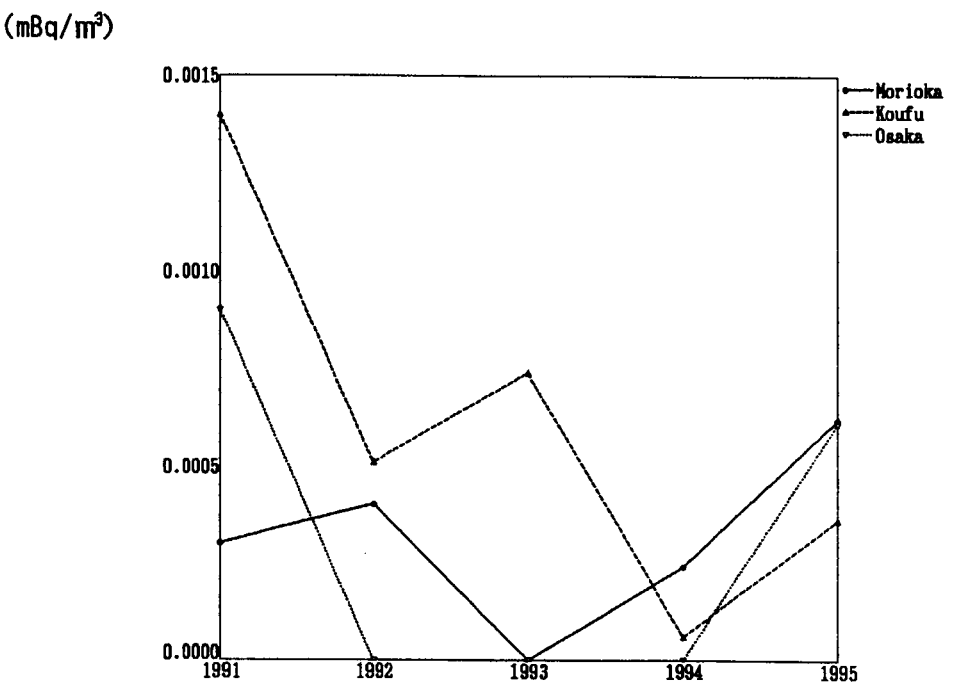
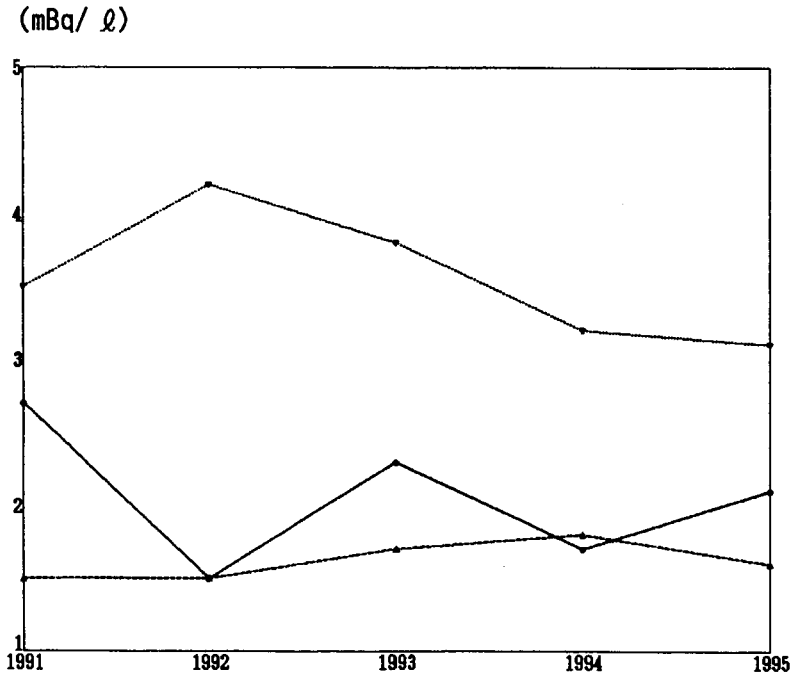


