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The present issue is the results on the samples obtained from April, 1978 to March, 1979.

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Radioactivity Survey related with Environmental and Dietary Materials

1. Samples and Sampling

(1) Rain and Dry Fallout

For sampling of rain and dry fallout, an about 5,000cm^2 tray is used. In the beginning of the month, it is filled with water 1cm deep and left untouched for the month. In the end of the month, the water depth is measured to determine the water amount. The smapled water is added with carriers of strontium and cesium. After sufficiently stirred, it is filtered. The tray is washed with about 5ℓ pure water, which is then filtered and added to the water above. The filtered water is made to go, at a flow rate of 80mℓ/min, through a column of previously adjusted sodium cation exchange resin (equivalent to DOWE x 50 WX – 80 ~ 100 mesh, 50mℓ), so that all positive ions may be absorbed and the liquid, flowing out, is thrown away.

(2) Air-borne Dust

For the sampling of air-bone dust, there is a rain cover provided about 1 ~ 1.5m above the ground to keep rain from coming in. Over 3,000m^3/month of air is absorbed by an electric static precipitator or a "filter-paper" precipitator. The sample for three months is put together.

(3) Service Water, (Source Water, Tap Water), and Fresh Water.

Service water is divided into two types, source water and tap water. Source water is sampled with a proper water-collector, and tap water is sampled after left running for about 5 minutes. Sampled amount is 100mℓ respectively. After sampled, the water is added with carriers of strontium and cesium. After fully stirred up, it is filtered, and the subsequent process is same as in (1) above. Fresh water is handled just same as source water.

(4) Soil

For sampling, a sampling place should be relatively spacious and flat, an area capable of representing the neighbourhood. Besides, it should be a place with the surface never disturbed in the past, free from dust strorms, dust-sand accumulated by wind, inflow and outflow of precipitation, and stagnant water. Avoid a place located under trees in a forest, stony area or inside of river banks.

Soil sample is taken, with a soil collector, from two kinds of depth, 0 ~ 5cm depth and 5 ~ 20cm depth. Collected sample is air dried. In the course of the process, roots of plants, and pebbles are removed incidentally and lumps are crushed by hand. The soil then, is passed through a 2mm mesh sifter for the removal of small stones. (Airdry-fine-soil).

(5) Sea Water.

Sea water is sampled when fine weather has continued for a few days. A sampling place should be located where no river water comes in. Once a place is chosen, be sure to do sampling at the same place.

Surface water should be sampled, with a polyethylene or canvas bucket, and stored in a 20ℓ polyethylene cubtaner. The bottle, bucket, funnel, etc., should be washed first in hydrochloric acid and next distilled water, prior to use.

Sampling should be done at the front of the ship, just before the ship comes to a stop. Immediately after the collection, the sample water should be added with concentrated hydrochloride acid at a rate of 1mℓ/liter (sea water).

By the way, separately, 200ℓ of sea water is picked up per sample and is used for measuring the concentration of chlorine. (This is not added with hydrochloric acid.)

(6) Sea Sediment

Sampling should be done at the same place after the Sampling of sea-water. The place should be one meter deep on the ebb tide in an area where sea sediment does not move and the seabottom in mud. Sample as much as 4 kg by wet weight should be put on a large size porcelain dish and dried with a thermodrier.

(7) Total Diet

Samples should be meals to be eaten daily.

Avoid meals specially prepared. One sample should consist of breakfast, lunch, supper, and snacks (tea and water are inclusive) for five persons per day. The stuff is carbonized under direct fire on a large-sized stainless plate. Take care not to raise smoke. The carbide is moved on to a porcelain dish and then ashed at 500°C in an electric oven.

(8) Rice (Producing place, consuming place)

Sampling is done in a producing place at the harvest and in a consuming place when new rice is put on sale.

Polished rice is sampled, put on a porcelain dish, carbonized and ashed.

(9) Milk

Sampling is done both in a producing place and consuming place. In the producing place, sample is taken from raw milk, and in the consuming place, commercial milk is purchased.

Milk sample is put in a stainless pan or porcelain dish. After evaporation to dryness, the stuff is carbonized and ashed.

(10) Vegetables

Vegetable materials divide into edible herbs (green vegetable) and edible roots. In principle, spinash represents green vegetable, while Japanese radish, edible roots.

Each material is washed with water to remove mud. Green vegetable gets rid of bad leaves and roots which are not eaten. After dried, each sample is carbonized on a stainless pan or porcelain dish.

(11) Tea

500g of manufactured tea is put on a stainless pan or porcelain dish, carbonized and ashed.

(12) Fish, Shellfishes and Seaweed (producing place and consuming place)

Sampling is done independently at producing places and consuming places. Living things differ depending on periods and places, resulting in difference in marine products. Kinds of products representing respective areas and places should be chosen. Producing places should be those where the catch is great, accompanied by great consumption, and the catch is possible all the year round.

(a) Sea Fish

Each sample is washed in water and wiped with filter paper. (Only the estable portion is used in case of a large-sized fish, and the whole is used in case of a small fish). Each is weighed, placed on a stainless pan or porcelain dish, carbonized and further ashed in an electric oven.

(b) Shellfishes

Shellfishes with shells on are collected or purchased. With the removal of the shell, the inside is processed in the same manner as in (a) above, sea fish.

(c) Seaweed

Seaweed to be sampled should be those of useful kinds. Each sample is washed with water, after removal of sand. Next, it is rid of water, weighed, dried, carbonized and ashed.

(13) Fresh Water Fishes

Samples are processed in the way same as for sea fish.

With reference to samples above mentioned, Table 1 shows the number of prefectures, the number of sampling and quantity of samples.

2. Preparation of Analysis Data (Prior treatment)

(1) Rain and Dry Fallout, Service Water, Fresh Water

changed and absorbed into the cation exchange resin column. For elution, hydrochloric acid (1+3) is flowed into the colum, and the elution liquid is retained. Dry-fallout separated by the filtering of the water sampled previously is ashed along with the filter paper and next the ash is treated with hydrochloric acid and decomposed; then the stuff is extracted by use of hydrochloric acid and water and insuluble matters are filtered. The filtrate and liquid used for washing are put into the elution liquid. The solution thus turned out is the solution for analysis.

(2) Soil

Airdry soil is passed thru a 20 mesh sifter. Out of it, a portion weighing 100g is taken out and added with a fixed amount of carriers of strontium and cecium. With further addition of sodium hydroxide solution (IN), the stuff is heated, added with hydrochloric acid, and heated again for decomposition. Then, the insoluble portion is filtered out and washed. The

filtrate and washing liquid are added with nitric acid and heated for the decomposition of organic matters. The resulting solution is the sample solution for analysis.

(3) Sea Sediment

The sediment is first rid of pieces of stone and shell and dried by hot air. Then the stuff is pulverized finely in a mortar and passed through a 20 mesh sifter for preparation. Then, it is treated same as above (2) soil, and made into sample solution for analysis.

(4) Rice

The ashed sample is cooled and pulverized in a porcelain mortar, to pass through a 40 mesh sifter. A certain amount is taken out and added with carriers of strontium and cesium, and hydrochloric acid; it is then heated for decomposition. With further addition of nitric acid, it is heated again and dried.; the stuff then is treated with hydrochloric acid and water for extraction, filtering and washing. The filtrate and washing liquid are used for sample solution for analysis.

(5) Airborne Dust, Total Diet, Milk, Vegetables, Freshes and Shellfishes, Seaweed, Tea, etc.

A certain amount is taken out respectively from ash sample of these. Each is treated in the way same as in (4) above.

3. Separation and Measurement of Strontium-90 and Cesium-137

(1) Strontium-90

Sample solution pretreated neutralizes with sodium hydroxide, and strontium, calsium, magnesium, and other ions in it are to precipitate as the carbonates of them by adding sodium carbonate. Supernatant solution is kept as the sample solution for analysis of cesium content in the materials (see (2) cesium-137).

Following disolvation of these carbonate precipitations with hydrochloric acid, strontium element is separated in precipitation as strontium oxalate. This precipitation disolves again with nitric acid, and then the strontium element is separated as strontium nitrate in precipitation by treatment with furning nitric acid.

Precipitation of strontium nitrate is disolved with water, and added a unit volume of Ba^{2+}. Then radium and barium elements are to separated in precipitation by adding potassium chromate. Strontium carbonate is obtained as precipitation by adding ammonium carbonate into the supernatant.

To obtain strontium carbonate, the precipitation is filtered off, washed, and dried, and it's volume and the chemical recovery rate are determined. After the precipitation dissolves again with hydrochloric acid, it is allowed to stand two weeks under the preseuce of iron (III) chloride.

Yttrium-90 element derived in above procedure is precipitated with iron ions by adding ammonium water. And it apply as the sample in order to determine the strontium content in it, after filtration and washing of precipitation.

(2) Cesium-137

As described in previous section, supernatant solution, which derived in analytic process of strontium-90 content, is utilized as the sample solution of cesium-137 content determination.

This solution is made just acidic with hydrochloric acid, and then cesium ions is coprecipitated with other ions by addition and mixture of ammonium phosphomolybdate powder. After filtration and washing the precipitate, it dissolves with 2.5N sodium hydroxide solution, and ammonium involved remoues by adding iron (III) chloride (Fe^{3+}) and boiling.

After it is allowed to stand for cooling the pH of sample solution adjustes to 8.2, and precipitations of iron (III) chloride, molybdic acid precipitated, and others remove through filtration and washing.

(Concerning sea-water samples, it is applied on a column filled the cation exchange resin after adding EDTA, and cesium and rubisium elements are absorbed on it. Then, cesium element absorbed on the resin are eluted with the addition of hydrochloric acid.)

Following these procedures, chloroplatinic acid is added into sample solution to precipitate the cesium element. The precipitation separates by filtration using a separatory funnel. After it is determined the volume of cesium content obtained and the chemical recovery rate, and it is applied as sample for measurement of cesium content in original materials.

4. Estimation of Stable Strontium, Potassium, and Calcium

Sample soil and sea sediment are respectively weighed to get a necessary portion. Each portion is processed with sodium hydroxide solution and hydrochloric acid and decomposed. Sample ash of total diet, vegetables, milk, fishes, shellfishes and seaweed are measured for a necessary amount. For decomposition, each sample ash is processed with hydrochloric acid and nitric acid, and, if necessary, hydrofluoric acid is used. Then, the solution is diluted into a certain fixed amount of acid solution having the characteristic of hydrochloric acid.

Estimation is carried out as follows:

Strontium : By atomic absorption spectroscopy.

Potassium : By flame spectrophotometry.

Calcium : By potassium permanganate titration, or atomic absorption spectroscopy, after calcium is precipitated and isolated as calcium oxalate.

5. General Plan of Radioactivity Survey in Japan

Radioactivity survey was enforced in accordance with the following standards.

Samples	Number of prefectures sampled	Period of sampling	Volume of samples collected
Environmental Materials			
Rain and Dry Fallout	32	12 times/year (monthly)	
Air-borne Dust	10	4 times/year (1 sample consists of the totals collected during 3 months)	~1,000 m^3/3 months
Service Water (Source Water)	8	2 times/year (June, December)	100 ℓ
" (Tap Water)	32	2 times/year (June, December)	100 ℓ
Fresh Water	9	1 time/year (fishing season)	100 ℓ
Soil (0~5 cm)	32	1 time/year (June or July)	~4 kg
Soil (5~20 cm)	32	1 time/year (June or July)	~4 kg
Sea Water	12	1 time/year (July or August)	40 ℓ
Marine Sediments	12	1 time/year (July or August)	~4 kg
Diet Materials			
Total Diet	32	2 times/year (June, November or December)	all the daily regular diet consumed for five persons
Rice (Producing districts)	9	1 time/year (Heavesting season)	5 kg of processed rice
Rice (Consuming districts)	27	1 time/year (Heavesting season)	5 kg of processed rice
Milk (the report to WHO)	10	4 times/year (quarterly)	3 ℓ
Milk (Producing districts)	4	2 times/year (August, February)	3 ℓ
Milk (Consuming districts)	29	2 times/year (August, February)	3 ℓ
Vegetables (Producing districts)	19	1 time/year (Producing season)	4 kg
Vegetables (Consuming districts)	15	1 time/year (Producing season)	4 kg
Green Tea (Producing districts)	4	1 time/year (season of the first pick)	500 g of processed tea
Marine Fish (Producing districts)	21	1 time/year (fishing season)	4 kg of fresh materials
Marine Fish (Consuming districts)	11	1 time/year (fishing season)	4 kg of fresh materials
Shell Fish (Producing districts)	7	1 time/year (fishing season)	4~5 kg of fresh materials with shell
Sea Weeds (Producing districts)	7	1 time/year (fishing season)	2~3 kg of fresh materials
Fresh-Water Fish (Producing districts)	9	1 time/year (fishing season)	4 kg of fresh materials

Environmental Data

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

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

The results obtained are shown in Table 1 and the sampling locations are shown in Figure 1.

