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RADIOACTIVITY SURVEY DATA in Japan

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Radioactivity Survey Data in Japan

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Contents

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 5000 cm^2 in area, which was filled with water to a depth of 1 cm at the beginning of every month.

The sample was filtered after strontium and cesium carriers were added. 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 (500 mℓ of Dowex 50W X8, 50 ~ 100 mesh, Na form) at a rate of 80 mℓ/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 3000 m^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 an intake of the water-treatment plant and at the tap after water was left running for five minutes. Water, to which added carriers of strontium and cesium immediately after sampling, was vigorously stirred and filtered. 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 disturbance on the surface caused by duststorms, inflow and outflow due to precipitation, and so on. 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 ~ 5 cm and 5 ~ 20 cm. In the course of air-drying, lumps were crushed by hand, and roots of plants and pebbles were removed. The soil was then passed through a 2 mm sieve to remove small gravels.

(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 1 mℓ 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 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 1 m 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 4 kg of the sample in wet weight was spread on a large porcelain dish and dried in an electric oven at 105 to 110 °C to a constant weight.

(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 500°C in an electric muffle furnace.

(8) Rice

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

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* Samples were sent to the Center from 32 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 non-starch 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 4 kg 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 detailes 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 (sourse water)	semiyearly (June and December)	100 ℓ
2 Service water (tap water)	semiyearly (June and December)	100 ℓ
3 Freshwater	yearly (fishing season)	100 ℓ
(4) Soil		
1 0 ~ 5 cm	yearly (June or July)	4 kg
2 5 ~ 20 cm	yearly (June or July)	4 kg
(5) Sea water	yearly (July or August)	40 ℓ
(6) Sea sediments	yearly (July or August)	4 kg
= Dietary materials =		
(7) Total diet	semiyearly (June, November or December)	daily amount for 5 person
(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)	500 g (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

Air-dried soil was passed through a 20 mesh sieve. The sieved sample was heated, in the presence of strontium and cesium carriers, together with sodium hydroxide. The sample was then heated with hydrochloric acid and the insoluble part was filtered and washed. The combined solution of the filtrate and washings was used for radiochemical analysis.

(3) Sea sediments

After removal of pebbles, shells and other foreign matters, the sediment sample was dried in a hot-air oven and ground finely with a mortar. The sample was passed through a 20 mesh sieve. The further preparation of the sample was the same as that described in the section 2-(2).

(4) Rice

The ashed sample was pulverlized with a porcelain mortar and passed through a 42 mesh sieve. The sieved sample to which both strontium and cesium carriers were added, was digested with hydrochloric 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 part was filtered and washed. The filtrate and washings were combined for subsequent radiochemical analysis.

(5) Airborne dust, diet, milk, vegetable, 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-(5), 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 calcium and strontium were precipitated as oxalates. The precipitate was dissolved in nitric acid and strontium was separated from calcium by successive fuming nitric acid separations. 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 the iron carrier was added. The solution was allowed to stand

for two weeks for strontium-90 and yttrium-90 to attain equilibrium. The 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 in the solution was acidified with hydrochloric acid. While stirring the solution, cesium was adsorbed on ammonium molybdophosphate.

After filtered off and washed with dilute nitric acid, the precipitate was dissolved in 2.5N sodium hydroxide solution. Ammonia was removed completely from the solution by boiling. The solution was adjusted to pH 8.2 with hydrochloric acid and allowed to cool. Molybdenum hydroxide which came out in the solution, was filtered off and washed with water. In such circumstance that ontamination by rubidium-87 was not negligible for the measurement of cesium-137, the following ion-exchange procedure was applied. A fixed amount of ferric chloride solution was added to the solution dissolved with 2.5N sodium hydroxide. Ammonia and molybdenum hydroxide were removed as described above. Ethylenediaminetetraaceticacid tetrasodium salt was added to the filtrate and washings. Cesium and rubidium were adsorbed on a cation exchange resin. Cesium was separated from rubidium by eluting with hydrochloric acid.

To this eluate or the filtrate and washings after removing molybdenum hydroxide, chloroplatinic acid solution was added to precipitate cesium. The precipitate was filtered onto a tared paper in a demountable filter and washed with water and then ethanol. After fixing the filter paper on a tared planchette and drying it, the chemical yield of cesium was determined by weighing the precipitate with the planchette. Radioactivity from cesium-137 was measured for this precipitate.

4. Determination of stable strontium, calcium and potassium

A weighed amount of soil or sea sediment was treated under heating with sodium hydroxide and then with hydrochloric acid for extraction. A weighed aliquot of ashed samples of total diet, vegetables, milk, fish, shellfish or seeweeds was digested using hydrochloric acid or nitric acid, hydrofluoric acid being used when necessary. 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 min. Net sample counting rates were corrected for counter efficiency, recovery, self-absorption and decay to obtain the content of strontium-90 and cesium-137 radio activity 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. 1983 to Jan. 1984)

– continued from No. 64 of this publication –

Table (1)-1: Strontium-90 and Cesium-137 Rain and dry fallout

Location	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/Km^2)	^{137}Cs (mCi/Km^2)
April, 1983				
Matsue, SHIMANE	31	107.3	0.003 ± 0.0006	0.006 ± 0.0008
May, 1983				
Matsue, SHIMANE	32	96.3	0.004 ± 0.0007	0.006 ± 0.0008
June, 1983				
Shizuoka, SHIZUOKA	32	167.5	0.005 ± 0.0008	0.007 ± 0.0008
Kyoto, KYOTO	31	246.4	0.005 ± 0.0008	0.006 ± 0.0007
Matsue, SHIMANE	31	136.1	0.003 ± 0.0007	0.005 ± 0.0008
Saga, SAGA	29	311.2	0.003 ± 0.0007	0.005 ± 0.0007
July, 1983				
Sapporo, HOKKAIDO	32	44.5	0.003 ± 0.0006	0.003 ± 0.0007
Aomori, AOMORI	32	86.1	0.007 ± 0.0008	0.006 ± 0.0007
Ojika-gun, MIYAGI	31	278.6	0.007 ± 0.0008	0.007 ± 0.0007
Mito, IBARAGI	32	140.0	0.006 ± 0.0008	0.007 ± 0.0008
Shinjuku, TOKYO	32	107.6	0.005 ± 0.0007	0.003 ± 0.0007
Yokohama, KANAGAWA	32	155.3	0.004 ± 0.0007	0.005 ± 0.0008
Fukui, FUKUI	38	486.4	0.005 ± 0.0008	0.007 ± 0.0008
Shizuoka, SHIZUOKA	32	192.5	0.003 ± 0.0007	0.004 ± 0.0007
Nagoya, AICHI	32	283.5	0.005 ± 0.0008	0.005 ± 0.0007
Kyoto, KYOTO	32	181.7	0.003 ± 0.0007	0.002 ± 0.0007
Wakayama, WAKAYAMA	31	184.4	0.004 ± 0.0007	0.003 ± 0.0005
Tottori, TOTTORI	32	232.2	0.007 ± 0.0008	0.003 ± 0.0007
Matsue, SHIMANE	31	350.5	0.003 ± 0.0007	0.005 ± 0.0007
Matsuyama, EHIME	32	156.0	0.002 ± 0.0006	0.002 ± 0.0006
Dazaifu, FUKUOKA	32	302.5	0.002 ± 0.0007	0.002 ± 0.0006
Saga, SAGA	32	287.6	0.001 ± 0.0006	0.002 ± 0.0005
Nagasaki, NAGASAKI	33	276.0	0.002 ± 0.0007	0.002 ± 0.0005
Nakagami-gun, OKINAWA	34	166.5	0.002 ± 0.0007	0.002 ± 0.0005

