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CONTENTS

Science and Technology Agency
National Institute of Radiological Sciences

Environmental Data

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

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

Under the commission of Science and Technology Agency, Japan Chemical Analysis Center and prefectural public health laboratories and institutes have measured the levels of strontium-90 and cesium-137 in rain and dry fallout samples.

Sampling and pretreatment were performed by each prefectural public health laboratories and institutes. The large tray containing water was used for the collection of samples, and it was exposed to rain and dust for a month. Water in the collection tray and water used to wash the tray are combined with strontium and cesium carrier, and filtrate through the filter paper. The filtration is then applied on column filled resin, and all the cation were absorbed in it. These resin and filter papers used were collected in Japan Chemical Analysis Center. The fraction containing both strontium-90 and cesium-137 was eluted from the resin with hydrochloric acid. Eluted solution and filter papers collected were ashed in an electric muffle furnance. The ash to which was treated with hydrochloric acid, was eluted with hydrochloric acid and water, and it was filtrated and washed. The filtrate was radiochemically analysed for strontium-90 and cesium-137 with low background beta-ray spectrometer.

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
(Japan Chemical Analysis Center)
– April 1977 to Dec. 1977 –
(Continued from Table 3, No. 47 of this publication)

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
April, 1977				
Sapporo, HOKKAIDO	31	115.0	0.041 ± 0.0015	0.061 ± 0.0019
Sendai, MIYAGI	32	130.6	0.007 ± 0.0009	0.069 ± 0.0019
Akita, AKITA	31	132.5	0.058 ± 0.0020	0.089 ± 0.0023
Yamagata, YAMAGATA	31	72.5	0.036 ± 0.0015	0.050 ± 0.0017
Ohkuma, FUKUSHIMA	26	93.5	0.064 ± 0.0022	0.082 ± 0.0022
Mito, IBARAKI	33	98.0	0.029 ± 0.0014	0.047 ± 0.0017
Shinjyuku, TOKYO	30	106.0	0.025 ± 0.0013	0.071 ± 0.0020
Yokohama, KANAGAWA	31	149.2	0.041 ± 0.0017	0.077 ± 0.0021
Niigata, NIIGATA	35	74.4	0.036 ± 0.0015	0.040 ± 0.0015
Kanazawa, ISHIKAWA	33	165.0	0.050 ± 0.0017	0.046 ± 0.0016