Table 1 : ^{90}Sr and ^{137}Cs in Rain and Dry Fallout
– April, 1978 to December, 1978 –
(Continued from Table 1, No. 49 of this publication)

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
April, 1978				
Sapporo, HOKKAIDO	31	47.5	0.067 ± 0.0023	0.13 ± 0.003
Sendai, MIYAGI	31	115.9	0.13 ± 0.003	0.20 ± 0.003
Akita, AKITA	31	62.42	0.13 ± 0.003	0.26 ± 0.004
Yamagata, YAMAGATA	30	60.75	0.094 ± 0.0025	0.19 ± 0.003
Ohkuma, FUKUSHIMA	31	105.5	0.17 ± 0.003	0.25 ± 0.004
Mito, IBARAKI	31	144.5	0.14 ± 0.003	0.26 ± 0.004
Shinjyuku, TOKYO	30	195	0.15 ± 0.003	0.23 ± 0.003
Yokohama, KANAGAWA	32	143.1	0.19 ± 0.004	0.29 ± 0.004
Niigata, NIIGATA	31	68.80	0.10 ± 0.003	0.17 ± 0.003
Kanazawa, ISHIKAWA	30	105.5	0.17 ± 0.004	0.36 ± 0.005
Fukui, FUKUI	31	113.6	0.15 ± 0.004	0.25 ± 0.004
Nagano, NAGANO	31	61.5	0.080 ± 0.0024	0.12 ± 0.003
Shizuoka, SHIZUOKA	26	131.5	0.16 ± 0.003	0.25 ± 0.004
Nagoya, AICHI	31	128.5	0.19 ± 0.004	0.31 ± 0.004
Kyoto, KYOTO	31	61.5	0.061 ± 0.0023	0.11 ± 0.002
Osaka, OSAKA	31	60	0.058 ± 0.0026	0.091 ± 0.0022
Kobe, HYOGO	32	69.4	0.075 ± 0.0022	0.12 ± 0.003
Wakayama, WAKAYAMA	40	85.7	0.11 ± 0.003	0.15 ± 0.003
Tottori, TOTTORI	31	22.5	0.096 ± 0.0027	0.17 ± 0.003
Matsue, SHIMANE	32	38.1	0.079 ± 0.0023	0.13 ± 0.003
Okayama, OKAYAMA	30	24.6	0.037 ± 0.0018	0.071 ± 0.0020
Hiroshima, HIROSHIMA	30	63.06	0.063 ± 0.0022	0.089 ± 0.0022
Yamaguchi, YAMAGUCHI	32	77	0.14 ± 0.003	0.21 ± 0.003
Matsuyama, EHIME	32	62	0.073 ± 0.0023	0.098 ± 0.0023
Kochi, KOCHI	30	259.1	0.36 ± 0.005	0.55 ± 0.005
Dazaifu, FUKUOKA	31	58.1	0.064 ± 0.0024	0.10 ± 0.002
Saga, SAGA	31	125.0	0.083 ± 0.0023	0.13 ± 0.003
Nagasaki, NAGASAKI	30	160.0	0.12 ± 0.003	0.18 ± 0.003

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Kagoshima, KAGOSHIMA	30	211.8	0.13 ± 0.003	0.19 ± 0.003
Yonagusuku, OKINAWA	29	278	0.11 ± 0.003	0.18 ± 0.003
May, 1978				
Sapporo, HOKKAIDO	32	83.0	0.080 ± 0.0023	0.13 ± 0.003
Aomori, AOMORI	32	73.9	0.10 ± 0.003	0.15 ± 0.003
Sendai, MIYAGI	32	93.0	0.088 ± 0.0025	0.14 ± 0.003
Akita, AKITA	32	154.78	0.21 ± 0.004	0.33 ± 0.004
Yamagata, YAMAGATA	31	55.38	0.077 ± 0.0024	0.13 ± 0.003
Ohkuma, FUKUSHIMA	32	61.5	0.085 ± 0.0023	0.12 ± 0.003
Mito, IBARAKI	31	123	0.10 ± 0.003	0.15 ± 0.003
Shinjuyku, TOKYO	30	110	0.15 ± 0.003	0.21 ± 0.003
Yokohama, KANAGAWA	31	139.7	0.15 ± 0.003	0.23 ± 0.004
Niigata, NIIGATA	32	50.38	0.092 ± 0.0026	0.14 ± 0.003
Kanazawa, ISHIKAWA	31	74	0.12 ± 0.003	0.19 ± 0.003
Fukui, FUKUI	32	137.4	0.11 ± 0.003	0.17 ± 0.003
Nagano, NAGANO	32	30.0	0.032 ± 0.0016	0.052 ± 0.0018
Shizuoka, SHIZUOKA	28	172.0	0.13 ± 0.003	0.22 ± 0.003
Nagoya, AICHI	32	86.4	0.091 ± 0.0027	0.14 ± 0.003
Kyoto, KYOTO	31	80.1	0.095 ± 0.0026	0.12 ± 0.003
Osaka, OSAKA	31	93	0.061 ± 0.0021	0.093 ± 0.0022
Kobe, HYOGO	32	62.0	0.054 ± 0.0027	0.091 ± 0.0022
Wakayama, WAKAYAMA	24	92.5	0.068 ± 0.0023	0.094 ± 0.0023
Tottori, TOTTORI	32	47.75	0.081 ± 0.0024	0.12 ± 0.003
Matsue, SHIMANE	31	43.7	0.053 ± 0.0019	0.081 ± 0.0021
Okayama, OKAYAMA	31	68.5	0.040 ± 0.0017	0.074 ± 0.0020
Hiroshima, HIROSHIMA	31	63.36	0.050 ± 0.0019	0.067 ± 0.0019
Yamaguchi, YAMAGUCHI	31	38.5	0.028 ± 0.0016	0.053 ± 0.0019
Matsuyama, EHIME	32	55.5	0.056 ± 0.0020	0.084 ± 0.0021
Kochi, KOCHI	31	129.3	0.084 ± 0.0025	0.13 ± 0.003
Dazaifu, FUKUOKA	31	45.9	0.028 ± 0.0016	0.045 ± 0.0017
Saga, SAGA	31	43.5	0.019 ± 0.0012	0.033 ± 0.0014
Nagasaki, NAGASAKI	31	55.0	0.023 ± 0.0016	0.039 ± 0.0016
Kagoshima, KAGOSHIMA	31	66	0.043 ± 0.0017	0.053 ± 0.0018
Yonagusuku, OKINAWA	30	230	0.098 ± 0.0027	0.15 ± 0.003
June, 1978				
Sapporo, HOKKAIDO	31	91.0	0.084 ± 0.0022	0.12 ± 0.003
Aomori, AOMORI	31	195.3	0.077 ± 0.0024	0.11 ± 0.002
Sendai, MIYAGI	31	157.6	0.087 ± 0.0024	0.13 ± 0.003
Akita, AKITA	31	225.84	0.16 ± 0.003	0.23 ± 0.003
Yamagata, YAMAGATA	30	164.64	0.063 ± 0.0020	0.10 ± 0.002

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Ohkuma, FUKUSHIMA	31	134.0	0.079 ± 0.0025	0.12 ± 0.002
Mito, IBARAKI	30	109	0.034 ± 0.0016	0.051 ± 0.0017
Shinjyuku, TOKYO	30	102	0.056 ± 0.0020	0.075 ± 0.0020
Yokohama, KANAGAWA	31	110.2	0.046 ± 0.0017	0.067 ± 0.0019
Niigata, NIIGATA	30	322.2	0.11 ± 0.003	0.16 ± 0.003
Kanazawa, ISHIKAWA	30	229.5	0.095 ± 0.0026	0.15 ± 0.003
Fukui, FUKUI	31	270.5	0.090 ± 0.0026	0.15 ± 0.003
Nagano, NAGANO	31	169.0	0.076 ± 0.0023	0.11 ± 0.002
Shizuoka, SHIZUOKA	33	303.5	0.079 ± 0.0025	0.13 ± 0.003
Nagoya, AICHI	31	202.7	0.086 ± 0.0024	0.13 ± 0.003
Kyoto, KYOTO	29	257.0	0.099 ± 0.0027	0.16 ± 0.003
Osaka, OSAKA	30	232	0.059 ± 0.0021	0.091 ± 0.0022
Kobe, HYOGO	33	324.1	0.11 ± 0.003	0.17 ± 0.003
Wakayama, WAKAYAMA	31	157	0.075 ± 0.0025	0.11 ± 0.003
Tottori, TOTTORI	31	65.30	0.092 ± 0.0025	0.14 ± 0.003
Matsue, SHIMANE	31	220.3	0.088 ± 0.0027	0.14 ± 0.003
Okayama, OKAYAMA	30	243.3	0.086 ± 0.0024	0.11 ± 0.002
Hiroshima, HIROSHIMA	30	141.67	0.090 ± 0.0025	0.12 ± 0.003
Yamaguchi, YAMAGUCHI	31	380	0.070 ± 0.0024	0.10 ± 0.002
Matsuyama, EHIME	30	173.5	0.032 ± 0.0015	0.053 ± 0.0017
Kochi, KOCHI	31	356.9	0.15 ± 0.003	0.23 ± 0.003
Dazaifu, FUKUOKA	30	299.1	0.046 ± 0.0019	0.067 ± 0.0019
Saga, SAGA	29	351.5	0.066 ± 0.0021	0.10 ± 0.002
Nagasaki, NAGASAKI	30	354.5	0.075 ± 0.0022	0.11 ± 0.002
Kagoshima, KAGOSHIMA	22	223.5	0.020 ± 0.0012	0.037 ± 0.0015
Naha, OKINAWA	30	250.0	0.016 ± 0.0012	0.043 ± 0.0017
July, 1978				
Sapporo, HOKKAIDO	32	46.0	0.036 ± 0.0018	0.058 ± 0.0018
Aomori, AOMORI	32	63.7	0.025 ± 0.0015	0.045 ± 0.0018
Akita, AKITA	32	76.61	0.022 ± 0.0015	0.037 ± 0.0021
Yamagata, YAMAGATA	31	15.63	0.0094±0.0011	0.017 ± 0.0011
Ohkuma, FUKUSHIMA	32	11.5	0.015 ± 0.0010	0.020 ± 0.0012
Mito, IBARAKI	31	35.0	0.024 ± 0.0016	0.041 ± 0.0016
Shinjyuku, TOKYO	31	44	0.010 ± 0.0012	0.015 ± 0.0011
Yokohama, KANAGAWA	33	55.2	0.011 ± 0.0012	0.016 ± 0.0011
Niigata, NIIGATA	32	30.7	0.011 ± 0.0012	0.020 ± 0.0012
Kanazawa, ISHIKAWA	31	25.5	0.006 ± 0.0010	0.012 ± 0.0010
Fukui, FUKUI	32	3.6	0.005 ± 0.0010	0.019 ± 0.0013
Nagano, NAGANO	32	65.0	0.0022±0.0015	0.034 ± 0.0015
Shizuoka, SHIZUOKA	28	162.5	0.033 ± 0.0017	0.054 ± 0.0018