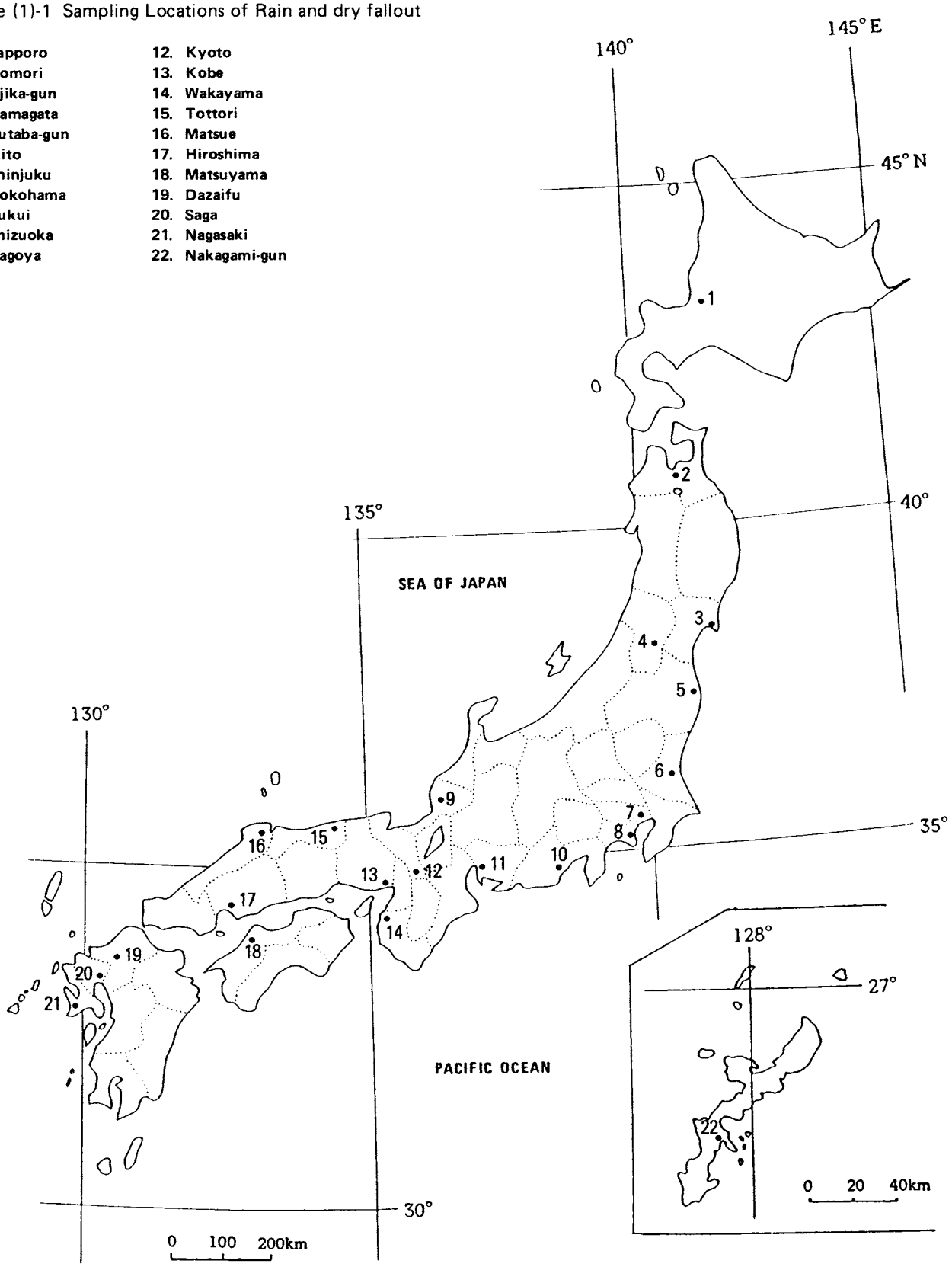
Location	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/Km^2)	^{137}Cs (mCi/Km^2)
August, 1983				
Sapporo, HOKKAIDO	32	96.5	0.003 ± 0.0006	0.003 ± 0.0007
Aomori, AOMORI	32	119.8	0.004 ± 0.0007	0.003 ± 0.0006
Ojika-gun, MIYAGI	33	162.9	0.004 ± 0.0006	0.002 ± 0.0005
Yamagata, YAMAGATA	32	116.0	0.001 ± 0.0006	0.001 ± 0.0005
Futaba-gun, FUKUSHIMA	32	103.7	0.002 ± 0.0006	0.002 ± 0.0005
Mito, IBARAGI	32	91.0	0.002 ± 0.0006	0.001 ± 0.0005
Shinjuku, TOKYO	32	199.2	0.002 ± 0.0006	0.002 ± 0.0006
Yokohama, KANAGAWA	31	353.5	0.002 ± 0.0008	0.002 ± 0.0005
Fukui, FUKUI	26	49.4	0.001 ± 0.0006	0.002 ± 0.0005
Shizuoka, SHIZUOKA	32	605.0	0.001 ± 0.0006	0.002 ± 0.0006
Nagoya, AICHI	32	86.6	0.003 ± 0.0007	0.001 ± 0.0005
Kyoto, KYOTO	32	92.0	0.002 ± 0.0006	0.003 ± 0.0006
Kobe, HYOGO	33	41.7	0.003 ± 0.0007	0.004 ± 0.0006
Wakayama, WAKAYAMA	33	15.2	0.003 ± 0.0007	0.001 ± 0.0005
Tottori, TOTTORI	32	104.3	0.011 ± 0.0010	0.003 ± 0.0006
Matsue, SHIMANE	32	77.7	0.002 ± 0.0006	0.001 ± 0.0005
Hiroshima, HIROSHIMA	31	76.7	0.012 ± 0.0010	0.003 ± 0.0006
Matsuyama, EHIME	32	19.5	0.002 ± 0.0006	0.000 ± 0.0005
Dazaifu, FUKUOKA	32	175.4	0.004 ± 0.0007	0.001 ± 0.0005
Saga, SAGA	33	272.1	0.002 ± 0.0006	0.002 ± 0.0005
Nagasaki, NAGASAKI	32	208.0	0.002 ± 0.0007	0.002 ± 0.0005
Nakagami-gun, OKINAWA	30	209.0	0.002 ± 0.0006	0.001 ± 0.0004
September, 1983				
Sapporo, HOKKAIDO	31	122.0	0.003 ± 0.0007	0.003 ± 0.0007
Aomori, AOMORI	31	56.1	0.004 ± 0.0007	0.001 ± 0.0005
Ojika-gun, MIYAGI	31	293.3	0.006 ± 0.0007	0.004 ± 0.0007
Yamagata, YAMAGATA	31	182.1	0.003 ± 0.0007	0.001 ± 0.0006
Futaba-gun, FUKUSHIMA	30	285.1	0.004 ± 0.0007	0.003 ± 0.0007
Mito, IBARAGI	31	188.5	0.002 ± 0.0006	0.003 ± 0.0007
Shinjuku, TOKYO	31	232.4	0.002 ± 0.0006	0.002 ± 0.0007
Yokohama, KANAGAWA	31	271.4	0.003 ± 0.0007	0.002 ± 0.0007
Fukui, FUKUI	31	395.4	0.003 ± 0.0006	0.002 ± 0.0007
Shizuoka, SHIZUOKA	29	479.0	0.004 ± 0.0007	0.001 ± 0.0006
Nagoya, AICHI	31	272.8	0.003 ± 0.0007	0.002 ± 0.0006
Kyoto, KYOTO	31	333.8	0.004 ± 0.0007	0.002 ± 0.0006
Kobe, HYOGO	32	333.2	0.003 ± 0.0007	0.002 ± 0.0007
Wakayama, WAKAYAMA	28	173.2	0.003 ± 0.0007	0.002 ± 0.0005
Tottori, TOTTORI	33	241.0	0.006 ± 0.0009	0.001 ± 0.0005

Location	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/Km^2)	^{137}Cs (mCi/Km^2)
Matsue, SHIMANE	32	275.8	0.002 ± 0.0006	0.001 ± 0.0005
Hiroshima, HIROSHIMA	31	236.8	0.004 ± 0.0007	0.002 ± 0.0005
Matsuyama, EHIME	30	178.0	0.002 ± 0.0007	0.001 ± 0.0004
Dazaifu, FUKUOKA	30	311.3	0.003 ± 0.0007	0.001 ± 0.0005
Saga, SAGA	31	255.2	0.002 ± 0.0008	0.001 ± 0.0005
Nagasaki, NAGASAKI	31	258.5	0.002 ± 0.0007	0.000 ± 0.0005
Nakagami-gun, OKINAWA	34	379.0	0.002 ± 0.0008	0.001 ± 0.0005
October, 1983				
Sapporo, HOKKAIDO	32	86.5	0.003 ± 0.0006	0.003 ± 0.0006
Aomori, AOMORI	32	77.7	0.003 ± 0.0006	0.004 ± 0.0006
Ojika-gun, MIYAGI	32	71.3	0.007 ± 0.0008	0.002 ± 0.0006
Yamagata, YAMAGATA	32	67.1	0.002 ± 0.0006	0.002 ± 0.0005
Futaba-gun, FUKUSHIMA	33	65.4	0.001 ± 0.0006	0.002 ± 0.0005
Mito, IBARAGI	32	104.0	0.003 ± 0.0007	0.001 ± 0.0005
Shinjuku, TOKYO	32	141.4	0.003 ± 0.0007	0.003 ± 0.0006
Yokohama, KANAGAWA	32	153.8	0.002 ± 0.0006	0.002 ± 0.0006
Fukui, FUKUI	33	136.9	0.001 ± 0.0006	0.002 ± 0.0005
Shizuoka, SHIZUOKA	33	192.0	0.002 ± 0.0007	0.001 ± 0.0004
Nagoya, AICHI	32	167.5	0.001 ± 0.0006	0.002 ± 0.0005
Kyoto, KYOTO	32	130.6	0.005 ± 0.0008	0.002 ± 0.0006
Kobe, HYOGO	32	84.4	0.002 ± 0.0007	0.004 ± 0.0006
Wakayama, WAKAYAMA	39	146.1	0.003 ± 0.0007	0.002 ± 0.0005
Tottori, TOTTORI	30	111.8	0.004 ± 0.0008	0.004 ± 0.0006
Hiroshima, HIROSHIMA	32	69.8	0.004 ± 0.0008	0.001 ± 0.0005
Matsuyama, EHIME	33	94.5	0.002 ± 0.0006	0.000 ± 0.0004
Dazaifu, FUKUOKA	33	102.9	0.004 ± 0.0009	0.000 ± 0.0004
Saga, SAGA	31	134.9	0.002 ± 0.0007	0.000 ± 0.0006
Nagasaki, NAGASAKI	32	87.0	0.003 ± 0.0007	0.001 ± 0.0006
Nakagami-gun, OKINAWA	29	53.5	0.002 ± 0.0007	0.001 ± 0.0006
November, 1983				
Sapporo, HOKKAIDO	30	79.5	0.003 ± 0.0007	0.002 ± 0.0007
Aomori, AOMORI	31	114.3	0.005 ± 0.0007	0.003 ± 0.0006
Ojika-gun, MIYAGI	31	82.6	0.007 ± 0.0008	0.001 ± 0.0005
Yamagata, YAMAGATA	31	121.3	0.002 ± 0.0006	0.002 ± 0.0005
Futaba-gun, FUKUSHIMA	31	69.5	0.001 ± 0.0006	0.003 ± 0.0006
Mito, IBARAGI	31	52.0	0.002 ± 0.0007	0.002 ± 0.0005
Shinjuku, TOKYO	31	35.6	0.002 ± 0.0006	0.005 ± 0.0007
Yokohama, KANGAWA	31	45.0	0.002 ± 0.0006	0.002 ± 0.0005
Fukui, FUKUI	38	329.3	0.006 ± 0.0008	0.008 ± 0.0008
Shizuoka, SHIZUOKA	31	40.5	0.002 ± 0.0006	0.002 ± 0.0006