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Fukui, FUKUI	31	189.0	0.053 ± 0.0020	0.10 ± 0.003
Nagano, NAGANO	33	52.0	0.024 ± 0.0015	0.031 ± 0.0014
Shizuoka, SHIZUOKA	34	323.0	0.088 ± 0.0034	0.14 ± 0.003
Nagoya, AICHI	33	197.0	0.078 ± 0.0032	0.14 ± 0.003
Kyoto, KYOTO	30	108.1	0.040 ± 0.0017	0.073 ± 0.0020
Osaka, OSAKA	32	140.0	0.19 ± 0.001	0.059 ± 0.0018
Kobe, HYOGO	25	196.4	0.090 ± 0.0022	0.15 ± 0.003
Wakayama, WAKAYAMA	29	66.5	0.024 ± 0.0018	0.060 ± 0.0020
Tottori, TOTTORI	30	37.8	0.027 ± 0.0014	0.035 ± 0.0014
Matsue, SHIMANE	30	175.2	0.067 ± 0.0021	0.085 ± 0.0022
Okayama, OKAYAMA	32	129.4	0.040 ± 0.0016	0.053 ± 0.0016
Hiroshima, HIROSHIMA	30	275.4	0.12 ± 0.003	0.18 ± 0.003
Yamaguchi, YAMAGUCHI	30	372.0	0.034 ± 0.0017	0.13 ± 0.003
Matsuyama, EHIME	30	103.0	0.042 ± 0.0017	0.069 ± 0.0020
Kochi, KOCHI	31	245.8	0.13 ± 0.003	0.17 ± 0.003
Dazaifu, FUKUOKA	30	217.2	0.052 ± 0.0019	0.084 ± 0.0022
Saga, SAGA	30	272.5	0.058 ± 0.0019	0.11 ± 0.003
Nagasaki, NAGASAKI	35	241.5	0.069 ± 0.0020	0.16 ± 0.003
Kagoshima, KAGOSHIMA	27	327.5	0.11 ± 0.003	0.16 ± 0.003
May, 1977				
Sapporo, HOKKAIDO	30	74.0	0.042 ± 0.0016	0.072 ± 0.0020
Aomori, AOMORI	30	100.5	0.071 ± 0.0025	0.12 ± 0.003
Sendai, MIYAGI	30	147.1	0.065 ± 0.0020	0.099 ± 0.0024
Akita, AKITA	31	132.5	0.058 ± 0.0020	0.089 ± 0.0023
Yamagata, YAMAGATA	30	101.4	0.052 ± 0.0018	0.089 ± 0.0022
Ohkuma, FUKUSHIMA	33	129.6	0.047 ± 0.0018	0.020 ± 0.0012
Mito, IBARAKI	31	153.5	0.052 ± 0.0024	0.081 ± 0.0022
Shinjyuku, TOKYO	31	87.9	0.026 ± 0.0013	0.044 ± 0.0016
Yokohama, KANAGAWA	30	74.5	0.030 ± 0.0014	0.051 ± 0.0017
Niigata, NIIGATA	26	102.7	0.037 ± 0.0015	0.047 ± 0.0017
Kanazawa, ISHIKAWA	28	73.0	0.026 ± 0.0013	0.041 ± 0.0015
Fukui, FUKUI	30	77.5	0.030 ± 0.0017	0.064 ± 0.0025
Nagano, NAGANO	28	63.0	0.041 ± 0.0015	0.055 ± 0.0018
Shizuoka, SHIZUOKA	28	253.0	0.047 ± 0.0020	0.092 ± 0.0022
Nagoya, AICHI	28	180.0	0.040 ± 0.0022	0.058 ± 0.0023
Kyoto, KYOTO	32	72.4	0.023 ± 0.0013	0.057 ± 0.0018
Osaka, OSAKA	30	48.0	0.018 ± 0.0013	0.036 ± 0.0015
Kobe, HYOGO	28	41.6	0.024 ± 0.0013	0.040 ± 0.0016
Wakayama, WAKAYAMA	34	60.5	0.037 ± 0.0019	0.058 ± 0.0019
Tottori, TOTTORI	28	28.3	0.038 ± 0.0018	0.043 ± 0.0016