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Nagoya, AICHI	32	155.1	0.018 ± 0.0012	0.033 ± 0.0014
Kyoto, KYOTO	31	71.7	0.020 ± 0.0013	0.043 ± 0.0016
Osaka, OSAKA	31	48	0.013 ± 0.0011	0.018 ± 0.0012
Kobe, HYOGO	30	17.7	0.0058±0.0010	0.008 ± 0.0009
Wakayama, WAKAYAMA	32	48.5	0.008 ± 0.0010	0.016 ± 0.0011
Tottori, TOTTORI	32	7.0	0.029 ± 0.0021	0.024 ± 0.0014
Matsue, SHIMANE	32	68.7	0.026 ± 0.0015	0.042 ± 0.0016
Okayama, OKAYAMA	31	23.4	0.013 ± 0.0012	0.022 ± 0.0012
Hiroshima, HIROSHIMA	31	2.68	0.005 ± 0.0009	0.004 ± 0.0008
Yamaguchi, YAMAGUCHI	32	43.5	0.013 ± 0.0011	0.017 ± 0.0012
Matsuyama, EHIME	33	65.5	0.023 ± 0.0019	0.030 ± 0.0014
Kochi, KOCHI	30	433.0	0.040 ± 0.0018	0.057 ± 0.0019
Dazaifu, FUKUOKA	31	66	0.022 ± 0.0014	0.036 ± 0.0016
Saga, SAGA	32	52.0	0.014 ± 0.0013	0.018 ± 0.0012
Nagasaki, NAGASAKI	31	24.5	0.010 ± 0.0011	0.020 ± 0.0012
Kagoshima, KAGOSHIMA	31	343.7	0.018 ± 0.0012	0.021 ± 0.0012
Naha, OKINAWA	31	315.0	0.026 ± 0.0014	0.040 ± 0.0016
August, 1978				
Sapporo, HOKKAIDO	32	69.5	0.043 ± 0.0017	0.068 ± 0.0019
Aomori, AOMORI	32	85.5	0.042 ± 0.0017	0.066 ± 0.0020
Sendai, MIYAGI	32	116.2	0.024 ± 0.0013	0.037 ± 0.0015
Akita, AKITA	32	157.35	0.052 ± 0.0020	0.078 ± 0.0024
Yamagata, YAMAGATA	31	176.38	0.045 ± 0.0017	0.066 ± 0.0019
Ohkuma, FUKUSHIMA	32	42.5	0.033 ± 0.0015	0.051 ± 0.0017
Mito, IBARAKI	31	17.0	0.007 ± 0.0010	0.009 ± 0.0009
Shinjyuku, TOKYO	31	17.6	0.013 ± 0.0011	0.018 ± 0.0012
Yokohama, KANAGAWA	31	17.7	0.003 ± 0.0008	0.007 ± 0.0008
Niigata, NIIGATA	32	100.54	0.012 ± 0.0012	0.025 ± 0.0013
Kanazawa, ISHIKAWA	31	108	0.018 ± 0.0014	0.028 ± 0.0014
Fukui, FUKUI	32	70.0	0.013 ± 0.0012	0.028 ± 0.0015
Nagano, NAGANO	32	108.0	0.056 ± 0.0019	0.075 ± 0.0020
Shizuoka, SHIZUOKA	31	136.5	0.016 ± 0.0013	0.026 ± 0.0015
Nagoya, AICHI	32	74.6	0.015 ± 0.0011	0.019 ± 0.0012
Kyoto, KYOTO	31	21.9	0.017 ± 0.0012	0.024 ± 0.0013
Osaka, OSAKA	31	16.8	0.002 ± 0.0007	0.006 ± 0.0008
Kobe, HYOGO	32	24.9	0.005 ± 0.0007	0.009 ± 0.0009
Wakayama, WAKAYAMA	31	47.5	0.003 ± 0.0007	0.005 ± 0.0009
Tottori, TOTTORI	32	11.0	0.028 ± 0.0015	0.032 ± 0.0015

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Matsue, SHIMANE	33	75.4	0.016 ± 0.0011	0.024 ± 0.0012
Okayama, OKAYAMA	31	33.5	0.003 ± 0.0008	0.005 ± 0.0008
Hiroshima, HIROSHIMA	31	27.62	0.006 ± 0.0008	0.005 ± 0.0008
Yamaguchi, YAMAGUCHI	32	41.50	0.010 ± 0.0010	0.015 ± 0.0011
Matsuyama, EHIME	32	60.0	0.003 ± 0.0007	0.006 ± 0.0008
Kochi, KOCHI	31	272.9	0.024 ± 0.0014	0.042 ± 0.0016
Dazaifu, FUKUOKA	31	82.9	0.007 ± 0.0013	0.008 ± 0.0009
Saga, SAGA	30	85.5	0.007 ± 0.0009	0.015 ± 0.0011
Nagasaki, NAGASAKI	31	166.0	0.010 ± 0.0010	0.016 ± 0.0011
Kagoshima, KAGOSHIMA	34	96.0	0.014 ± 0.0011	0.015 ± 0.0011
Naha, OKINAWA	31	515.0	0.018 ± 0.0012	0.034 ± 0.0015
September, 1978				
Sapporo, HOKKAIDO	32	52.5	0.023 ± 0.0013	0.037 ± 0.0015
Aomori, AOMORI	32	105.6	0.026 ± 0.0015	0.042 ± 0.0016
Sendai, MIYAGI	32	107.1	0.036 ± 0.0016	0.053 ± 0.0018
Akita, AKITA	31	148.68	0.033 ± 0.0016	0.058 ± 0.0019
Yamagata, YAMAGATA	30	103.4	0.037 ± 0.0015	0.040 ± 0.0016
Ohkuma, FUKUSHIMA	32	145.1	0.032 ± 0.0015	0.048 ± 0.0017
Mito, IBARAKI	32	118.0	0.023 ± 0.0014	0.034 ± 0.0015
Shinjuku, TOKYO	30	130	0.026 ± 0.0014	0.045 ± 0.0017
Yokohama, KANAGAWA	35	138.8	0.040 ± 0.0018	0.056 ± 0.0019
Niigata, NIIGATA	32	89.20	0.021 ± 0.0013	0.038 ± 0.0015
Kanazawa, ISHIKAWA	32	199.5	0.030 ± 0.0016	0.049 ± 0.0030
Fukui, FUKUI	32	122.6	0.024 ± 0.0014	0.043 ± 0.0016
Nagano, NAGANO	31	133.5	0.015 ± 0.0011	0.033 ± 0.0015
Shizuoka, SHIZUOKA	31	288.0	0.020 ± 0.0015	0.028 ± 0.0014
Nagoya, AICHI	33	250	0.019 ± 0.0012	0.026 ± 0.0013
Kyoto, KYOTO	31	167.8	0.022 ± 0.0014	0.026 ± 0.0014
Osaka, OSAKA	31	104	0.009 ± 0.0009	0.015 ± 0.0011
Kobe, HYOGO	32	118.3	0.011 ± 0.0010	0.020 ± 0.0012
Wakayama, WAKAYAMA	30	136.5	0.012 ± 0.0011	0.020 ± 0.0012
Tottori, TOTTORI	32	151.80	0.032 ± 0.0016	0.041 ± 0.0017
Matsue, SHIMANE	30	132.4	0.022 ± 0.0013	0.035 ± 0.0015
Okayama, OKAYAMA	32	80.3	0.006 ± 0.0010	0.011 ± 0.0010
Hiroshima, HIROSHIMA	30	146.38	0.017 ± 0.0012	0.020 ± 0.0013
Yamaguchi, YAMAGUCHI	32	133.0	0.019 ± 0.0012	0.024 ± 0.0013
Matsuyama, EHIME	32	89.0	0.011 ± 0.0010	0.018 ± 0.0011
Kochi, KOCHI	31	153.7	0.022 ± 0.0014	0.029 ± 0.0014
Dazaifu, FUKUOKA	30	102	0.014 ± 0.0011	0.018 ± 0.0012
Saga, SAGA	31	87.5	0.008 ± 0.0010	0.018 ± 0.0011

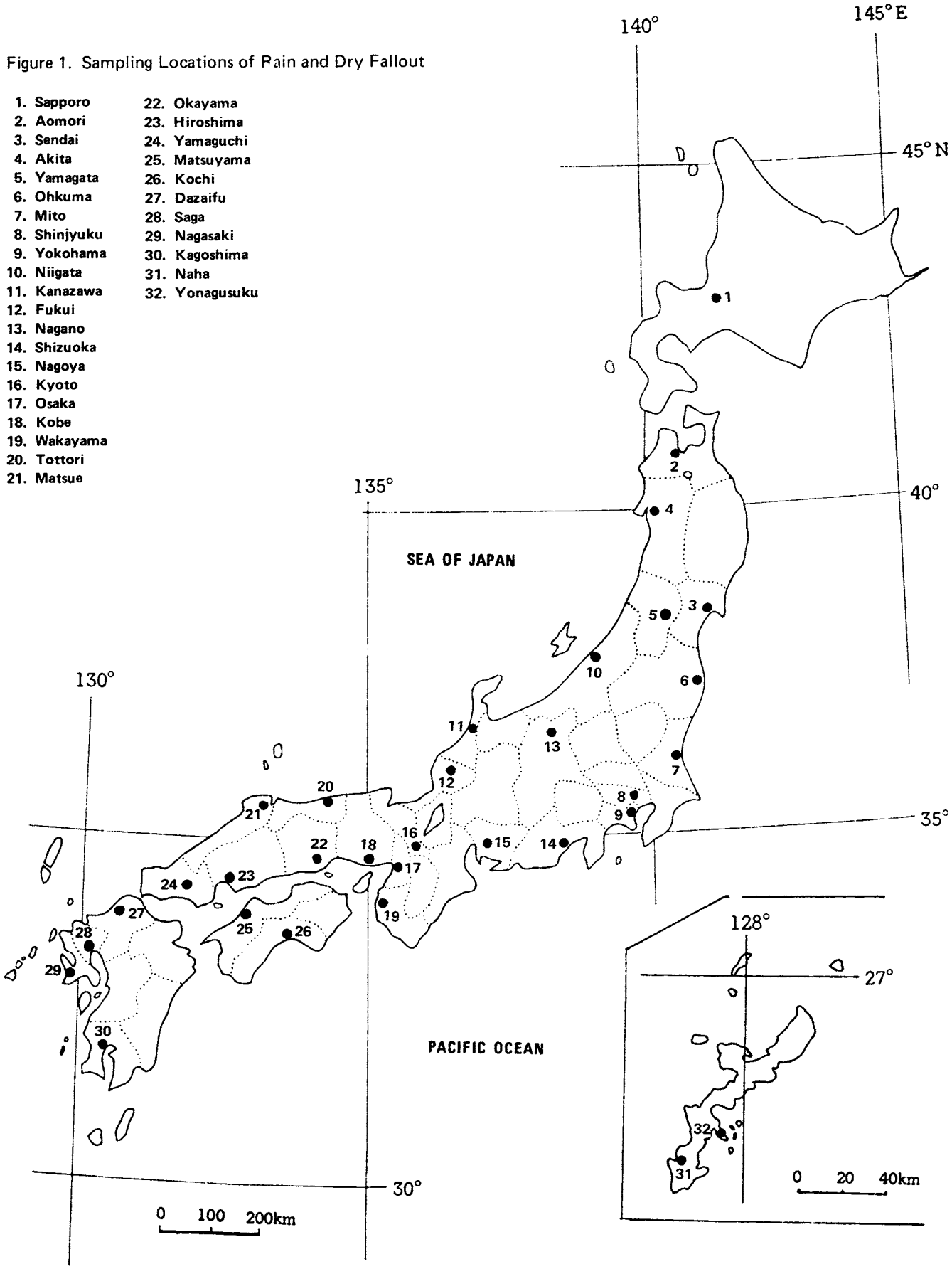
Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Nagasaki, NAGASAKI	31	120.0	0.016 ± 0.0011	0.025 ± 0.0013
Kagoshima, KAGOSHIMA	32	199	0.012 ± 0.0016	0.012 ± 0.0010
Naha, OKINAWA	30	164.5	0.010 ± 0.0010	0.014 ± 0.0011
October, 1978				
Sapporo, HOKKAIDO	31	123.0	0.030 ± 0.0014	0.050 ± 0.0017
Aomori, AOMORI	31	89.6	0.037 ± 0.0015	0.056 ± 0.0018
Sendai, MIYAGI	32	68.0	0.013 ± 0.0011	0.019 ± 0.0012
Akita, AKITA	32	181.44	0.046 ± 0.0018	0.074 ± 0.0021
Yamagata, YAMAGATA	31	63.10	0.008 ± 0.0009	0.015 ± 0.0010
Ohkuma, FUKUSHIMA	32	133.2	0.018 ± 0.0012	0.024 ± 0.0012
Mito, IBARAKI	31	133.0	0.021 ± 0.0014	0.033 ± 0.0014
Shinjuku, TOKYO	25	159	0.017 ± 0.011	0.027 ± 0.0014
Yokohama, KANAGAWA	28	119.3	0.018 ± 0.0012	0.024 ± 0.0012
Niigata, NIIGATA	30	80.70	0.021 ± 0.0012	0.035 ± 0.0015
Kanazawa, ISHIKAWA	34	144.5	0.039 ± 0.0016	0.058 ± 0.0018
Nagano, NAGANO	31	87.0	0.006 ± 0.0009	0.011 ± 0.0010
Shizuoka, SHIZUOKA	30	191.0	0.016 ± 0.0011	0.026 ± 0.0013
Nagoya, AICHI	33	93.4	0.011 ± 0.0009	0.016 ± 0.0011
Kyoto, KYOTO	31	91.0	0.008 ± 0.0009	0.013 ± 0.0010
Osaka, OSAKA	30	94	0.010 ± 0.0011	0.012 ± 0.0010
Kobe, HYOGO	30	82.4	0.009 ± 0.0010	0.016 ± 0.0011
Wakayama, WAKAYAMA	33	99.5	0.012 ± 0.0011	0.015 ± 0.0011
Tottori, TOTTORI	31	73.30	0.036 ± 0.0017	0.050 ± 0.0018
Matsue, SHIMANE	32	132.7	0.029 ± 0.0015	0.039 ± 0.0015
Okayama, OKAYAMA	30	82.7	0.008 ± 0.0010	0.010 ± 0.0009
Hiroshima, HIROSHIMA	31	78.516	0.090 ± 0.0010	0.011 ± 0.0010
Yamaguchi, YAMAGUCHI	31	99.0	0.010 ± 0.0009	0.011 ± 0.0010
Matsuyama, EHIME	31	88.0	0.008 ± 0.0009	0.013 ± 0.0010
Kochi, KOCHI	30	189.7	0.018 ± 0.0012	0.028 ± 0.0013
Dazaifu, FUKUOKA	31	68.4	0.008 ± 0.0010	0.009 ± 0.0009
Saga, SAGA	30	89.0	0.004 ± 0.0008	0.006 ± 0.0008
Nagasaki, NAGASAKI	30	55.0	0.008 ± 0.0009	0.009 ± 0.0009
Kagoshima, KAGOSHIMA	31	70	0.004 ± 0.0008	0.015 ± 0.0012
Naha, OKINAWA	31	298.5	0.012 ± 0.0009	0.018 ± 0.0011
November, 1978				
Sapporo, HOKKAIDO	31	83.0	0.023 ± 0.0013	0.043 ± 0.0016
Aomori, AOMORI	31	56.9	0.023 ± 0.0012	0.035 ± 0.0015
Sendai, MIYAGI	30	44.6	0.010 ± 0.0010	0.013 ± 0.0011
Akita, AKITA	31	137.14	0.011 ± 0.0010	0.028 ± 0.0014
Yamagata, YAMAGATA	30	56.96	0.010 ± 0.0010	0.018 ± 0.0011