Location	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/Km^2)	^{137}Cs (mCi/Km^2)
Nagoya, AICHI	31	20.2	0.002 ± 0.0007	0.001 ± 0.0004
Kyoto, KYOTO	31	22.2	0.004 ± 0.0007	0.001 ± 0.0006
Kobe, HYOGO	32	25.4	0.003 ± 0.0007	0.003 ± 0.0007
Tottori, TOTTORI	31	168.9	0.008 ± 0.0010	0.006 ± 0.0008
Hiroshima, HIROSHIMA	31	17.8	0.006 ± 0.0008	0.005 ± 0.0008
Matsuyama, EHIME	30	22.5	0.002 ± 0.0006	0.002 ± 0.0007
Dazaifu, FUKUOKA	31	14.1	0.001 ± 0.0008	0.001 ± 0.0009
Saga, SAGA	31	4.1	0.001 ± 0.0006	0.002 ± 0.0006
Nagasaki, NAGASAKI	31	15.0	0.002 ± 0.0007	0.002 ± 0.0007
Nakagami-gun, OKINAWA	31	10.0	0.002 ± 0.0007	0.001 ± 0.0006
December, 1983				
Sapporo, HOKKAIDO	28	67.5	0.002 ± 0.0006	0.002 ± 0.0006
Aomori, AOMORI	35	105.9	0.006 ± 0.0008	0.005 ± 0.0007
Ojika-gun, MIYAGI	28	0.6	0.006 ± 0.0008	0.001 ± 0.0005
Yamagata, YAMAGATA	35	42.2	0.003 ± 0.0007	0.002 ± 0.0007
Futaba-gun, FUKUSHIMA	27	6.4	0.001 ± 0.0006	0.001 ± 0.0007
Mito, IBARAGI	36	11.0	0.001 ± 0.0005	0.001 ± 0.0004
Shinjuku, TOKYO	35	14.0	0.001 ± 0.0006	0.002 ± 0.0005
Yokohama, KANAGAWA	36	15.6	0.001 ± 0.0006	0.001 ± 0.0005
Fukui, FUKUI	31	258.6	0.002 ± 0.0006	0.007 ± 0.0008
Shizuoka, SHIZUOKA	35	17.0	0.002 ± 0.0006	0.001 ± 0.0005
Nagoya, AICHI	36	16.6	0.002 ± 0.0006	0.002 ± 0.0006
Kyoto, KYOTO	36	18.4	0.001 ± 0.0006	0.000 ± 0.0004
Kobe, HYOGO	27	15.1	0.003 ± 0.0007	0.003 ± 0.0007
Wakayama, WAKAYAMA	37	13.5	0.002 ± 0.0007	0.000 ± 0.0004
Tottori, TOTTORI	36	436.2	0.010 ± 0.0009	0.011 ± 0.0009
Hiroshima, HIROSHIMA	37	47.8	0.002 ± 0.0007	0.003 ± 0.0006
Matsuyama, EHIME	28	18.0	0.001 ± 0.0006	0.001 ± 0.0005
Saga, SAGA	36	17.4	0.001 ± 0.0006	0.001 ± 0.0005
Nagasaki, NAGASAKI	35	49.5	0.002 ± 0.0008	0.002 ± 0.0006
Nakagami-gun, OKINAWA	27	22.5	0.001 ± 0.0005	0.001 ± 0.0005

Figure (1)-1 Sampling Locations of Rain and dry fallout

1. Sapporo
2. Aomori
3. Ojika-gun
4. Yamagata
5. Futaba-gun
6. Mito
7. Shinjuku
8. Yokohama
9. Fukui
10. Shizuoka
11. Nagoya
12. Kyoto
13. Kobe
14. Wakayama
15. Tottori
16. Matsue
17. Hiroshima
18. Matsuyama
19. Dazaifu
20. Saga
21. Nagasaki
22. Nakagami-gun



(1)-2 Strontium-90 and Cesium-137 in Rain and dry fallout (for WHO program) (from Jul. 1983 to Jan. 1984)

– continued from No. 64 of this publication –

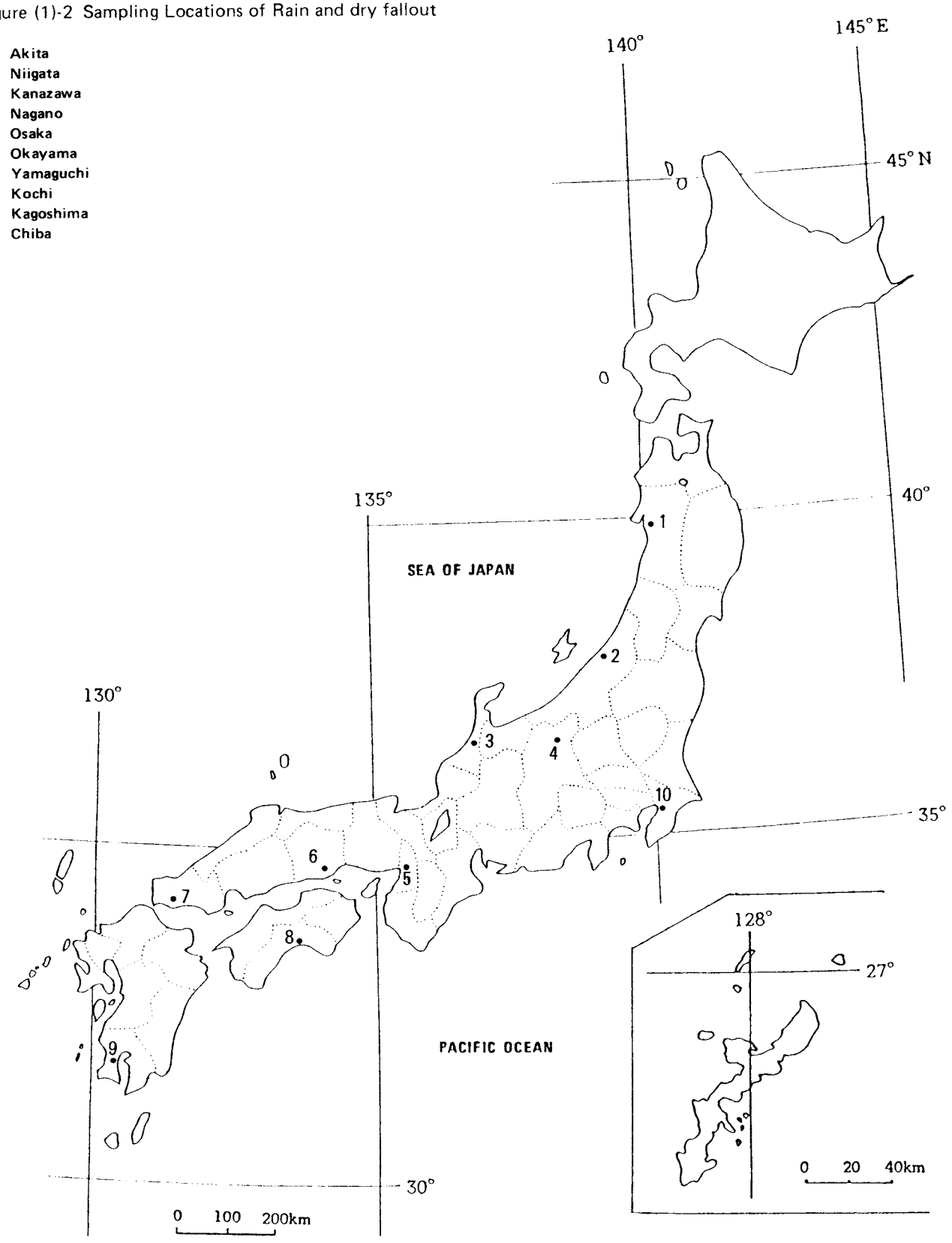
Table (1)-2: Strontium-90 and Cesium-137 Rain and dry fallout