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Matsue, SHIMANE	32	87.1	0.043 ± 0.0017	0.063 ± 0.0019
Okayama, OKAYAMA	29	59.6	0.026 ± 0.0013	0.041 ± 0.0016
Hiroshima, HIROSHIMA	31	95.1	0.045 ± 0.0021	0.065 ± 0.0021
Yamaguchi, YAMAGUCHI	31	176.5	0.065 ± 0.0023	0.10 ± 0.002
Matsuyama, EHIME	31	93.5	0.039 ± 0.0016	0.059 ± 0.0019
Kochi, KOCHI	30	209.2	0.074 ± 0.0021	0.094 ± 0.0023
Dazaifu, FUKUOKA	31	203.9	0.063 ± 0.0017	0.066 ± 0.0020
Saga, SAGA	31	300.0	0.056 ± 0.0019	0.098 ± 0.0024
Nagasaki, NAGASAKI	27	113.0	0.031 ± 0.0014	0.021 ± 0.0012
Kagoshima, KAGOSHIMA	33	256.0	0.031 ± 0.0015	0.021 ± 0.0012
Naha, OKINAWA	31	64.5	0.025 ± 0.0016	0.043 ± 0.0016
June, 1977				
Sapporo, HOKKAIDO	30	7.5	0.012 ± 0.0011	0.024 ± 0.0012
Aomori, AOMORI	30	54.0	0.068 ± 0.0024	0.11 ± 0.003
Sendai, MIYAGI	30	154.4	0.070 ± 0.0033	0.20 ± 0.003
Akita, AKITA	30	86.5	0.051 ± 0.0020	0.074 ± 0.0021
Yamagata, YAMAGATA	30	56.6	0.049 ± 0.0019	0.082 ± 0.0022
Ohkuma, FUKUSHIMA	28	129.0	0.12 ± 0.003	0.10 ± 0.002
Mito, IBARAKI	30	157.5	0.10 ± 0.003	0.16 ± 0.003
Shinjyuku, TOKYO	30	222.7	0.097 ± 0.0025	0.14 ± 0.003
Yokohama, KANAGAWA	31	260.6	0.10 ± 0.003	0.17 ± 0.003
Niigata, NIIGATA	31	155.8	0.068 ± 0.0024	0.11 ± 0.003
Kanazawa, ISHIKAWA	30	134.0	0.039 ± 0.0016	0.070 ± 0.0020
Fukui, FUKUI	30	158.6	0.047 ± 0.0021	0.0071±0.0021
Nagano, NAGANO	30	96.5	0.070 ± 0.0024	0.085 ± 0.0022
Nagoya, AICHI	33	212.0	0.074 ± 0.0037	0.12 ± 0.004
Kyoto, KYOTO	31	163.5	0.053 ± 0.0020	0.085 ± 0.0022
Osaka, OSAKA	30	217.2	0.037 ± 0.0020	0.077 ± 0.0021
Kobe, HYOGO	29	173.9	0.043 ± 0.0019	0.073 ± 0.0021
Wakayama, WAKAYAMA	29	212.0	0.054 ± 0.0023	0.088 ± 0.0023
Tottori, TOTTORI	32	176.6	0.048 ± 0.0018	0.055 ± 0.0018
Matsue, SHIMANE	31	191.0	0.025 ± 0.0013	0.041 ± 0.0016
Okayama, OKAYAMA	30	137.2	0.042 ± 0.0019	0.053 ± 0.0018
Hiroshima, HIROSHIMA	30	221.0	0.044 ± 0.0018	0.057 ± 0.0019
Yamaguchi, YAMAGUCHI	30	280.0	0.070 ± 0.0024	0.11 ± 0.002
Matsuyama, EHIME	31	25.9	0.073 ± 0.0022	0.13 ± 0.003
Kochi, KOCHI	31	497.1	0.15 ± 0.003	0.22 ± 0.003