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Ohkuma, FUKUSHIMA	31	64.0	0.008 ± 0.0009	0.015 ± 0.0011
Mito, IBARAKI	31	66.5	0.010 ± 0.0011	0.013 ± 0.0011
Shinjuku, TOKYO	30	74	0.020 ± 0.0013	0.030 ± 0.0014
Yokohama, KANAGAWA	32	53.3	0.016 ± 0.0014	0.025 ± 0.0013
Niigata, NIIGATA	32	100.55	0.035 ± 0.0018	0.060 ± 0.0019
Kanazawa, ISHIKAWA	29	147.5	0.039 ± 0.0021	0.070 ± 0.0021
Fukui, FUKUI	31	139.6	0.036 ± 0.0015	0.052 ± 0.0018
Nagano, NAGANO	31	43.5	0.005 ± 0.0009	0.010 ± 0.0010
Shizuoka, SHIZUOKA	30	115.0	0.009 ± 0.0010	0.014 ± 0.0011
Nagoya, AICHI	28	61.3	0.007 ± 0.0008	0.011 ± 0.0009
Kyoto, KYOTO	30	60.8	0.011 ± 0.0011	0.012 ± 0.0010
Osaka, OSAKA	30	46	0.007 ± 0.0009	0.011 ± 0.0010
Kobe, HYOGO	32	51.1	0.009 ± 0.0010	0.014 ± 0.0011
Wakayama, WAKAYAMA	29	51	0.014 ± 0.0013	0.019 ± 0.0012
Tottori, TOTTORI	31	84.50	0.014 ± 0.0020	0.058 ± 0.0020
Matsue, SHIMANE	31	110.7	0.032 ± 0.0017	0.052 ± 0.0018
Okayama, OKAYAMA	30	41.2	0.006 ± 0.0009	0.009 ± 0.0010
Hiroshima, HIROSHIMA	30	44.72	0.009 ± 0.0010	0.012 ± 0.0010
Yamaguchi, YAMAGUCHI	31	58.5	0.009 ± 0.0009	0.014 ± 0.0010
Matsuyama, EHIME	31	34.0	0.006 ± 0.0008	0.007 ± 0.0009
Kochi, KOCHI	29	90.7	0.016 ± 0.0012	0.020 ± 0.0012
Dazaifu, FUKUOKA	30	52.2	0.011 ± 0.0010	0.016 ± 0.0011
Saga, SAGA	34	36.0	0.008 ± 0.0010	0.011 ± 0.0010
Nagasaki, NAGASAKI	30	63.0	0.012 ± 0.0010	0.016 ± 0.0011
Kagoshima, KAGOSHIMA	31	62.3	0.012 ± 0.0009	0.021 ± 0.0013
Naha, OKINAWA	31	26.0	0.006 ± 0.0008	0.009 ± 0.0009
December, 1978				
Sapporo, HOKKAIDO	27	73.5	0.016 ± 0.0010	0.026 ± 0.0013
Aomori, AOMORI	36	98.5	0.043 ± 0.0019	0.077 ± 0.0021
Sendai, MIYAGI	39	2.4	0.004 ± 0.0008	0.004 ± 0.0008
Akita, AKITA	35	184.28	0.059 ± 0.0022	0.094 ± 0.0023
Yamagata, YAMAGATA	27	17.99	0.010 ± 0.0009	0.019 ± 0.0011
Ohkuma, FUKUSHIMA	35	6.5	0.018 ± 0.0013	0.026 ± 0.0013
Mito, IBARAKI	36	24.5	0.016 ± 0.0011	0.023 ± 0.0013
Shinjuku, TOKYO	31	32	0.014 ± 0.0011	0.021 ± 0.0012
Yokohama, KANAGAWA	35	18.3	0.008 ± 0.0010	0.016 ± 0.0011
Niigata, NIIGATA	36	91.52	0.057 ± 0.0021	0.092 ± 0.0023
Kanazawa, ISHIKAWA	34	171	0.065 ± 0.0021	0.10 ± 0.002
Fukui, FUKUI	36	165.6	0.054 ± 0.0020	0.091 ± 0.0024
Nagano, NAGANO	35	26.0	0.007 ± 0.0010	0.010 ± 0.0010

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Shizuoka, SHIZUOKA	35	46.0	0.009 ± 0.0011	0.015 ± 0.0011
Nagoya, AICHI	35	30.3	0.006 ± 0.0009	0.008 ± 0.0009
Kyoto, KYOTO	35	63.7	0.010 ± 0.0010	0.017 ± 0.0011
Osaka, OSAKA	30	50	0.010 ± 0.0010	0.014 ± 0.0010
Kobe, HYOGO	36	39.9	0.009 ± 0.0010	0.014 ± 0.0012
Wakayama, WAKAYAMA	34	47.0	0.011 ± 0.0011	0.016 ± 0.0011
Tottori, TOTTORI	36	154.30	0.035 ± 0.0016	0.059 ± 0.0018
Matsue, SHIMANE	31	137.7	0.041 ± 0.0017	0.073 ± 0.0020
Okayama, OKAYAMA	35	19.7	0.007 ± 0.0010	0.009 ± 0.0009
Hiroshima, HIROSHIMA	28	34.02	0.007 ± 0.0010	0.008 ± 0.0009
Yamaguchi, YAMAGUCHI	36	77.0	0.020 ± 0.0013	0.024 ± 0.0013
Matsuyama, EHIME	28	42.5	0.008 ± 0.0009	0.012 ± 0.0012
Kochi, KOCHI	36	34.9	0.012 ± 0.0010	0.013 ± 0.0010
Dazaifu, FUKUOKA	36	61.1	0.009 ± 0.0010	0.014 ± 0.0011
Saga, SAGA	30	42.0	0.004 ± 0.0008	0.007 ± 0.0009
Nagasaki, NAGASAKI	34	67.5	0.014 ± 0.0011	0.020 ± 0.0012
Kagoshima, KAGOSHIMA	34	61.8	0.008 ± 0.0009	0.011 ± 0.0010
Naha, OKINAWA	36	117.0	0.015 ± 0.0011	0.019 ± 0.0012

Figure 1. Sampling Locations of Rain and Dry Fallout

1. Sapporo
2. Aomori
3. Sendai
4. Akita
5. Yamagata
6. Ohkuma
7. Mito
8. Shinjyuku
9. Yokohama
10. Niigata
11. Kanazawa
12. Fukui
13. Nagano
14. Shizuoka
15. Nagoya
16. Kyoto
17. Osaka
18. Kobe
19. Wakayama
20. Tottori
21. Matsue
22. Okayama
23. Hiroshima
24. Yamaguchi
25. Matsuyama
26. Kochi
27. Dazaifu
28. Saga
29. Nagasaki
30. Kagoshima
31. Naha
32. Yonagusuku



(2) Strontium-90 and Cesium-137 in Air-borne Dust

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

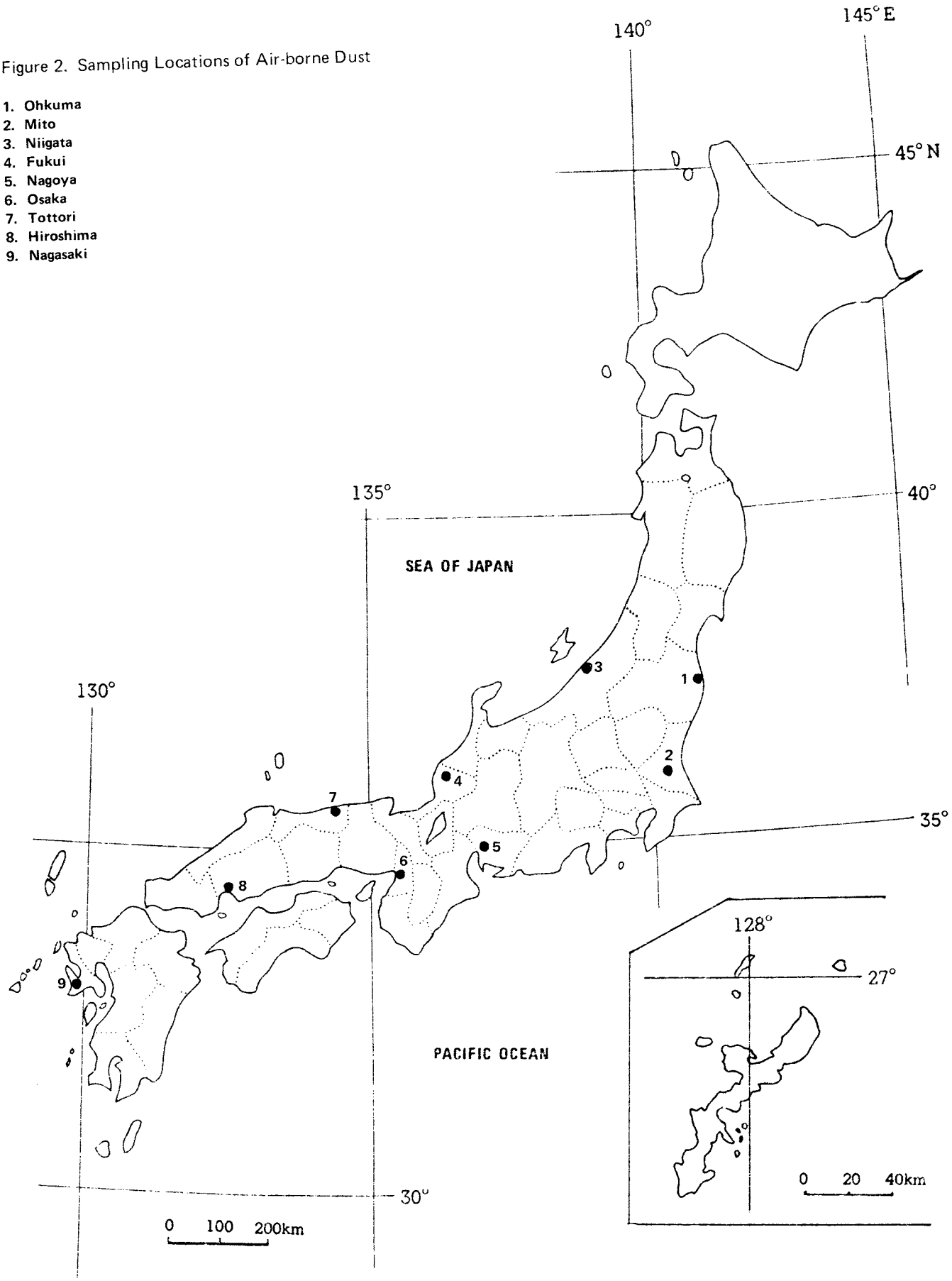
The results obtained are shown in Table 2 and the sampling locations are shown in Figure 2.