Location	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/Km^2)	^{137}Cs (mCi/Km^2)
July, 1983				
Niigata, NIIGATA	32	274.4	0.006 ± 0.0008	0.008 ± 0.0008
Nagano, NAGANO	32	201.9	0.004 ± 0.0007	0.003 ± 0.0007
Yamaguchi, YAMAGUCHI	33	291.0	0.005 ± 0.0007	0.002 ± 0.0005
Kochi, KOCHI	33	214.3	0.005 ± 0.0008	0.003 ± 0.0006
Kagoshima, KAGOSHIMA	32	303.1	0.004 ± 0.0007	0.002 ± 0.0005
August, 1983				
Akita, AKITA	32	159.5	0.003 ± 0.0006	0.001 ± 0.0005
Niigata, NIIGATA	32	73.6	0.002 ± 0.0006	0.002 ± 0.0005
Kanazawa, ISHIKAWA	33	59.0	0.002 ± 0.0007	0.000 ± 0.0004
Nagano, NAGANO	32	136.1	0.001 ± 0.0006	0.002 ± 0.0005
Osaka, OSAKA	32	56.1	0.002 ± 0.0006	0.002 ± 0.0005
Okayama, OKAYAMA	32	7.3	0.003 ± 0.0008	0.000 ± 0.0004
Yamaguchi, YAMAGUCHI	32	80.5	0.009 ± 0.0009	0.002 ± 0.0005
Kochi, KOCHI	32	70.2	0.006 ± 0.0007	0.001 ± 0.0005
Kagoshima, KAGOSHIMA	32	195.7	0.003 ± 0.0007	0.002 ± 0.0005
Chiba, CHIBA	32	177.7	0.000 ± 0.0005	0.001 ± 0.0005
September, 1983				
Akita, AKITA	31	139.9	0.002 ± 0.0006	0.001 ± 0.0006
Niigata, NIIGATA	31	143.0	0.002 ± 0.0007	0.002 ± 0.0007
Kanazawa, ISHIKAWA	32	354.5	0.001 ± 0.0005	0.002 ± 0.0006
Nagano, NAGANO	31	261.3	0.001 ± 0.0006	0.001 ± 0.0006
Osaka, OSAKA	30	408.7	0.002 ± 0.0006	0.002 ± 0.0006
Okayama, OKAYAMA	31	278.9	0.002 ± 0.0007	0.001 ± 0.0005
Yamaguchi, YAMAGUCHI	31	183.5	0.006 ± 0.0008	0.001 ± 0.0004
Kochi, KOCHI	31	288.7	0.003 ± 0.0007	0.001 ± 0.0005
Kagoshima, KAGOSHIMA	31	508.4	0.004 ± 0.0008	0.002 ± 0.0005
Chiba, CHIBA	33	232.3	0.001 ± 0.0006	0.001 ± 0.0004
October, 1983				
Akita, AKITA	32	145.2	0.004 ± 0.0007	0.005 ± 0.0007
Niigata, NIIGATA	32	105.3	0.002 ± 0.0007	0.003 ± 0.0006
Kanazawa, ISHIKAWA	31	150.0	0.002 ± 0.0007	0.003 ± 0.0005
Nagano, NAGANO	32	50.7	0.002 ± 0.0007	0.001 ± 0.0005
Osaka, OSAKA	33	97.1	0.003 ± 0.0007	0.001 ± 0.0004

Location	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/Km^2)	^{137}Cs (mCi/Km^2)
Okayama, OKAYAMA	32	76.3	0.001 ± 0.0006	0.001 ± 0.0004
Yamaguchi, YAMAGUCHI	32	56.5	0.007 ± 0.0008	0.001 ± 0.0005
Kochi, KOCHI	31	259.3	0.005 ± 0.0007	0.002 ± 0.0005
Kagoshima, KAGOSHIMA	32	94.8	0.003 ± 0.0007	0.002 ± 0.0006
Chiba, CHIBA	30	148.1	0.001 ± 0.0008	0.002 ± 0.0006
November, 1983				
Akita, AKITA	31	169.6	0.002 ± 0.0006	0.005 ± 0.0007
Niigata, NIIGATA	31	160.9	0.003 ± 0.0007	0.004 ± 0.0007
Kanazawa, ISHIKAWA	32	260.0	0.005 ± 0.0008	0.006 ± 0.0007
Nagano, NAGANO	31	26.2	0.002 ± 0.0007	0.001 ± 0.0005
Osaka, OSAKA	31	22.7	0.003 ± 0.0007	0.001 ± 0.0007
Okayama, OKAYAMA	31	19.0	0.002 ± 0.0007	0.001 ± 0.0006
Yamaguchi, YAMAGUCHI	31	36.0	0.008 ± 0.0008	0.001 ± 0.0006
Kochi, KOCHI	31	12.6	0.004 ± 0.0007	0.000 ± 0.0006
Kagoshima, KAGOSHIMA	31	27.9	0.006 ± 0.0010	0.004 ± 0.0007
Chiba, CHIBA	31	82.5	0.001 ± 0.0007	0.002 ± 0.0004
December, 1983				
Akita, AKITA	35	177.0	0.003 ± 0.0006	0.004 ± 0.0007
Niigata, NIIGATA	36	112.9	0.004 ± 0.0007	0.006 ± 0.0007
Kanazawa, ISHIKAWA	28	153.0	0.003 ± 0.0007	0.005 ± 0.0008
Nagano, NAGANO	35	41.2	0.001 ± 0.0005	0.001 ± 0.0005
Osaka, OSAKA	36	9.8	0.002 ± 0.0006	0.002 ± 0.0005
Okayama, OKAYAMA	36	33.7	0.001 ± 0.0006	0.002 ± 0.0005
Yamaguchi, YAMAGUCHI	35	50.5	0.006 ± 0.0008	0.003 ± 0.0006
Kochi, KOCHI	36	24.8	0.006 ± 0.0008	0.000 ± 0.0004
Kagoshima, KAGOSHIMA	36	25.0	0.007 ± 0.0009	0.003 ± 0.0007
Chiba, CHIBA	36	22.0	0.001 ± 0.0006	0.001 ± 0.0005
January, 1984				
Chiba, CHIBA	28	55.9	0.001 ± 0.0007	0.002 ± 0.0006

Figure (1)-2 Sampling Locations of Rain and dry fallout

1. Akita
2. Niigata
3. Kanazawa
4. Nagano
5. Osaka
6. Okayama
7. Yamaguchi
8. Kochi
9. Kagoshima
10. Chiba



(2) Strontium-90 and Cesium-137 in Airborne dust (from Apr. 1983 to Sept. 1983)

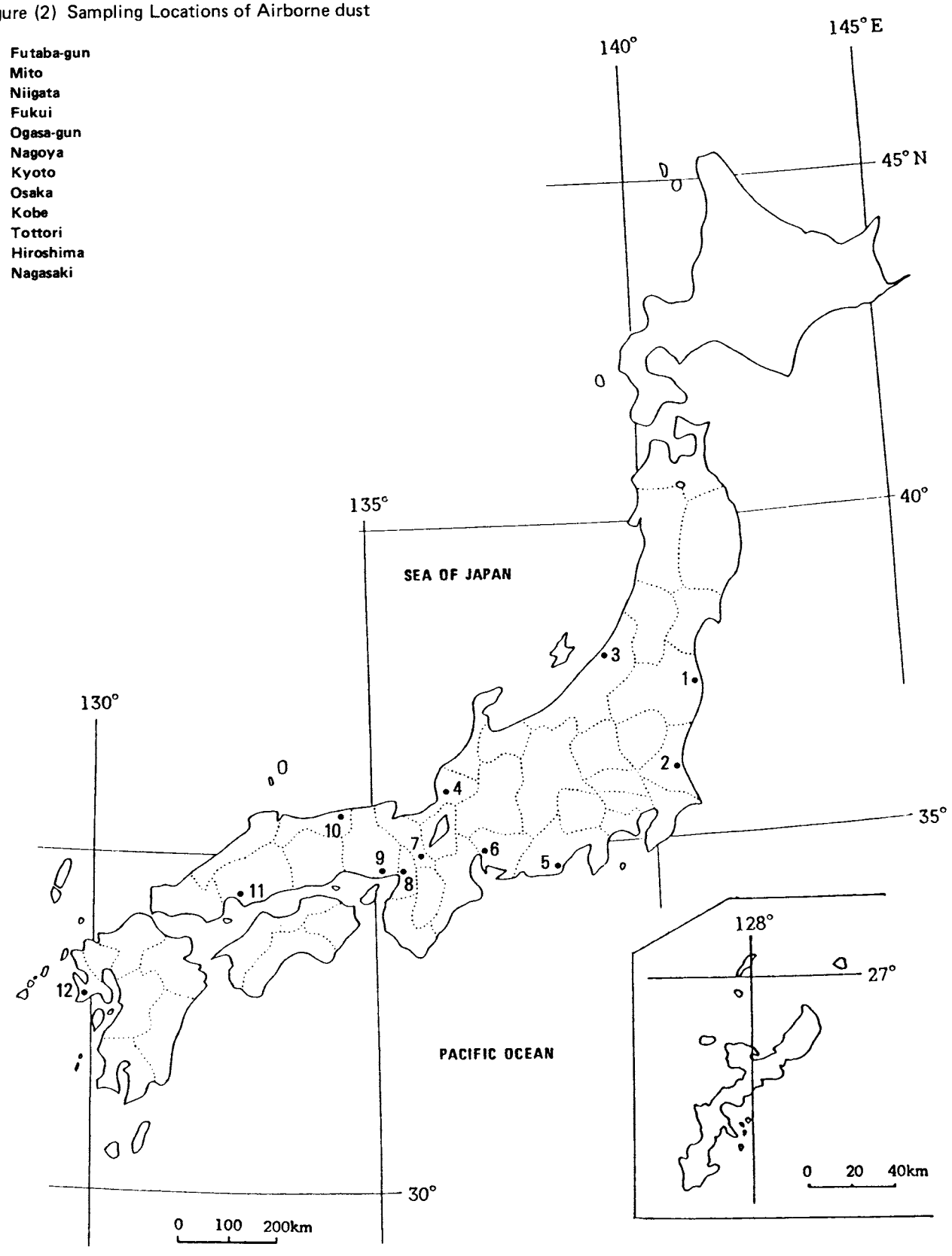
– continued from No. 64 of this publication –