Fig. 2

＊ ＊ Service Water (Source Water) ＊ ＊

<Strontium-90>



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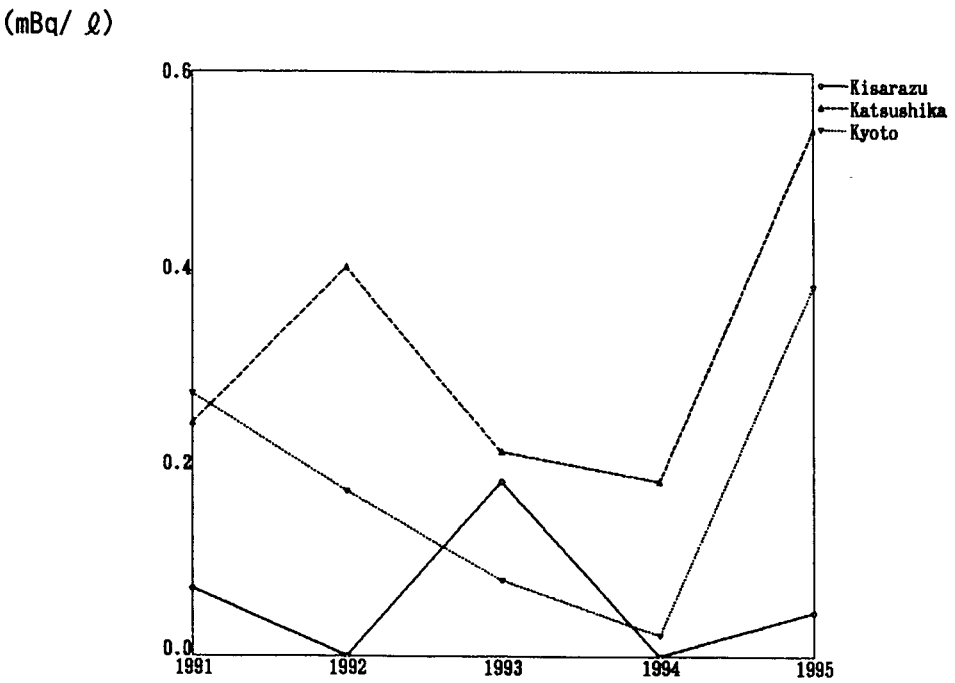

Fig. 3—1

* * Service Water (Tap Water) * *

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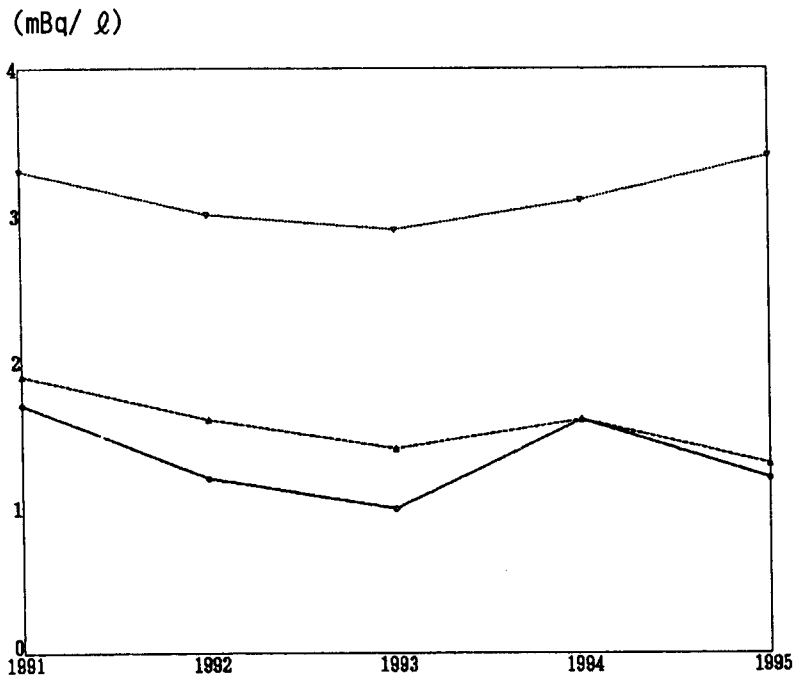