Table 2: ^{90}Sr and ^{137}Cs in Air-borne Dust
– April, 1978 to September, 1978 –
(Continued from Table 2, No. 49 of this publication)

Location	Sampling period	Absorption volume (m^3)	^{90}Sr (10^{-3} pCi/m^3)	^{137}Cs (10^{-3} pCi/m^3)
April ~ June, 1978				
Ohkuma, FUKUSHIMA	4 ~ 6	12824	1.3 ± 0.06	2.4 ± 0.06
Mito, IBARAKI	〃	10944	2.1 ± 0.08	3.3 ± 0.07
Fukui, FUKUI	〃	34571	2.5 ± 0.05	3.8 ± 0.04
Nagoya, AICHI	〃	11824	3.7 ± 0.11	5.1 ± 0.09
Osaka, OSAKA	〃	7776	1.9 ± 0.11	2.8 ± 0.09
Tottori, TOTTORI	〃	11701	2.9 ± 0.10	3.9 ± 0.08
Nagasaki, NAGASAKI	〃	12294	1.5 ± 0.06	2.1 ± 0.06
Niigata, NIIGATA	〃	10957.1	3.7 ± 0.11	6.3 ± 0.10
Hiroshima, HIROSHIMA	〃	10800	0.9 ± 0.06	1.3 ± 0.05
July ~ September, 1978				
Ohkuma, FUKUSHIMA	8 ~ 9	7451	0.8 ± 0.07	1.2 ± 0.06
Mito, IBARAKI	7 ~ 9	10368	0.4 ± 0.04	0.7 ± 0.04
Niigata, NIIGATA	〃	11103.3	1.5 ± 0.07	2.1 ± 0.06
Fukui, FUKUI	〃	25129	1.3 ± 0.04	2.0 ± 0.04
Nagoya, AICHI	〃	10452	1.0 ± 0.06	1.2 ± 0.05
Osaka, OSAKA	〃	8424	0.7 ± 0.06	0.9 ± 0.05
Tottori, TOTTORI	〃	11941.0	1.0 ± 0.06	1.6 ± 0.05
Hiroshima, HIROSHIMA	〃	10800	0.2 ± 0.03	0.2 ± 0.03
Nagasaki, NAGASAKI	〃	9053	0.8 ± 0.06	1.4 ± 0.06

Figure 2. Sampling Locations of Air-borne Dust

1. Ohkuma
2. Mito
3. Niigata
4. Fukui
5. Nagoya
6. Osaka
7. Tottori
8. Hiroshima
9. Nagasaki



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

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

The results obtained are shown in Table 3 and the sampling locations are shown in Figure 3, 4.

Table 3: ^{90}Sr and ^{137}Cs in Service Water
– April, 1978 to September, 1978 –
(Continued from Table 3, No. 49 of this publication)

Location	pH	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
(Source Water)			
June, 1978			
Kanamachi, TOKYO	6.9	0.15 ± 0.007	0.02 ± 0.004
Nagoya, AICHI	7.2	0.11 ± 0.007	0.02 ± 0.003
Fukuoka, FUKUOKA	7.15	0.15 ± 0.008	0.03 ± 0.005
July, 1978			
Sapporo, HOKKAIDO	6.8	0.13 ± 0.007	0.02 ± 0.004
Aoyama (Tsukui-gun), KANAGAWA	9.1	0.04 ± 0.004	0.004± 0.003
Moriguchi, OSAKA	7.0	0.28 ± 0.012	0.02 ± 0.003
August, 1978			
Keage, KYOTO	8.2	0.32 ± 0.013	0.02 ± 0.004
(Tap Water)			
June, 1978			
Wakkanai, HOKKAIDO	6.8	0.41 ± 0.012	0.03 ± 0.004
Aomori, AOMORI	7.0	0.07 ± 0.006	0.01 ± 0.003
Sendai, MIYAGI	7.36	0.11 ± 0.006	0.01 ± 0.003
Akita, AKITA	6.1	0.33 ± 0.010	0.03 ± 0.004
Yamagata, YAMAGATA	6.7	0.11 ± 0.007	0.01 ± 0.004
Fukushima, FUKUSHIMA	–	0.22 ± 0.009	0.01 ± 0.003
Kanamachi, TOKYO	7.1	0.16 ± 0.007	0.02 ± 0.003
Kanazawa, ISHIKAWA	7.7	0.18 ± 0.008	0.02 ± 0.003
Fukui, FUKUI	6.8	0.01 ± 0.003	0.005± 0.003
Nagano, NAGANO	7.6	0.07 ± 0.005	0.01 ± 0.003
Shizuoka, SHIZUOKA	8.0	0.001± 0.003	0.005± 0.003
Nagoya, AICHI	6.6	0.13 ± 0.008	0.01 ± 0.003
Kobe, HYOGO	7.0	0.31 ± 0.010	0.02 ± 0.004
Tottori, TOTTORI	7.5	0.10 ± 0.007	0.01 ± 0.003
Matsue, SHIMANE	6.9	0.28 ± 0.011	0.02 ± 0.003
Okayama, OKAYAMA	6.5	0.10 ± 0.006	0.01 ± 0.003
Ube, YAMAGUCHI	6.8	0.15 ± 0.007	0.02 ± 0.003

Location	pH	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
Kochi, KOCHI	7.3	0.11 ± 0.006	0.01 ± 0.003
Fukuoka, FUKUOKA	6.88	0.21 ± 0.008	0.01 ± 0.003
Saga, SAGA	7.39	0.10 ± 0.006	0.01 ± 0.003
Kagoshima, KAGOSHIMA	6.6	0.02 ± 0.004	0.002± 0.003
Naha, OKINAWA	7.5	0.19 ± 0.008	0.01 ± 0.003
July, 1978			
Yokohama, KANAGAWA	8.6	0.06 ± 0.005	0.01 ± 0.003
Niigata, NIIGATA	7.62	0.23 ± 0.009	0.02 ± 0.004
Osaka, OSAKA	7.0	0.21 ± 0.009	0.01 ± 0.003
Wakayama, WAKAYAMA	7.5	0.10 ± 0.006	0.04 ± 0.004
Matsuyama, EHIME	7.5	0.09 ± 0.006	0.06 ± 0.003
Nagasaki, NAGASAKI	6.9	0.12 ± 0.006	0.02 ± 0.004
Hiroshima, HIROSHIMA	7.8	0.15 ± 0.007	0.02 ± 0.004
August, 1978			
Mito, IBARAKI	6.2	0.07 ± 0.005	0.02 ± 0.004
Kyoto, KYOTO	7.11	0.32 ± 0.012	0.02 ± 0.004

Figure 3. Sampling Location of Service Water (Source Water)

1. Sapporo
2. Kanamachi
3. Aoyama (Tsukui-gun)
4. Nagoya
5. Keage
6. Moriguchi
7. Fukuoka

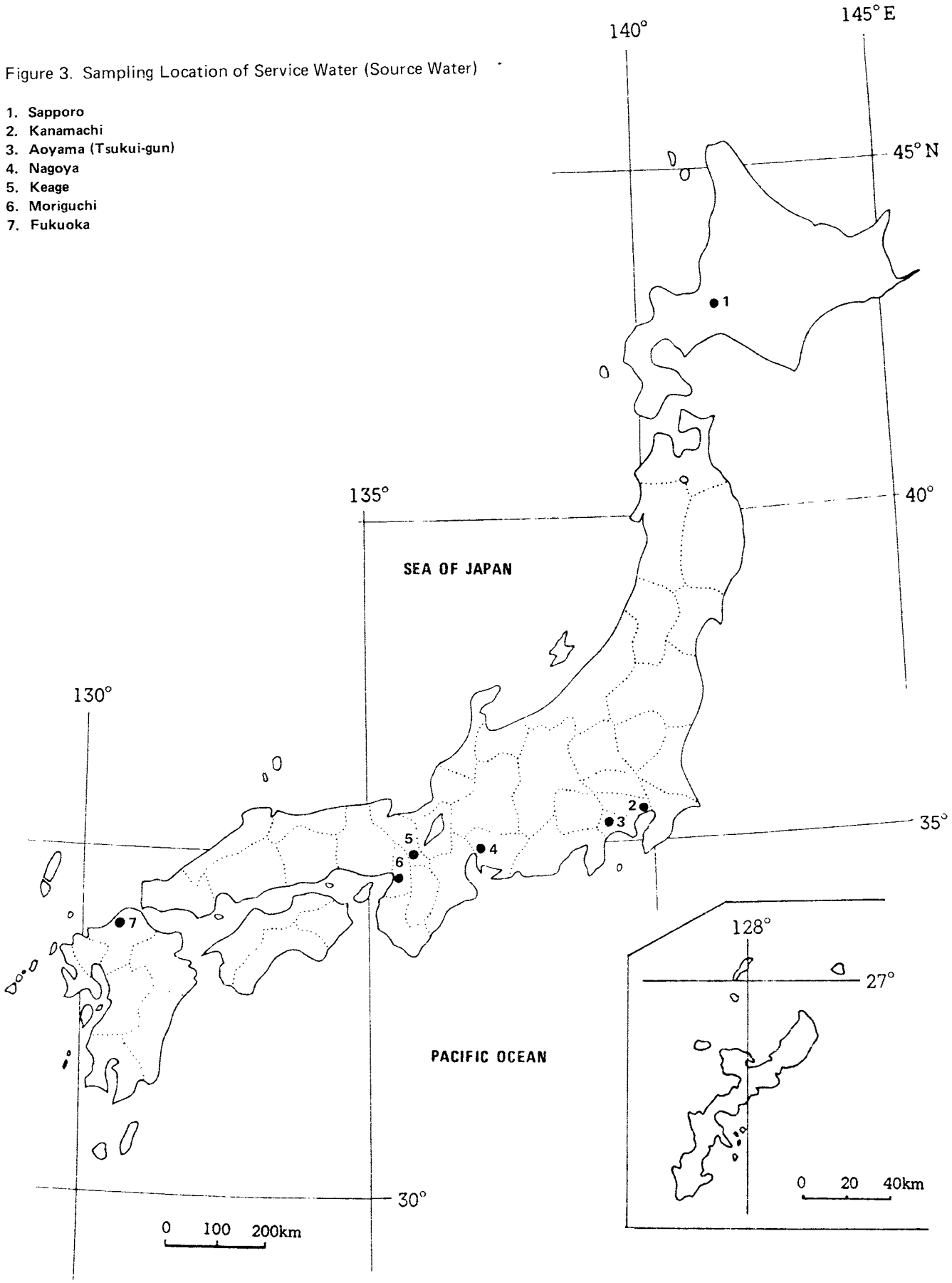
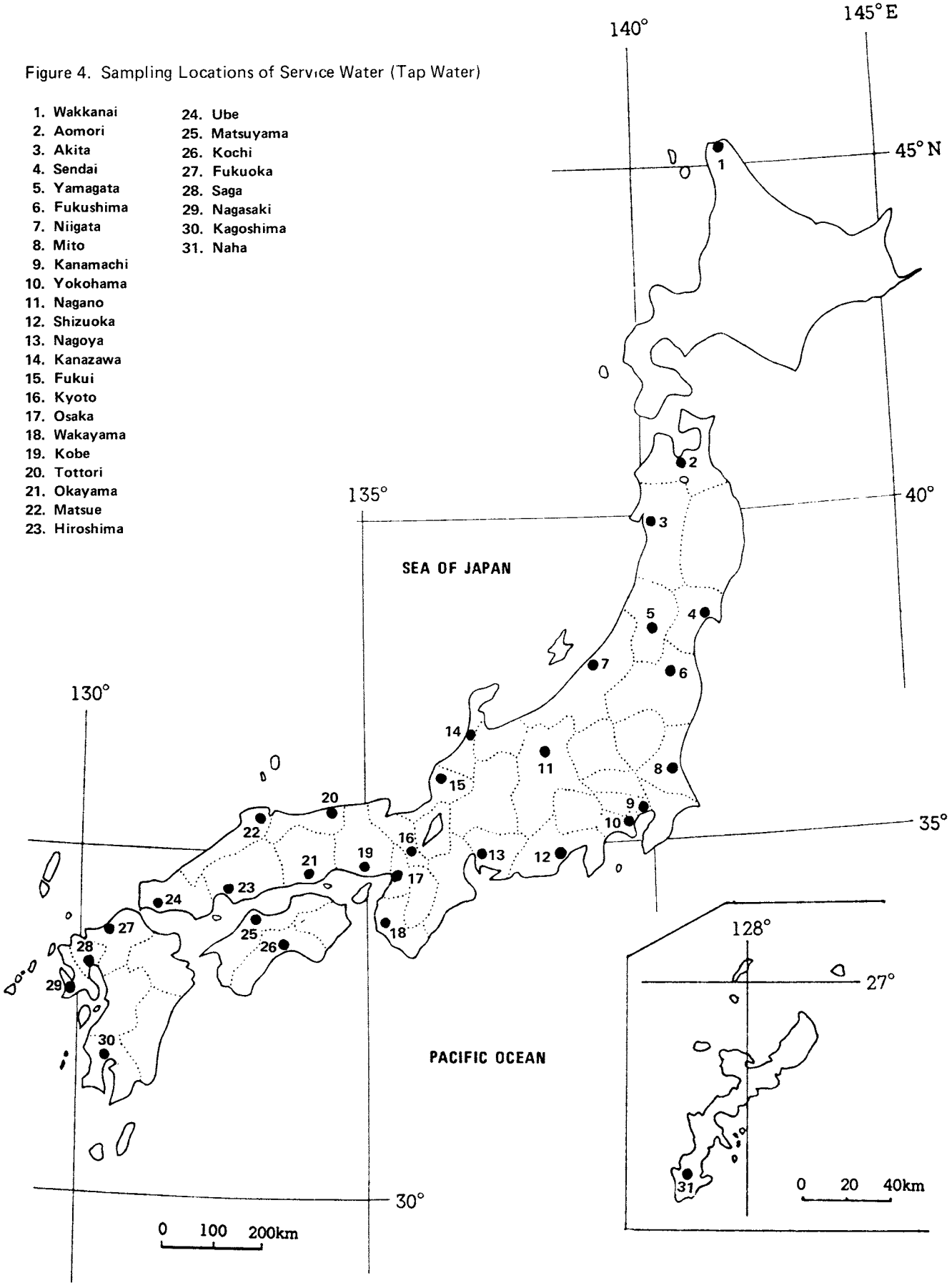