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

Location	Sampling Period	Absorption volume (m^3)	^{90}Sr (10^{-3} pCi/m^3)	^{137}Cs (10^{-3} pCi/m^3)
April ~ June, 1983				
Mito, IBARAGI	4 ~ 6	10,192	0.10 ± 0.03	0.10 ± 0.02
Ogasa-gun, SHIZUOKA	4 ~ 6	12,225	0.02 ± 0.02	0.10 ± 0.02
May ~ June, 1983				
Futaba-gun, FUKUSHIMA	5 ~ 6	11,757	0.01 ± 0.02	0.10 ± 0.02
July ~ September, 1983				
Futaba-gun, FUKUSHIMA	7 ~ 9	12,909	0.04 ± 0.02	0.03 ± 0.01
Mito, IBARAGI	7 ~ 9	11,519	0.03 ± 0.02	0.03 ± 0.01
Niigata, NIIGATA	7 ~ 9	14,372	0.00 ± 0.02	0.04 ± 0.01
Fukui, FUKUI	7 ~ 9	20,785	0.03 ± 0.01	0.10 ± 0.01
Ogasa-gun, SHIZUOKA	7 ~ 9	11,548	0.01 ± 0.02	0.05 ± 0.01
Nagoya, AICHI	7 ~ 9	9,378	0.00 ± 0.03	0.02 ± 0.02
Kyoto, KYOTO	7 ~ 9	8,514	0.00 ± 0.03	0.00 ± 0.02
Osaka, OSAKA	7 ~ 9	8,424	0.00 ± 0.04	0.10 ± 0.02
Kobe, KYOGO	7 ~ 9	10,359	0.00 ± 0.03	0.10 ± 0.02
Tottori, TOTTORI	7 ~ 9	11,304	0.00 ± 0.02	0.02 ± 0.01
Hiroshima, HIROSHIMA	7 ~ 9	10,958	0.00 ± 0.03	0.03 ± 0.02
Nagasaki, NAGASAKI	7 ~ 9	11,807	0.00 ± 0.02	0.01 ± 0.02

Figure (2) Sampling Locations of Airborne dust

1. Futaba-gun
2. Mito
3. Niigata
4. Fukui
5. Ogasa-gun
6. Nagoya
7. Kyoto
8. Osaka
9. Kobe
10. Tottori
11. Hiroshima
12. Nagasaki



(3) Strontium-90 and Cesium-137 in Service water (from Jul. 1983 to Dec. 1983)

– continued from No. 64 of this publication –

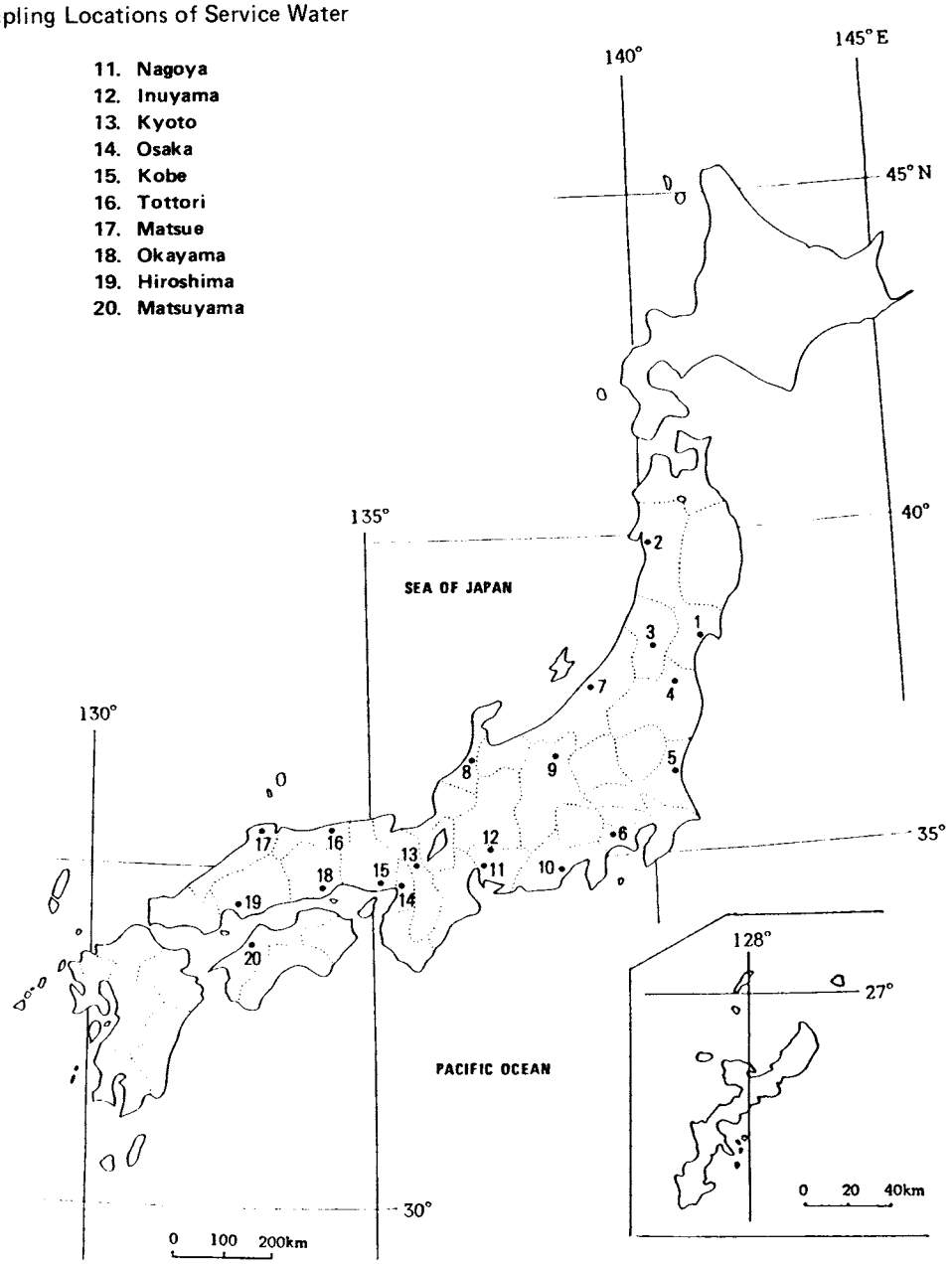
Table (3): Strontium-90 and Cesium-137 in Service water

Location	pH	^{90}Sr (pCi/l)	^{137}Cs (pCi/l)
(Source Water)			
July, 1983			
Tsukui-gun, KANAGAWA	8.1	0.03 ± 0.004	0.005 ± 0.002
August, 1983			
Kyoto, KYOTO	8.2	0.19 ± 0.008	0.010 ± 0.002
December, 1983			
Inuyama, AICHI	7.0	0.09 ± 0.006	0.010 ± 0.002
(Tap Water)			
June, 1983			
Shizuoka, SHIZUOKA	7.3	0.04 ± 0.004	0.000 ± 0.002
Matsue, SHIMANE	7.5	0.17 ± 0.007	0.003 ± 0.002
July, 1983			
Hiroshima, HIROSHIMA	6.2	0.08 ± 0.006	0.004 ± 0.002
August, 1983			
Akita, AKITA	7.3	0.15 ± 0.007	0.010 ± 0.003
Kyoto, KYOTO	7.6	0.18 ± 0.008	0.010 ± 0.002
October, 1983			
Sendai, MIYAGI	7.7	0.07 ± 0.005	0.004 ± 0.002
December, 1983			
Akita, AKITA	6.8	0.11 ± 0.006	0.005 ± 0.002
Yamagata, YAMAGATA	7.3	0.08 ± 0.005	0.004 ± 0.002
Fukushima, FUKUSHIMA	6.8	0.12 ± 0.006	0.003 ± 0.002
Mito, IBARAGI	6.2	0.05 ± 0.004	0.000 ± 0.002
Niigata, NIIGATA	6.8	0.12 ± 0.006	0.010 ± 0.002
Kanazawa, ISHIKAWA	7.1	0.11 ± 0.006	0.010 ± 0.002
Nagano, NAGANO	7.3	0.05 ± 0.004	0.005 ± 0.002
Nagoya, AICHI	6.5	0.11 ± 0.006	0.010 ± 0.002
Osaka, OSAKA	6.4	0.14 ± 0.007	0.000 ± 0.002
Kobe, HYOGO	6.7	0.13 ± 0.007	0.002 ± 0.002

Location	pH	^{90}Sr (pCi/l)	^{137}Cs (pCi/l)
Tottori, TOTTORI	7.5	0.08 ± 0.006	0.000 ± 0.002
Okayama, OKAYAMA	6.6	0.08 ± 0.006	0.000 ± 0.002
Matsuyama, EHIME	7.4	0.05 ± 0.005	0.004 ± 0.002