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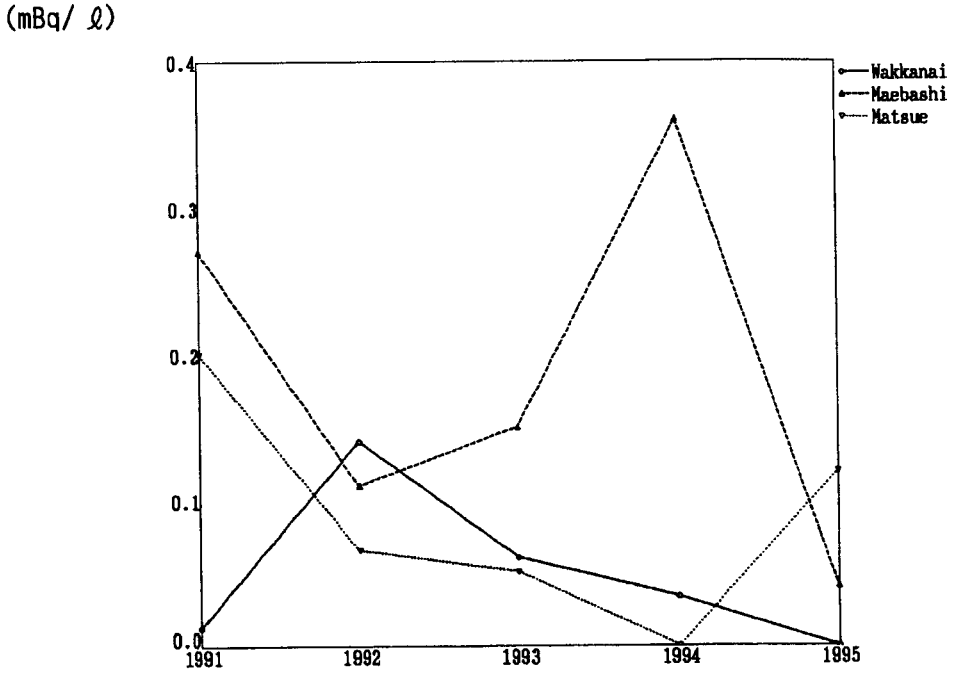

Fig. 3—2

* * Fresh Water * *

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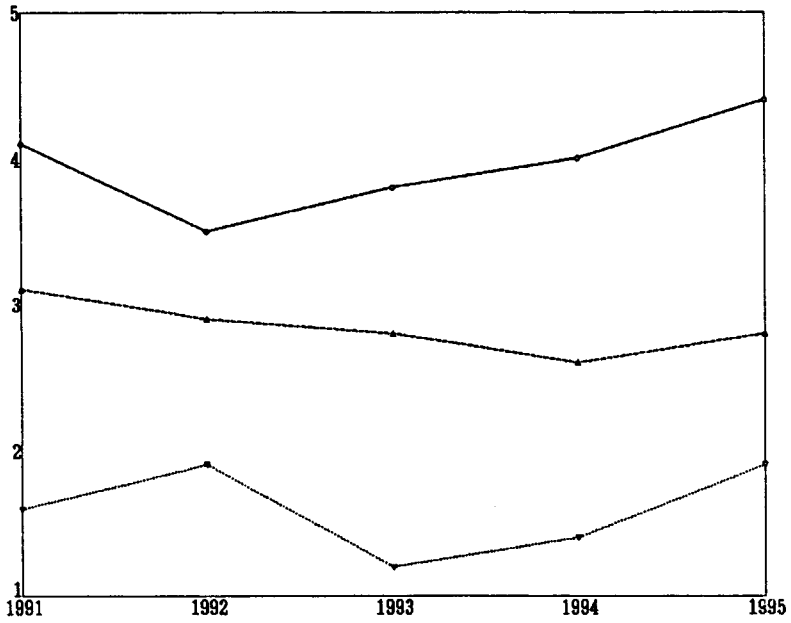