Figure 4. Sampling Locations of Service Water (Tap Water)

1. Wakkanai
2. Aomori
3. Akita
4. Sendai
5. Yamagata
6. Fukushima
7. Niigata
8. Mito
9. Kanamachi
10. Yokohama
11. Nagano
12. Shizuoka
13. Nagoya
14. Kanazawa
15. Fukui
16. Kyoto
17. Osaka
18. Wakayama
19. Kobe
20. Tottori
21. Okayama
22. Matsue
23. Hiroshima
24. Ube
25. Matsuyama
26. Kochi
27. Fukuoka
28. Saga
29. Nagasaki
30. Kagoshima
31. Naha



(4) Strontium-90 and Cesium-137 in Sea Water

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

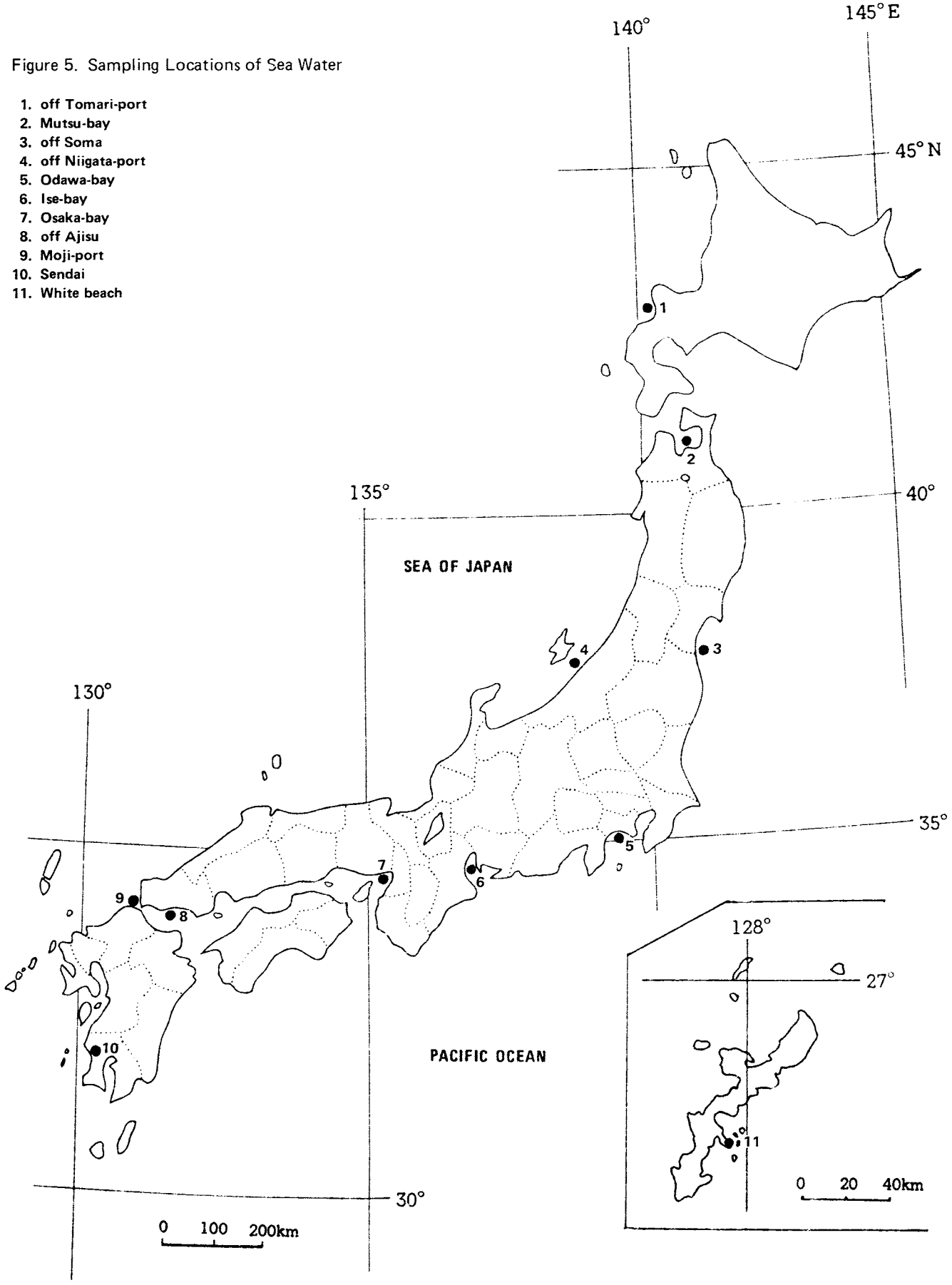
The results obtained are shown in Table 4 and the sampling locations are shown in Figure 5.

Table 4: ^{90}Sr and ^{137}Cs in Sea Water
– April, 1978 to March, 1979 –
(Continued from Table 4 No. 48 of this publication)

Location	Cl (‰)	Sample volume analyzed (ℓ)	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
July, ~~1977~~ 1978				
off-Niigata-port, NIIGATA	18.8	40	0.14 ± 0.015	0.19 ± 0.014
Moji-port, FUKUOKA	18.6	40	0.14 ± 0.016	0.15 ± 0.014
Ise-bay, AICHI	15.2	39.5	0.16 ± 0.012	0.11 ± 0.012
August, ~~1977~~ 1978				
off-Tomari-port, HOKKAIDO	18.8	40	0.14 ± 0.012	0.16 ± 0.013
Mutsu-bay, AOMORI	18.3	40	0.13 ± 0.012	0.14 ± 0.013
off-Soma, FUKUSHIMA	18.5	39	0.13 ± 0.013	0.13 ± 0.013
Odawa-bay, KANAGAWA	19.0	40	0.11 ± 0.013	0.15 ± 0.013
Osaka-bay, OSAKA	13.7	40	0.21 ± 0.014	0.13 ± 0.012
off-Ajisu, YAMAGUCHI	18.4	38	0.13 ± 0.014	0.16 ± 0.014
Sendai, KAGOSHIMA	18.8	38.2	0.11 ± 0.011	0.16 ± 0.013
White beach, OKINAWA	18.8	40	0.11 ± 0.013	0.14 ± 0.013

Figure 5. Sampling Locations of Sea Water

1. off Tomari-port
2. Mutsu-bay
3. off Soma
4. off Niigata-port
5. Odawa-bay
6. Ise-bay
7. Osaka-bay
8. off Ajisu
9. Moji-port
10. Sendai
11. White beach



(5) Strontium-90 and Cesium-137 in Marine Sediment

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

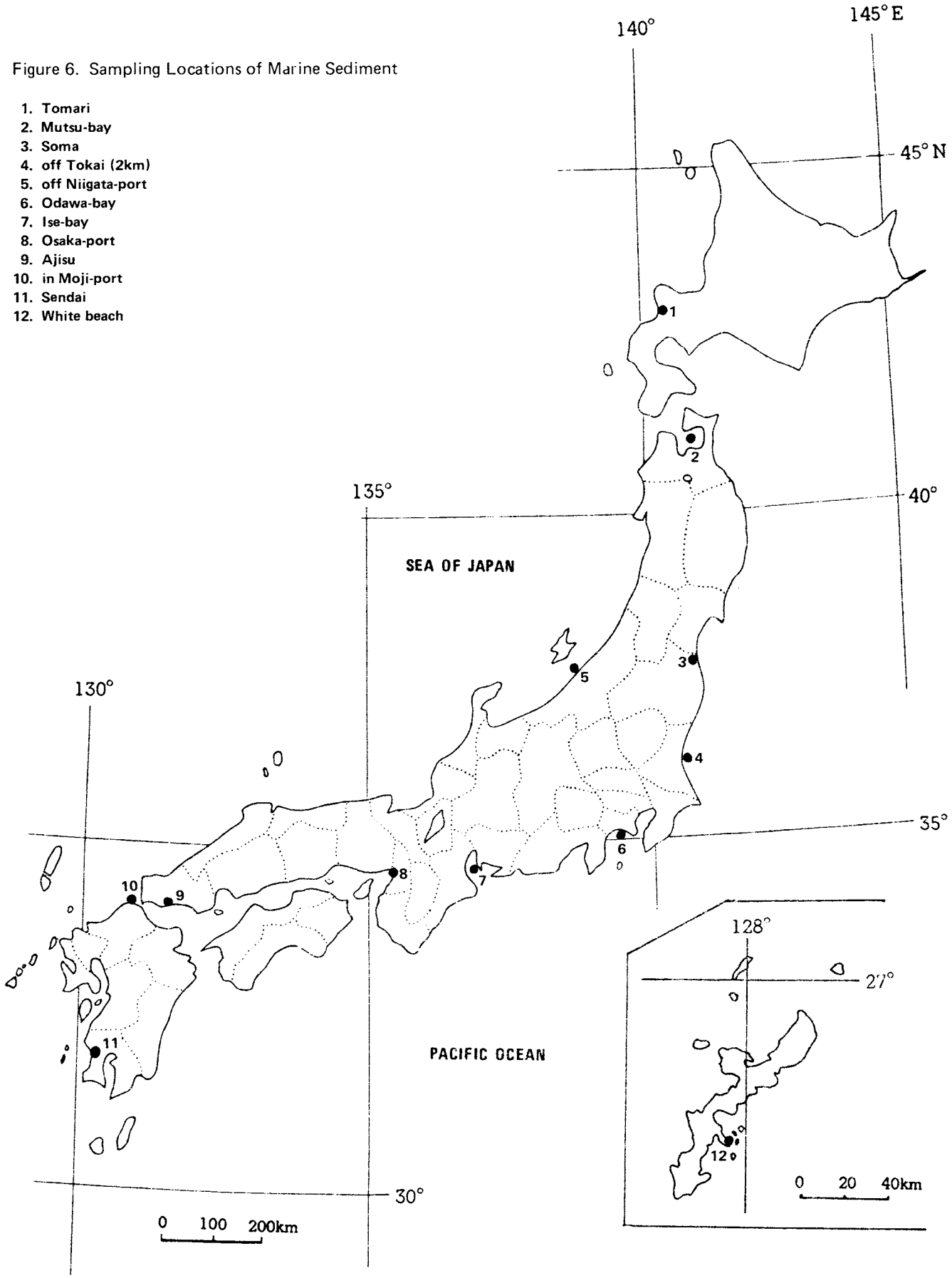
The results obtained are shown in Table 5 and the sampling locations are shown in Figure 6.

Table 5: ^{90}Sr and ^{137}Cs in Marine Sediment
– April, 1978 to March, 1979 –
(Continued from Table 5, No. 48 of this publication)

Location	Depth (m)	^{90}Sr (pCi/kg)	^{137}Cs (pCi/kg)
July, ~~1977~~ 1978			
off-Niigata-port, NIIGATA	22	4 ± 3.0	35 ± 4.1
Ise-bay, AICHI	13.0	4 ± 3.1	71 ± 5.5
in Moji-port, FUKUOKA	13.8	7 ± 2.9	100 ± 6
August, ~~1977~~ 1978			
Tomari, HOKKAIDO	5	6 ± 2.9	37 ± 4.3
Mutsu-bay, AOMORI	14	17 ± 3.5	160 ± 7
Soma, FUKUSHIMA	3	4 ± 3.0	12 ± 3.9
Odawa-bay, KANAGAWA	8	3 ± 2.7	140 ± 7
Osaka-port, OSAKA	10	11 ± 3.4	170 ± 7
Ajisu, YAMAGUCHI	5.0	3 ± 3.3	180 ± 8
Sendai, KAGOSHIMA	5.5	1 ± 2.8	19 ± 3.9
White-beach, OKINAWA	14	4 ± 3.1	32 ± 4.3
October, ~~1977~~ 1978			
off-Tokai (2km), IBARAKI	20	2 ± 3.1	27 ± 4.2

Figure 6. Sampling Locations of Marine Sediment

1. Tomari
2. Mutsu-bay
3. Soma
4. off Tokai (2km)
5. off Niigata-port
6. Odawa-bay
7. Ise-bay
8. Osaka-port
9. Ajisu
10. in Moji-port
11. Sendai
12. White beach



(6) Strontium-90 and Cesium-137 in Soil

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

The results obtained are shown in Table 6 and the sampling locations are shown in Figure 7.