Figure (3) Sampling Locations of Service Water

1. Sendai
2. Akita
3. Yamagata
4. Fukushima
5. Mito
6. Tsukui-gun
7. Niigata
8. Kanazawa
9. Nagano
10. Shizuoka
11. Nagoya
12. Inuyama
13. Kyoto
14. Osaka
15. Kobe
16. Tottori
17. Matsue
18. Okayama
19. Hiroshima
20. Matsuyama



(4) Strontium-90 and Cesium-137 in Freshwater (from Sept. 1983 to Dec. 1983)

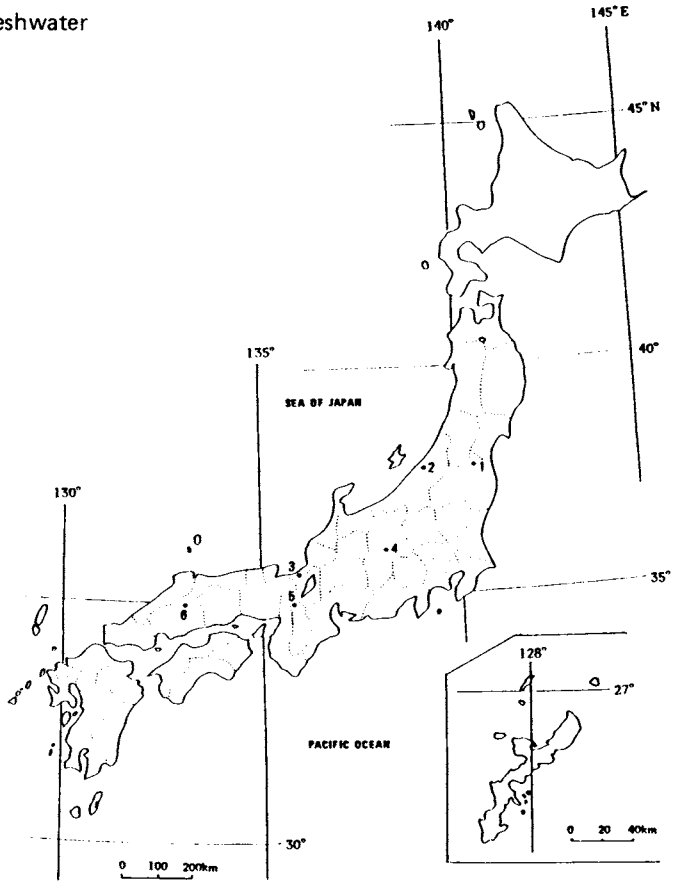
– continued from No. 64 of this publication –

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

Location	pH	^{90}Sr (pCi/l)	^{137}Cs (pCi/l)
(Freshwater)			
September, 1983			
Fukushima, FUKUSHIMA	7.1	0.05 ± 0.005	0.01 ± 0.003
November, 1983			
Niigata, NIIGATA	6.7	0.23 ± 0.009	0.10 ± 0.006
Shobara, HIROSHIMA	6.4	0.07 ± 0.006	0.00 ± 0.002
December, 1983			
Mikata-gun, FUKUI	6.9	0.12 ± 0.006	0.01 ± 0.003
Suwa-lake, NAGANO	7.2	0.04 ± 0.004	0.01 ± 0.002
Uji, KYOTO	7.4	0.00 ± 0.003	0.00 ± 0.002

Figure (4) Sampling Locations of Freshwater

1. **Fukushima**
2. **Niigata**
3. **Mitaka-gun**
4. **Suwa-lake**
5. **Uji**
6. **Shobara**



(5) Strontium-90 and Cesium-137 in Soil (from Jun. 1983 to Sept. 1983)

– continued from No. 64 of this publication –

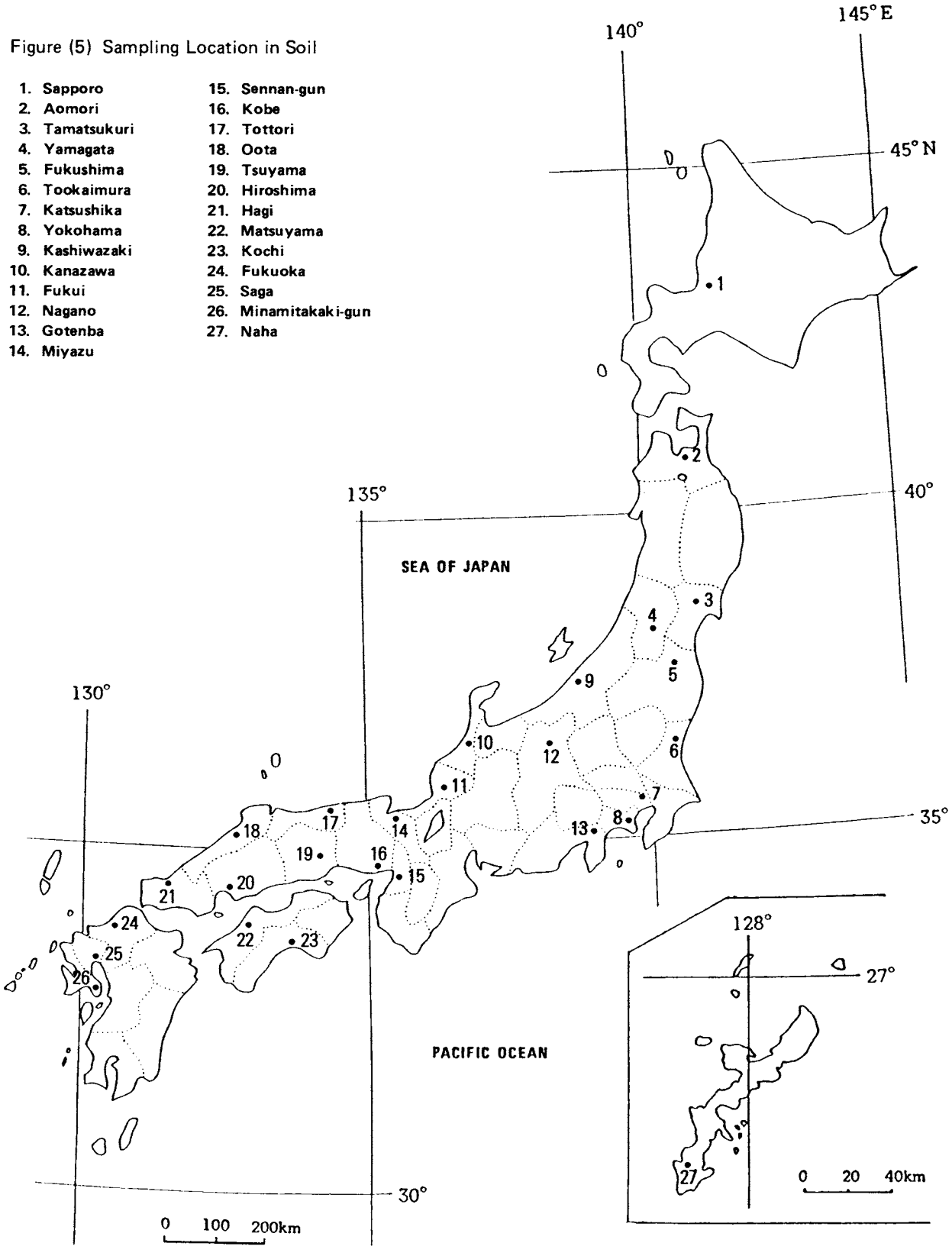
Table (5): Strontium-90 and Cesium-137 in Soil

Location	Sampling Depth (cm)	^{90}Sr (pCi/Kg)	^{90}Sr (mCi/Km^2)	^{137}Cs (pCi/Kg)	^{137}Cs (mCi/Km^2)
June, 1983					
Gotenba, SHIZUOKA	0 ~ 5	57.0 ± 4.5	1.9 ± 0.15	310.0 ± 9.0	10.0 ± 0.30
〃	5 ~ 20	34.0 ± 3.9	3.0 ± 0.34	110.0 ± 6.0	9.4 ± 0.52
Tsuyama, OKAYAMA	0 ~ 5	29.0 ± 3.7	1.1 ± 0.14	120.0 ± 6.0	4.4 ± 0.24
〃	5 ~ 20	39.0 ± 4.2	3.8 ± 0.41	68.0 ± 5.0	6.6 ± 0.49
Naha, OKINAWA	0 ~ 5	64.0 ± 4.9	4.0 ± 0.31	230.0 ± 8.0	14.0 ± 0.50
〃	5 ~ 20	73.0 ± 5.5	12.0 ± 0.90	110.0 ± 6.0	18.0 ± 1.00
July, 1983					
Aomori, AOMORI	0 ~ 5	75.0 ± 5.3	2.3 ± 0.16	27.0 ± 3.4	0.8 ± 0.11
〃	5 ~ 20	13.0 ± 3.3	1.6 ± 0.40	3.0 ± 2.2	0.4 ± 0.27
Yamagata, YAMAGATA	0 ~ 5	160.0 ± 7.0	8.9 ± 0.39	650.0 ± 13.0	37.0 ± 0.70
〃	5 ~ 20	20.0 ± 3.4	3.0 ± 0.51	48.0 ± 4.6	7.3 ± 0.70
Fukushima, FUKUSHIMA	0 ~ 5	260.0 ± 9.0	7.4 ± 0.25	1100.0 ± 20.0	31.0 ± 0.50
〃	5 ~ 20	120.0 ± 6.0	11.0 ± 0.60	230.0 ± 8.0	21.0 ± 0.70
Katsushika, TOKYO	0 ~ 5	58.0 ± 4.4	3.3 ± 0.25	85.0 ± 5.4	4.9 ± 0.31
〃	5 ~ 20	40.0 ± 3.9	6.3 ± 0.61	48.0 ± 4.6	7.4 ± 0.71
Kashiwazaki, NIIGATA	0 ~ 5	110.0 ± 6.0	9.2 ± 0.48	370.0 ± 10.0	31.0 ± 0.90
〃	5 ~ 20	210.0 ± 8.0	29.0 ± 1.10	670.0 ± 14.0	91.0 ± 1.90
Kanazawa, ISHIKAWA	0 ~ 5	270.0 ± 9.0	9.8 ± 0.33	990.0 ± 16.0	36.0 ± 0.60
〃	5 ~ 20	210.0 ± 8.0	27.0 ± 1.10	380.0 ± 10.0	50.0 ± 1.30
Nagano, NAGANO	0 ~ 5	35.0 ± 3.9	2.2 ± 0.24	71.0 ± 5.3	4.4 ± 0.33
〃	5 ~ 20	98.0 ± 5.8	11.0 ± 0.70	280.0 ± 9.0	31.0 ± 1.00
Miyazu, KYOTO	0 ~ 5	61.0 ± 4.9	2.5 ± 0.20	2100.0 ± 20.0	85.0 ± 1.00
〃	5 ~ 20	70.0 ± 5.2	20.0 ± 1.50	180.0 ± 7.0	52.0 ± 2.10
Sennan-gun, OSAKA	0 ~ 5	100.0 ± 6.0	5.6 ± 0.33	180.0 ± 7.0	10.0 ± 0.40
〃	5 ~ 20	74.0 ± 5.2	13.0 ± 0.9	62.0 ± 4.8	11.0 ± 0.80