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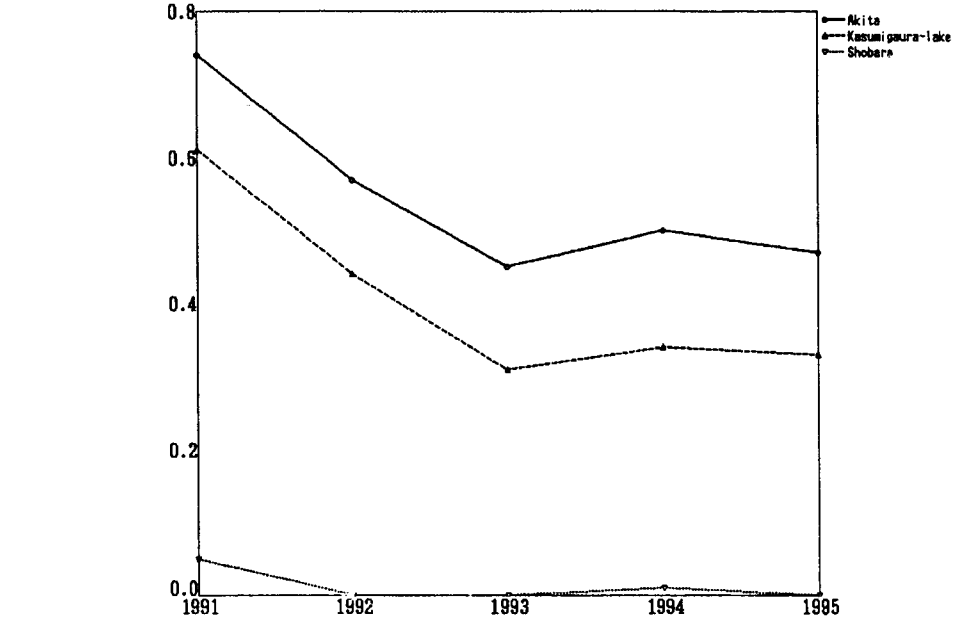
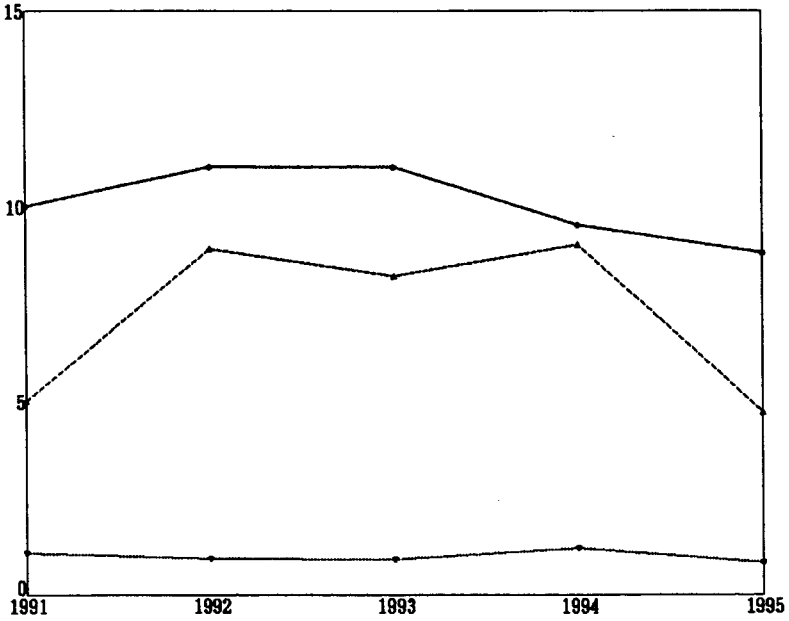


Fig. 4

* * Soil * *

<Strontium-90>

(Bq/kg)(dried So



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(Bq/kg)(dried So.