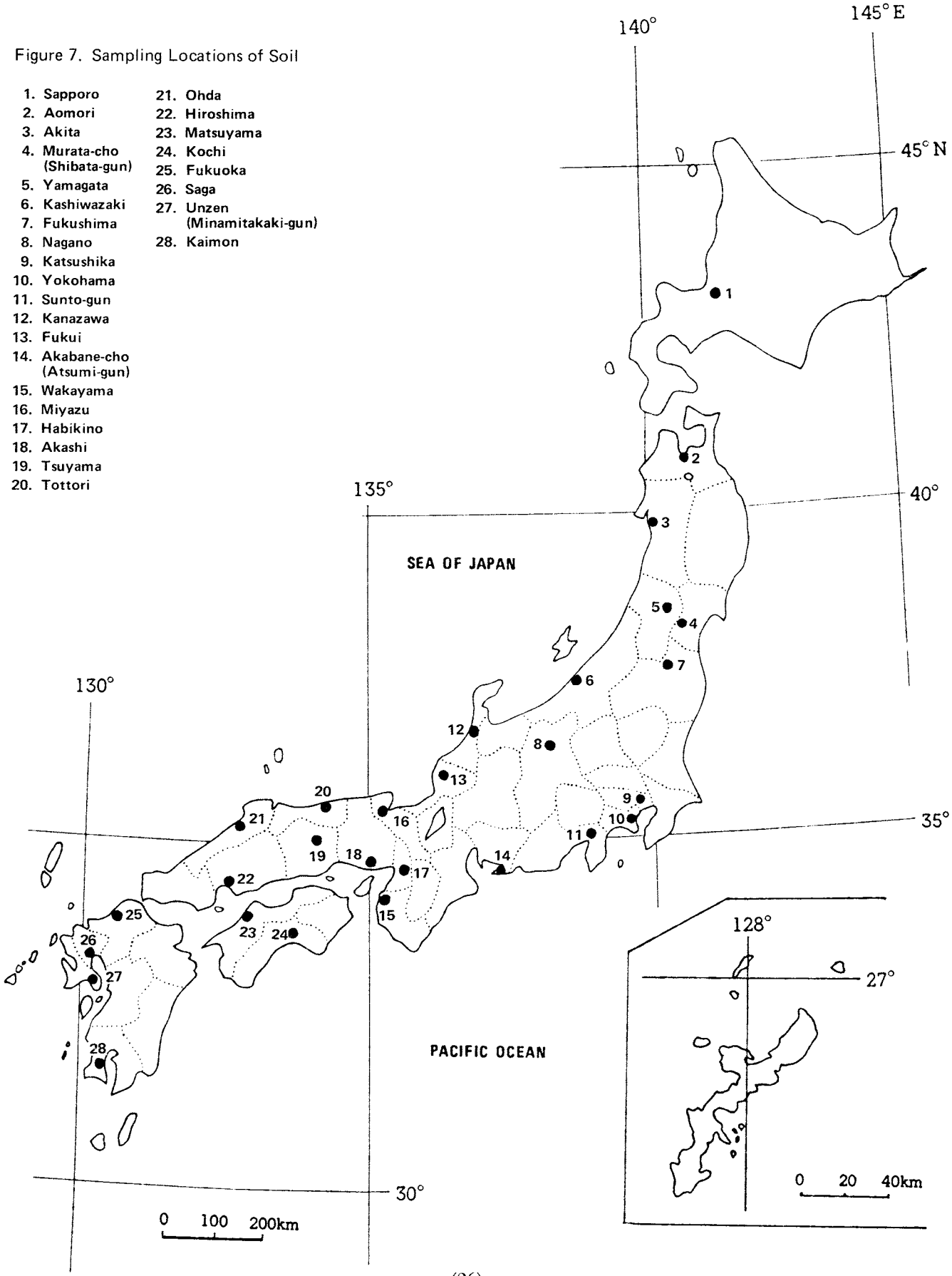
Table 6: ^{90}Sr and ^{137}Cs in Soil
– April 1978 to March, 1979 –
(Continued from Table 5, No. 49 of this publication)

Location	Sampling Depth (cm)	Air Soil (%)	Sr (%)	^{90}Sr (pCi/kg)	^{90}Sr (mCi/km^2)	^{137}Cs (pCi/kg)	^{137}Cs (mCi/km^2)
June, 1978							
Akabane (Atsumi-gun), AICHI	0~5	98.4	0.001	61 ± 5.5	5.6 ± 0.51	390 ± 10	35 ± 1.0
〃	5~20	98.5	0.001	63 ± 6.1	12 ± 1.2	360 ± 10	71 ± 2.0
Tsuyama, OKAYAMA	0~5	93.4	0.003	44 ± 5.8	0.9 ± 0.11	80 ± 6.1	1.6 ± 0.12
〃	5~20	93.0	0.004	25 ± 4.1	1.7 ± 0.27	41 ± 4.9	2.8 ± 0.33
July, 1978							
Aomori, AOMORI	0~5	89.8	0.004	120 ± 7	4.2 ± 0.26	86 ± 6.2	3.1 ± 0.22
〃	5~20	83.7	0.005	24 ± 4.8	3.4 ± 0.68	5.7± 4.0	0.8 ± 0.56
Murata (Shibata-gun), MIYAGI	0~5	91.3	0.003	310 ± 11	7.4 ± 0.25	1200 ± 20	28 ± 0.5
〃	5~20	89.8	0.003	130 ± 7	7.7 ± 0.45	180 ± 8	11 ± 0.5
Akita, AKITA	0~5	90.8	0.003	1100 ± 20	34 ± 0.6	4700 ± 40	150 ± 1
〃	5~20	87.8	0.003	710 ± 16	83 ± 1.9	830 ± 16	97 ± 1.9
Yamagata, YAMAGATA	0~5	96.8	0.002	310 ± 11	16 ± 0.6	760 ± 15	40 ± 0.8
〃	5~20	97.0	0.002	190 ± 8	24 ± 1.0	300 ± 10	37 ± 1.2
Kanamachi, TOKYO	0~5	95.8	0.007	170 ± 8	13 ± 0.6	370 ± 11	27 ± 0.8
〃	5~20	94.7	0.007	180 ± 10	43 ± 2.4	350 ± 11	84 ± 2.5
Kashiwazaki, NIIGATA	0~5	98.3	0.005	200 ± 8	17 ± 0.7	1000 ± 20	84 ± 1.4
〃	5~20	96.3	0.005	260 ± 9	42 ± 1.5	170 ± 8	28 ± 1.3
Kanazawa, ISHIKAWA	0~5	96.7	0.003	180 ± 8	8.6 ± 0.38	440 ± 11	21 ± 0.5
〃	5~20	96.3	0.003	100 ± 6	7.4 ± 0.46	180 ± 8	13 ± 0.6
Nagano, NAGANO	0~5	97.6	0.010	160 ± 9	9.8 ± 0.53	330 ± 10	20 ± 0.6
〃	5~20	97.5	0.011	82 ± 6.8	16 ± 1.3	92 ± 6.0	17 ± 1.1
Sunto-gun, SHIZUOKA	0~5	98.2	0.025	140 ± 8	3.5 ± 0.22	430 ± 12	11 ± 0.3
〃	5~20	98.0	0.023	130 ± 8	10 ± 0.6	520 ± 12	41 ± 1.0
Miyazu, KYOTO	0~5	97.9	0.001	450 ± 12	19 ± 0.5	910 ± 16	38 ± 0.7
〃	5~20	98.3	0.001	150 ± 7.8	27 ± 1.5	230 ± 8	42 ± 1.6
Habikino, OSAKA	0~5	97.4	0.003	62 ± 5.5	3.4 ± 0.30	260 ± 9	14 ± 0.5
〃	5~20	98.7	0.003	63 ± 5.2	9.4 ± 0.78	200 ± 8	30 ± 1.2
Akashi, HYOGO	0~5	94.7	0.001	40 ± 5.0	1.4 ± 0.17	310 ± 10	10 ± 0.3
〃	5~20	93.3	0.001	44 ± 5.2	4.6 ± 0.54	270 ± 10	29 ± 1.0
Tottori, TOTTORI	0~5	98.0	0.002	210 ± 9	9.0 ± 0.38	1200 ± 20	52 ± 0.8
〃	5~20	96.9	0.003	190 ± 9	33 ± 1.6	320 ± 10	56 ± 1.8
Kochi, KOCHI	0~5	95.6	0.010	380 ± 11	21 ± 0.6	1100 ± 20	61 ± 1.0
〃	5~20	95.6	0.009	240 ± 9	28 ± 1.1	310 ± 10	36 ± 1.2

Location	Sampling Depth (cm)	Air Soil (%)	Sr (%)	^{90}Sr		^{137}Cs	
				(pCi/kg)	(mCi/km^2)	(pCi/kg)	(mCi/km^2)
Fukuoka, FUKUOKA	0~5	98.7	0.001	490 ± 12	23 ± 0.6	350 ± 10	16 ± 0.5
〃	5~20	98.8	0.001	110 ± 6	17 ± 1.0	52 ± 4.8	8.4 ± 0.77
Unzen (Minamitakaki-gun), NAGASAKI	0~5	94.1	0.004	280 ± 10	7.5 ± 0.27	1100 ± 20	29 ± 0.5
〃	5~20	94.4	0.004	310 ± 11	28 ± 1.0	870 ± 16	78 ± 1.5
August, 1978							
Sapporo, HOKKADO	0~5	90.6	0.008	370 ± 11	15 ± 0.4	950 ± 17	38 ± 0.7
〃	5~20	86.1	0.007	320 ± 11	63 ± 2.2	430 ± 12	84 ± 2.4
Fukushima, FUKUSHIMA	0~5	90.1	0.003	370 ± 12	9.9 ± 0.32	600 ± 14	16 ± 0.4
〃	5~20	89.1	0.003	130 ± 8	8.5 ± 0.49	60 ± 5.5	3.8 ± 0.34
Fukui, FUKUI	0~5	96.5	0.004	200 ± 8	9.3 ± 0.36	1100 ± 20	49 ± 0.8
〃	5~20	96.4	0.004	170 ± 7	26 ± 1.1	820 ± 15	130 ± 2
Wakayama, WAKAYAMA	0~5	99.7	0.002	18 ± 3.8	1.3 ± 0.27	36 ± 4.3	2.5 ± 0.30
〃	5~20	99.5	0.002	18 ± 3.8	3.8 ± 0.79	23 ± 4.2	4.8 ± 0.87
Ohda, SHIMANE	0~5	94.5	0.006	120 ± 7	4.9 ± 0.30	510 ± 12	21 ± 0.5
〃	5~20	93.8	0.006	89 ± 6.4	14 ± 1.0	380 ± 11	58 ± 1.6
Hiroshima, HIROSHIMA	0~5	98.9	0.001	26 ± 4.3	2.4 ± 0.39	130 ± 7	12 ± 0.6
〃	5~20	98.5	0.001	31 ± 4.3	7.2 ± 1.0	94 ± 5.8	22 ± 1.4
Matsuyama, EHIME	0~5	98.0	0.001	100 ± 7	3.4 ± 0.22	320 ± 10	11 ± 0.3
〃	5~20	98.5	0.001	99 ± 6.4	5.6 ± 0.36	420 ± 11	24 ± 0.6
Saga, SAGA	0~5	99.4	0.001	130 ± 7	6.6 ± 0.38	46 ± 4.4	2.3 ± 0.22
〃	5~20	99.4	0.001	61 ± 6.0	5.5 ± 0.54	6.4± 3.0	0.6 ± 0.3
Kaimon (Ibusuki-gun), KAGOSHIMA	0~5	96.1	0.012	180 ± 8	13 ± 0.6	800 ± 15	57 ± 1.1
〃	5~20	96.5	0.012	180 ± 8	29 ± 1.3	270 ± 9	43 ± 1.4
September, 1978							
Yokohama Kanagawa	0~5	95.8	0.008	590 ± 14	16 ± 0.4	1700 ± 20	46 ± 0.6
〃	5~20	95.0	0.006	350 ± 14	33 ± 1.3	390 ± 11	37 ± 1.1

Figure 7. Sampling Locations of Soil

1. Sapporo
2. Aomori
3. Akita
4. Murata-cho (Shibata-gun)
5. Yamagata
6. Kashiwazaki
7. Fukushima
8. Nagano
9. Katsushika
10. Yokohama
11. Sunto-gun
12. Kanazawa
13. Fukui
14. Akabane-cho (Atsumi-gun)
15. Wakayama
16. Miyazu
17. Habikino
18. Akashi
19. Tsuyama
20. Tottori
21. Ohda
22. Hiroshima
23. Matsuyama
24. Kochi
25. Fukuoka
26. Saga
27. Unzen (Minamitakaki-gun)
28. Kaimon



Dietary Data

(7) Strontium-90 and Cesium-137 in Total Diet

(Japan Chemical Analysis Center)
(Prefectural Public Health Laboratories and Institutes)

The results obtained are shown in Table 7 and the sampling locations are shown in Figure 8.