Location	Sampling Depth (cm)	^{90}Sr (pCi/Kg)	^{90}Sr (mCi/Km^2)	^{137}Cs (pCi/Kg)	^{137}Cs (mCi/Km^2)
Kobe, HYOGO	0 ~ 5	33.0 ± 3.8	1.4 ± 0.17	240.0 ± 9.0	10.0 ± 0.40
〃	5 ~ 20	37.0 ± 4.1	6.0 ± 0.66	220.0 ± 8.0	35.0 ± 1.30
Tottori, TOTTORI	0 ~ 5	81.0 ± 5.2	4.9 ± 0.31	380.0 ± 11.0	23.0 ± 0.70
〃	5 ~ 20	76.0 ± 5.6	16.0 ± 1.2	140.0 ± 7.0	30.0 ± 1.40
Oota, SHIMANE	0 ~ 5	1300.0 ± 20.0	23.0 ± 0.30	4700.0 ± 40.0	85.0 ± 0.70
〃	5 ~ 20	450.0 ± 12.0	27.0 ± 0.70	2100.0 ± 30.0	120.0 ± 2.00
Hiroshima, HIROSHIMA	0 ~ 5	96.0 ± 5.7	7.2 ± 0.43	360.0 ± 10.0	27.0 ± 0.70
〃	5 ~ 20	94.0 ± 5.7	23.0 ± 1.40	170.0 ± 7.0	42.0 ± 1.70
Matsuyama, EHIME	0 ~ 5	93.0 ± 5.8	3.8 ± 0.24	170.0 ± 7.0	6.9 ± 0.30
〃	5 ~ 20	56.0 ± 4.9	4.8 ± 0.43	150.0 ± 7.0	13.0 ± 0.60
Kochi, KOCHI	0 ~ 5	200.0 ± 8.0	12.0 ± 0.50	550.0 ± 12.0	33.0 ± 0.70
〃	5 ~ 20	250.0 ± 9.0	32.0 ± 1.20	590.0 ± 13.0	75.0 ± 1.60
Fukuoka, FUKUOKA	0 ~ 5	300.0 ± 10.0	12.0 ± 0.40	780.0 ± 15.0	32.0 ± 0.60
〃	5 ~ 20	190.0 ± 8.0	27.0 ± 1.20	98.0 ± 5.9	14.0 ± 0.90
Minamitakaki-gun, NAGASAKI	0 ~ 5	370.0 ± 10.0	10.0 ± 0.30	3900.0 ± 30.0	110.0 ± 1.00
〃	5 ~ 20	200.0 ± 8.0	21.0 ± 0.80	630.0 ± 13.0	66.0 ± 1.40
August, 1983					
Sapporo, HOKKAIDO	0 ~ 5	470.0 ± 12.0	15.0 ± 0.40	1400.0 ± 20.0	45.0 ± 0.70
〃	5 ~ 20	250.0 ± 9.0	50.0 ± 1.70	280.0 ± 10.0	55.0 ± 1.90
Tamatsukuri, MIYAGI	0 ~ 5	680.0 ± 14.0	22.0 ± 0.40	2400.0 ± 30.0	78.0 ± 0.90
〃	5 ~ 20	210.0 ± 8.0	23.0 ± 0.90	280.0 ± 10.0	31.0 ± 1.10
Tookaimura, IBARAGI	0 ~ 5	360.0 ± 11.0	12.0 ± 0.40	1700.0 ± 20.0	60.0 ± 0.80
〃	5 ~ 20	300.0 ± 10.0	20.0 ± 0.70	95.0 ± 5.8	6.4 ± 0.39
Yokohama, KANAGAWA	0 ~ 5	490.0 ± 13.0	15.0 ± 0.40	1100.0 ± 20.0	34.0 ± 0.60
〃	5 ~ 20	230.0 ± 9.0	19.0 ± 0.70	460.0 ± 12.0	38.0 ± 1.00
Fukui, FUKUI	0 ~ 5	130.0 ± 6.0	8.4 ± 0.41	380.0 ± 10.0	24.0 ± 0.70
〃	5 ~ 20	140.0 ± 7.0	28.0 ± 1.30	390.0 ± 10.0	79.0 ± 2.10
Hagi, YAMAGUCHI	0 ~ 5	190.0 ± 8.0	9.6 ± 0.40	280.0 ± 9.0	14.0 ± 0.50
〃	5 ~ 20	130.0 ± 6.0	18.0 ± 0.90	220.0 ± 8.0	31.0 ± 1.10
September, 1983					
Saga, SAGA	0 ~ 5	38.0 ± 4.5	1.7 ± 0.21	8.0 ± 2.7	0.4 ± 0.13
〃	5 ~ 20	27.0 ± 4.1	5.0 ± 0.79	0.5 ± 2.2	0.1 ± 0.42

Figure (5) Sampling Location in Soil

1. Sapporo
2. Aomori
3. Tamatsukuri
4. Yamagata
5. Fukushima
6. Tookaimura
7. Katsushika
8. Yokohama
9. Kashiwazaki
10. Kanazawa
11. Fukui
12. Nagano
13. Gotenba
14. Miyazu
15. Sennan-gun
16. Kobe
17. Tottori
18. Oota
19. Tsuyama
20. Hiroshima
21. Hagi
22. Matsuyama
23. Kochi
24. Fukuoka
25. Saga
26. Minamitakaki-gun
27. Naha



(6) Strontium-90 and Cesium-137 in Sea water (from Jul. 1983 to Sept. 1983)

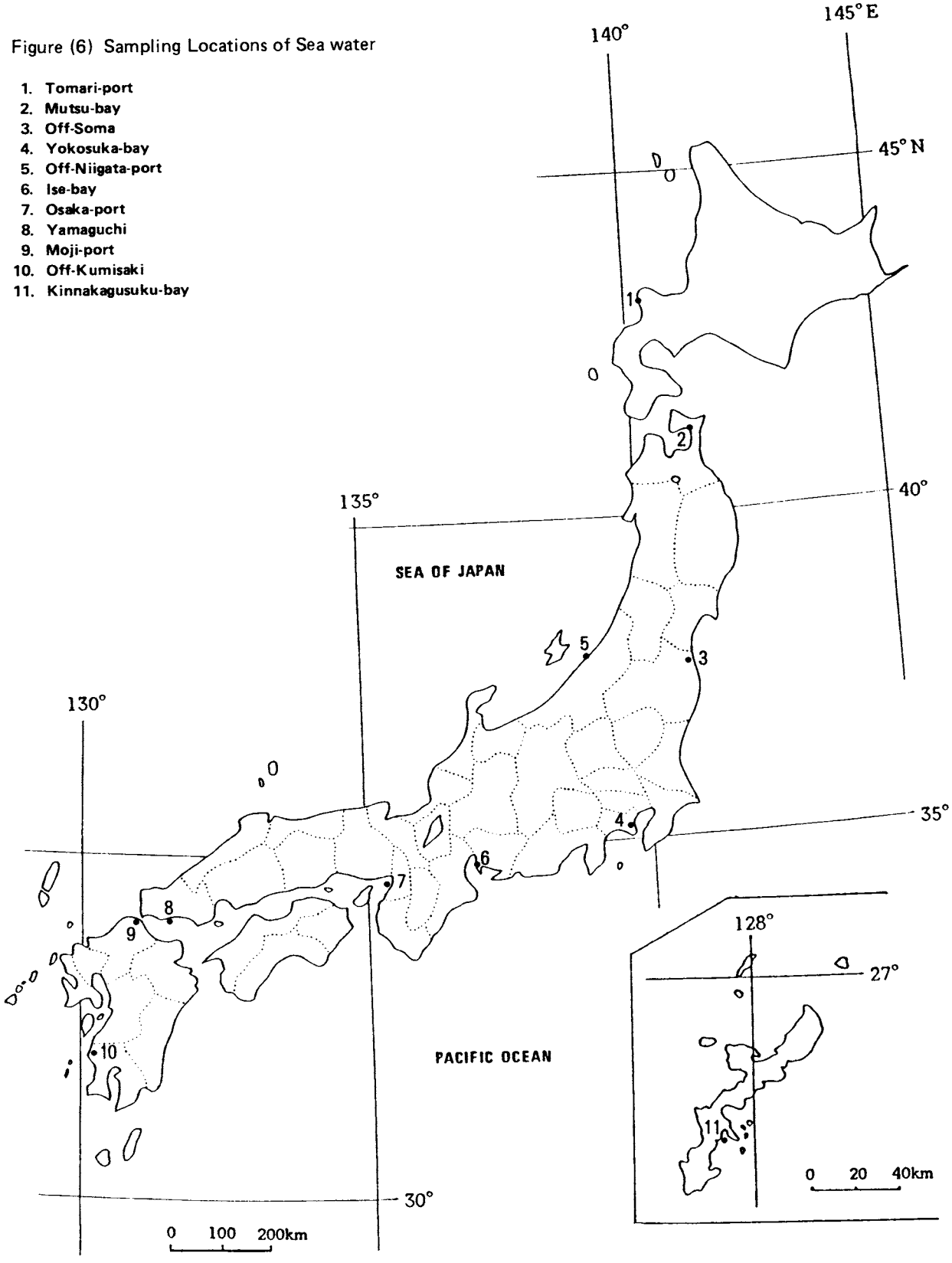
– continued from No. 62 of this publication –