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Dazaifu, FUKUOKA	30	265.2	0.077 ± 0.0023	0.14 ± 0.003
Saga, SAGA	30	426.5	0.063 ± 0.0029	0.15 ± 0.003
Nagasaki, NAGASAKI	29	420.0	0.088 ± 0.0025	0.14 ± 0.003
Kagoshima, KAGOSHIMA	28	502.5	0.022 ± 0.0020	0.064 ± 0.0021
Naha, OKINAWA	30	289.0	0.014 ± 0.0012	0.024 ± 0.0013
July, 1977				
Sapporo, HOKKAIDO	32	58.0	0.052 ± 0.0022	0.075 ± 0.0020
Aomori, AOMORI	32	69.5	0.052 ± 0.0018	0.065 ± 0.0020
Sendai, MIYAGI	31	56.1	0.056 ± 0.0022	0.089 ± 0.0023
Akita, AKITA	31	82.5	0.051 ± 0.0020	0.080 ± 0.0022
Yamagata, YAMAGATA	31	93.3	0.073 ± 0.0024	0.11 ± 0.002
Mito, IBARAKI	31	102.3	0.11 ± 0.003	0.16 ± 0.003
Shinjyuku, TOKYO	31	113.0	0.078 ± 0.0022	0.12 ± 0.003
Yokohama, KANAGAWA	31	69.9	0.060 ± 0.0019	0.081 ± 0.0022
Niigata, NIIGATA	30	141.7	0.014 ± 0.0013	0.038 ± 0.0015
Fukui, FUKUI	32	81.4	0.052 ± 0.0024	0.071 ± 0.0022
Nagano, NAGANO	31	67.0	0.042 ± 0.0020	0.065 ± 0.0019
Nagoya, AICHI	31	43.0	0.063 ± 0.0019	0.085 ± 0.0022
Kyoto, KYOTO	31	42.0	0.037 ± 0.0017	0.060 ± 0.0019
Osaka, OSAKA	31	18.9	0.034 ± 0.0019	0.059 ± 0.0018
Kobe, HYOGO	32	14	0.023 ± 0.0014	0.036 ± 0.0015
Wakayama, WAKAYAMA	34	50.5	0.016 ± 0.0011	0.010 ± 0.0010
Tottori, TOTTORI	32	37.8	0.041 ± 0.0016	0.050 ± 0.0017
Matsue, SHIMANE	31	127.0	0.038 ± 0.0017	0.053 ± 0.0017
Okayama, OKAYAMA	31	134.2	0.025 ± 0.0014	0.049 ± 0.0017
Hiroshima, HIROSHIMA	31	91.7	0.029 ± 0.0016	0.042 ± 0.0015
Yamaguchi, YAMAGUCHI	33	85.5	0.022 ± 0.0016	0.041 ± 0.0016
Matsuyama, EHIME	31	73.0	0.019 ± 0.0014	0.032 ± 0.0014
Kochi, KOCHI	30	104.7	0.079 ± 0.0022	0.11 ± 0.003
Dazaifu, FUKUOKA	32	113.3	0.022 ± 0.0013	0.035 ± 0.0015
Saga, SAGA	31	106.0	0.024 ± 0.0014	0.032 ± 0.0014
Nagasaki, NAGASAKI	31	85.0	0.015 ± 0.0012	0.025 ± 0.0014
Kagoshima, KAGOSHIMA	37	152	0.009 ± 0.0032	0.024 ± 0.0030
Naha, OKINAWA	33	100.0	0.018 ± 0.0012	0.021 ± 0.0011
August, 1977				
Sapporo, HOKKAIDO	32	190.5	0.12 ± 0.003	0.18 ± 0.003
Aomori, AOMORI	32	225.5	0.096 ± 0.0027	0.14 ± 0.003
Sendai, MIYAGI	32	167.2	0.11 ± 0.003	0.16 ± 0.003
Yamagata, YAMAGATA	31	133.5	0.051 ± 0.0019	0.084 ± 0.0022
Ohkuma, FUKUSHIMA	32	282.5	0.21 ± 0.004	0.34 ± 0.004