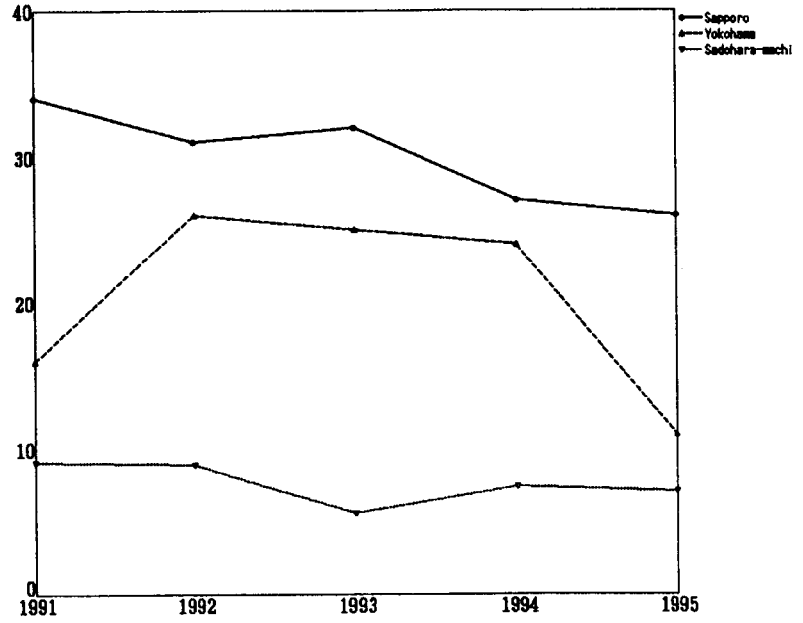

Fig. 5

* * Sea Water * *

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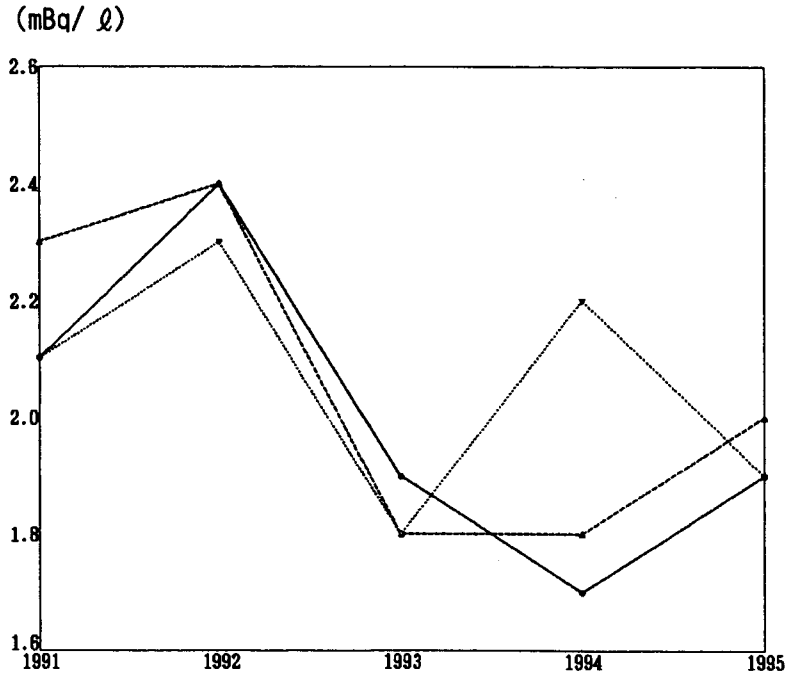