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

Location	Sample volume analyzed (l)	Cl (^{0}/00)	^{90}Sr (pCi/l)	^{137}Cs (pCi/l)
July, 1983				
Off-Niigata-port, NIIGATA	14.3	40.7	0.11 ± 0.012	0.09 ± 0.011
Ise-bay, AICHI	8.48	40.0	0.07 ± 0.009	0.05 ± 0.010
Moji-port, FUKUOKA	18.00	40.0	0.09 ± 0.011	0.11 ± 0.012
Off-kumisaki, KAGOSHIMA	15.72	40.0	0.08 ± 0.010	0.12 ± 0.012
August, 1983				
Off-Tomari-port, HOKKAIDO	18.59	40.0	0.11 ± 0.011	0.13 ± 0.013
Mutsu-bay, AOMORI	17.84	40.0	0.08 ± 0.010	0.11 ± 0.012
Off-Soma, FUKUSHIMA	16.07	40.0	0.09 ± 0.010	0.09 ± 0.011
Yokosuka-bay, KANAGAWA	16.7	40.0	0.09 ± 0.011	0.11 ± 0.011
September, 1983				
Osaka-port, OSAKA	8.12	40.0	0.12 ± 0.012	0.05 ± 0.010
Yamaguchi-bay, YAMAGUCHI	18.6	40.0	0.09 ± 0.011	0.14 ± 0.012
Kinnakagusuku-bay, OKINAWA	18.8	40.0	0.09 ± 0.011	0.14 ± 0.012

Figure (6) Sampling Locations of Sea water

1. Tomari-port
2. Mutsu-bay
3. Off-Soma
4. Yokosuka-bay
5. Off-Niigata-port
6. Ise-bay
7. Osaka-port
8. Yamaguchi
9. Moji-port
10. Off-Kumisaki
11. Kinnakagusuku-bay



(7) Strontium-90 and Cesium-137 in Sea sediments (from Jul. 1983 to Sep. 1983)

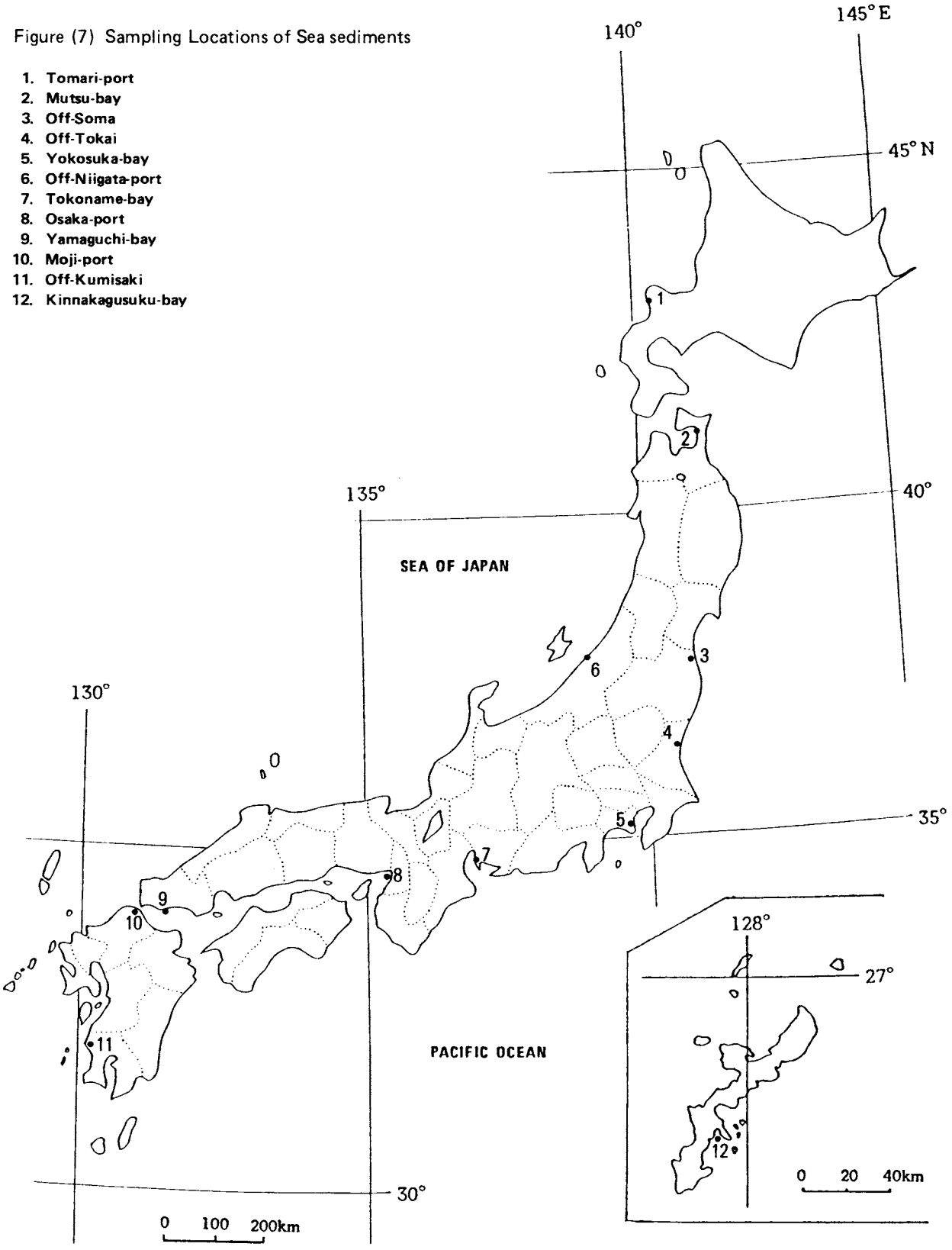
— continued from No. 62 of this publication —

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

Location	Depth (m)	^{90}Sr (pCi/Kg)	^{137}Cs (pCi/Kg)
July, 1983			
Mutsu-bay, AOMORI	10.0	3.0 ± 2.7	8.0 ± 2.6
Off-Tokai, IBARAGI	7.0	1.0 ± 2.8	12.0 ± 2.5
Off-Niigata-port, NIIGATA	26.0	0.0 ± 3.0	58.0 ± 4.7
Tokoname-bay, AICHI	18.0	2.0 ± 3.1	43.0 ± 4.3
Moji-port, FUKUOKA	10.0	4.0 ± 3.3	99.0 ± 6.0
Off-Kumisaki, KAGOSHIMA	3.9	2.0 ± 2.8	19.0 ± 3.3
August, 1983			
Tomari-port, HOKKAIDO	7.0	3.0 ± 2.4	33.0 ± 3.7
Mutsu-bay, AOMORI	13.0	15.0 ± 3.9	190.0 ± 8.0
Off-Soma, FUKUSHIMA	5.0	0.0 ± 2.3	15.0 ± 2.9
Yokosuka-bay, KANAGAWA	6.5	0.0 ± 2.4	79.0 ± 5.4
September, 1983			
Osaka-port, OSAKA	12.0	1.0 ± 3.2	150.0 ± 7.0
Yamaguchi-bay, YAMAGUCHI	10.0	0.2 ± 3.1	120.0 ± 6.0
Kinnakagusuku-bay, OKINAWA	15.0	6.0 ± 3.1	23.0 ± 3.5

Figure (7) Sampling Locations of Sea sediments

1. Tomari-port
2. Mutsu-bay
3. Off-Soma
4. Off-Tokai
5. Yokosuka-bay
6. Off-Niigata-port
7. Tokoname-bay
8. Osaka-port
9. Yamaguchi-bay
10. Moji-port
11. Off-Kumisaki
12. Kinnakagusuku-bay



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