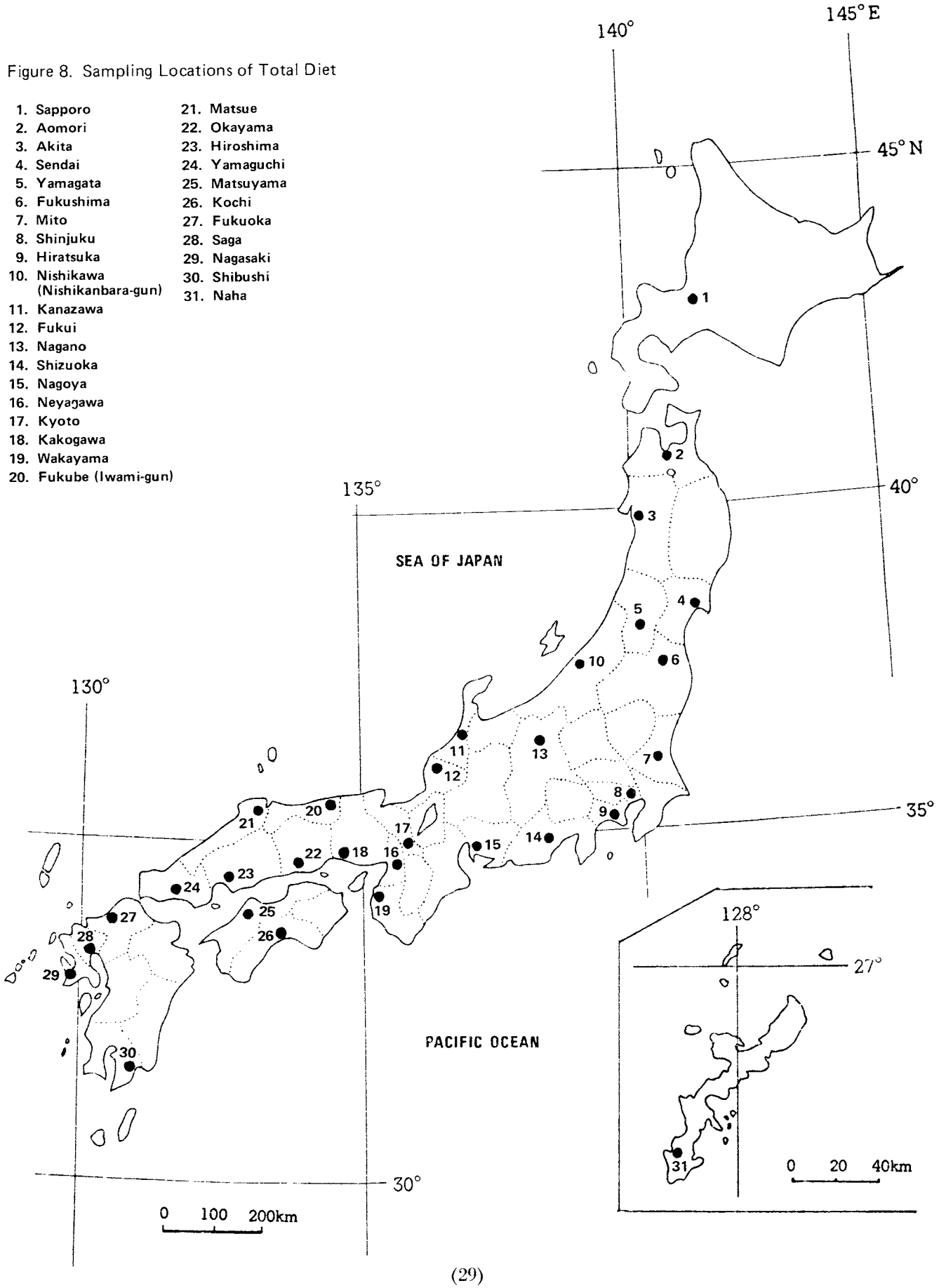
Table 7: ^{90}Sr and ^{137}Cs in Total Diet
– April, 1978 to March, 1979 –
(Continued from Table 6, No. 49 of this publication)

Location	Ash	Ca	K	^{90}Sr		^{137}Cs	
	(g/p/d)	(mg/p/d)	(mg/p/d)	(pCi/p/d)	(S.U.)	(pCi/p/d)	(C.U.)
May, 1978							
Sendai, MIYAGI	18.8	504	1810	3.6 ± 0.45	7.2 ± 0.89	7.3 ± 0.40	4.0 ± 0.22
Wakayama, WAKAYAMA	29.7	1490	3120	9.5 ± 0.89	6.4 ± 0.60	15 ± 0.7	4.8 ± 0.22
June, 1978							
Aomori, AOMORI	24.7	684	2240	14 ± 0.8	21 ± 1.2	6.2 ± 0.44	2.8 ± 0.20
Akita, AKITA	20.2	570	1920	5.0 ± 0.51	8.8 ± 0.89	5.4 ± 0.39	2.8 ± 0.20
Fukushima, FUKUSHIMA	17.7	735	2420	3.7 ± 0.50	5.1 ± 0.68	7.6 ± 0.40	3.1 ± 0.16
Mito, IBARAKI	24.0	1821	3542	4.0 ± 0.40	2.2 ± 0.22	6.2 ± 0.38	1.8 ± 0.11
Shinjuku, TOKYO	19.8	1010	1740	5.0 ± 0.58	4.9 ± 0.57	5.3 ± 0.37	3.0 ± 0.21
Fukui, FUKUI	15.9	730	2150	2.7 ± 0.36	3.7 ± 0.49	3.8 ± 0.32	1.8 ± 0.15
Nagano, NAGANO	20.0	634	2500	3.1 ± 0.44	4.9 ± 0.69	5.4 ± 0.38	2.1 ± 0.15
Shizuoka, SHIZUOKA	17.8	692	2470	3.7 ± 0.42	5.4 ± 0.61	6.4 ± 0.37	2.6 ± 0.15
Nagoya, AICHI	26.8	882	1880	4.0 ± 0.51	4.6 ± 0.58	6.7 ± 0.42	3.6 ± 0.22
Kyoto, KYOTO	20.0	1050	2280	2.7 ± 0.43	2.6 ± 0.41	7.0 ± 0.44	3.1 ± 0.19
Kakogawa, HYOGO	21.4	1120	2890	4.6 ± 0.50	4.1 ± 0.44	4.5 ± 0.36	1.6 ± 0.13
Okayama, OKAYAMA	19.1	615	1930	3.1 ± 0.42	5.0 ± 0.68	3.3 ± 0.30	1.7 ± 0.16
Yamaguchi, YAMAGUCHI	22.8	552	2390	7.2 ± 0.64	13 ± 1.2	2.9 ± 0.32	1.2 ± 0.13
Kochi, KOCHI	16.4	503	2130	2.6 ± 0.37	5.1 ± 0.73	4.6 ± 0.31	2.2 ± 0.15
Saga, SAGA	21.4	1640	1620	3.4 ± 0.48	2.1 ± 0.29	3.3 ± 0.32	2.0 ± 0.20
Fukuoka, FUKUOKA	21.4	644	2380	3.6 ± 0.50	5.5 ± 0.78	4.8 ± 0.37	2.0 ± 0.16
July, 1978							
Sapporo, HOKKAIDO	17.4	419	1980	2.3 ± 0.38	5.6 ± 0.90	4.3 ± 0.31	2.1 ± 0.16
Yamagata, YAMAGATA	17.0	316	1700	3.6 ± 0.42	11 ± 1.3	15 ± 0.5	8.6 ± 0.32
Nishikawa (Nishikanbara-gun), NIIGATA	24.8	809	3054	15 ± 0.7	19 ± 0.8	6.8 ± 0.39	2.2 ± 0.13
Neyagawa, OSAKA	14.8	429	2100	2.6 ± 0.35	6.0 ± 0.81	4.5 ± 0.31	2.1 ± 0.15
Kanazawa, ISHIKAWA	16.9	581	2240	3.6 ± 0.38	6.2 ± 0.65	4.6 ± 0.33	2.0 ± 0.15
Fukube (Iwami-gun), TOTTORI	15.3	372	1938	4.5 ± 0.40	12 ± 1.1	3.9 ± 0.29	2.0 ± 0.15
Matsuyama, EHIME	20.3	1150	1930	3.2 ± 0.49	2.8 ± 0.42	4.8 ± 0.36	2.5 ± 0.19
Nagasaki, NAGASAKI	12.4	558	1994	3.2 ± 0.29	5.8 ± 0.52	5.5 ± 0.29	2.7 ± 0.14
Shibushi, KAGOSHIMA	13.0	306	1530	2.2 ± 0.30	7.0 ± 0.98	5.9 ± 0.28	3.8 ± 0.18

Location	Ash (g/p/d)	Ca (mg/p/d)	K (mg/p/d)	^{90}Sr (pCi/p/d)	^{90}Sr (S.U.)	^{137}Cs (pCi/p/d)	^{137}Cs (C.U.)
August, 1978							
Hiratsuka, KANAGAWA	14.7	629	2258	2.8 ± 0.41	4.4 ± 0.65	5.5 ± 0.41	2.4 ± 0.18
Matsue, SHIMANE	20.1	711	3028	7.5 ± 0.56	11 ± 0.8	10 ± 0.5	3.4 ± 0.17
Hiroshima, HIROSHIMA	14.2	308	1800	2.9 ± 0.33	9.5 ± 1.1	3.6 ± 0.26	2.0 ± 0.14
September, 1978							
Naha, OKINAWA	17.6	716	2178	4.7 ± 0.50	6.6 ± 0.70	4.3 ± 0.32	2.0 ± 0.15
November, 1978							
Sendai, MIYAGI	15.4	448	1984	5.1 ± 0.45	11 ± 1.0	8.0 ± 0.37	4.0 ± 0.19
Akita, AKITA	17.1	334	1595	6.0 ± 0.51	18 ± 1.5	9.6 ± 0.46	6.0 ± 0.29
Fukui, FUKUI	14.6	419	1728	5.0 ± 0.45	12 ± 1.1	9.9 ± 0.39	5.7 ± 0.23
Shizuoka, SHIZUOKA	18.9	695	2750	6.9 ± 0.54	9.9 ± 0.78	9.1 ± 0.45	3.3 ± 0.16
Nagoya, AICHI	17.1	528	2253	4.0 ± 0.46	7.5 ± 0.87	5.4 ± 0.34	2.4 ± 0.15
Neyagawa, OSAKA	15.9	518	2030	3.4 ± 0.37	6.6 ± 0.71	4.6 ± 0.30	2.3 ± 0.15
Fukube (Iwami-gun), TOTTORI	19.6	561	2401	6.5 ± 0.62	12 ± 1.1	5.9 ± 0.48	2.5 ± 0.20
Kochi, KOCHI	16.5	544	2054	3.3 ± 0.39	6.1 ± 0.72	3.5 ± 0.29	1.7 ± 0.14
Fukuoka, FUKUOKA	20.8	660	2561	4.6 ± 0.49	7.0 ± 0.75	5.4 ± 0.39	2.1 ± 0.15
December, 1978							
Sapporo, HOKKAIDO	19.9	758	2580	5.5 ± 0.52	7.3 ± 0.69	7.2 ± 0.42	2.8 ± 0.16
Aomori, AOMORI	19.0	634	2438	5.0 ± 0.52	7.9 ± 0.82	7.7 ± 0.41	3.2 ± 0.17
Yamagata, YAMAGATA	14.2	570	1873	3.8 ± 0.42	6.7 ± 0.73	5.9 ± 0.31	3.2 ± 0.17
Kakogawa, HYOGO	14.2	549	1802	5.6 ± 0.41	10 ± 0.7	3.4 ± 0.25	1.9 ± 0.14

Figure 8. Sampling Locations of Total Diet

1. Sapporo
2. Aomori
3. Akita
4. Sendai
5. Yamagata
6. Fukushima
7. Mito
8. Shinjuku
9. Hiratsuka
10. Nishikawa (Nishikanbara-gun)
11. Kanazawa
12. Fukui
13. Nagano
14. Shizuoka
15. Nagoya
16. Neyagawa
17. Kyoto
18. Kakogawa
19. Wakayama
20. Fukube (Iwami-gun)
21. Matsue
22. Okayama
23. Hiroshima
24. Yamaguchi
25. Matsuyama
26. Kochi
27. Fukuoka
28. Saga
29. Nagasaki
30. Shibushi
31. Naha



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