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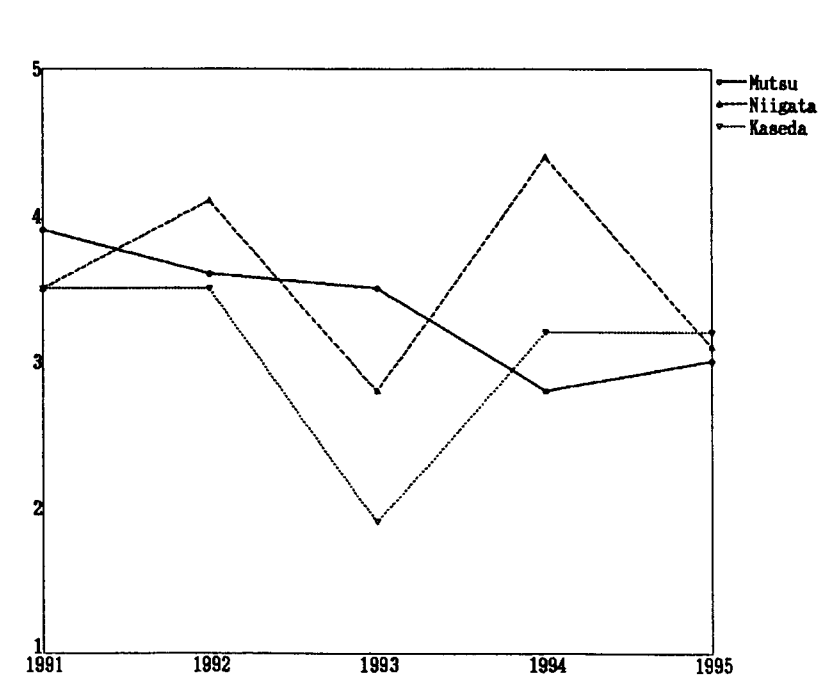
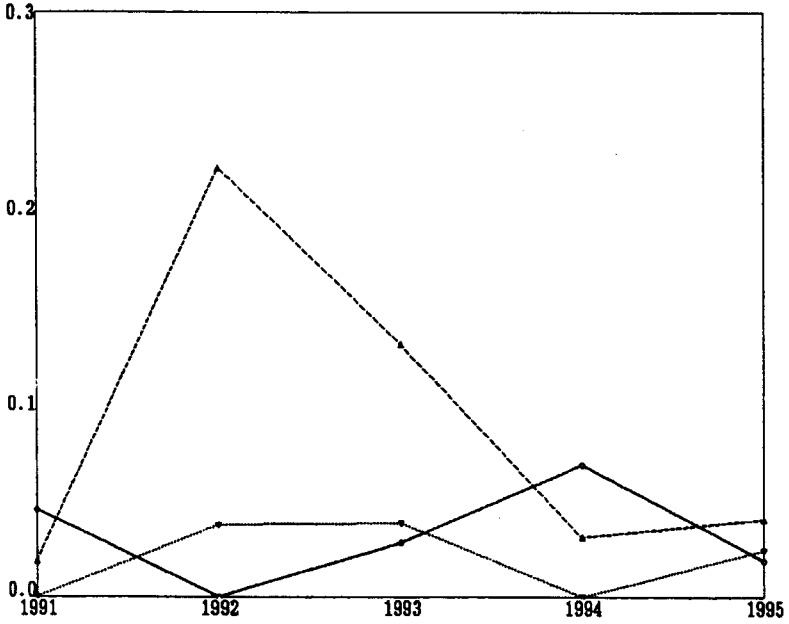


Fig. 6

* * Sea Sediments * *

<Strontium-90>

(Bq/kg･dried Soi



<Cesium-137>

(Bq/kg･dried Soi

Fig. 7

* * 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