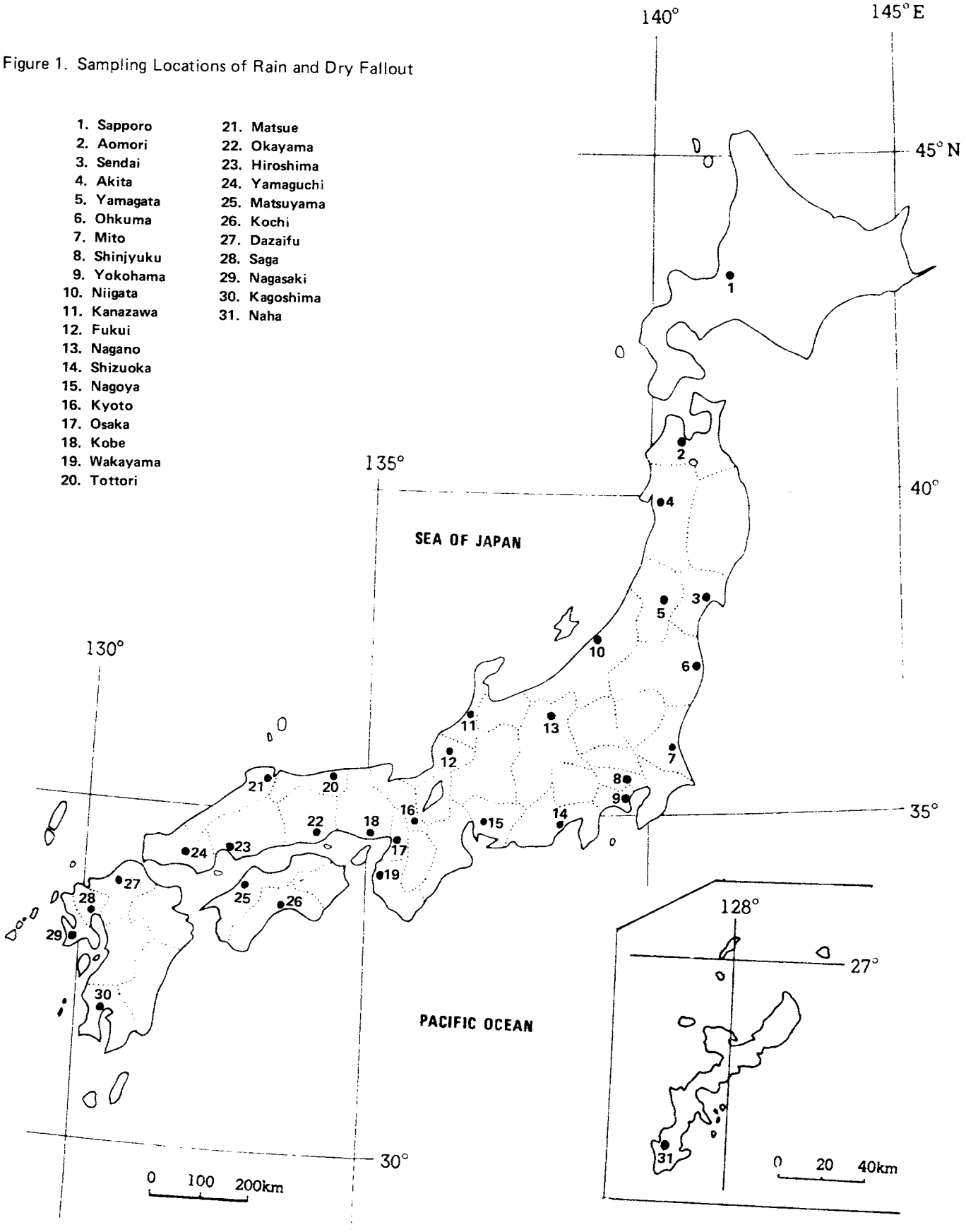
Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Mito, IBARAKI	31	368.5	0.095 ± 0.0024	0.15 ± 0.003
Shinjyuku, TOKYO	31	283.0	0.11 ± 0.003	0.17 ± 0.003
Yokohama, KANAGAWA	32	310.3	0.15 ± 0.003	0.23 ± 0.004
Niigata, NIIGATA	32	96.5	0.051 ± 0.0019	0.076 ± 0.0021
Kanazawa, ISHIKAWA	32	165.0	0.048 ± 0.0019	0.061 ± 0.0019
Fukui, FUKUI	32	187.7	0.039 ± 0.0018	0.064 ± 0.0018
Nagano, NAGANO	32	58.5	0.031 ± 0.0015	0.044 ± 0.0015
Shizuoka, SHIZUOKA	25	290	0.082 ± 0.0021	0.13 ± 0.003
Nagoya, AICHI	30	141.3	0.033 ± 0.0016	0.054 ± 0.0017
Kyoto, KYOTO	32	35.8	0.017 ± 0.0012	0.026 ± 0.0012
Osaka, OSAKA	31	47.0	0.032 ± 0.0016	0.045 ± 0.0016
Kobe, HYOGO	31	42.2	0.016 ± 0.0012	0.025 ± 0.0014
Wakayama, WAKAYAMA	28	35.0	0.014 ± 0.0013	0.021 ± 0.0012
Tottori, TOTTORI	33	87.8	0.033 ± 0.0015	0.047 ± 0.0017
Matsue, SHIMANE	33	261.7	0.039 ± 0.0020	0.064 ± 0.0020
Okayama, OKAYAMA	31	65.7	0.009 ± 0.0009	0.010 ± 0.0009
Hiroshima, HIROSHIMA	31	147.8	0.026 ± 0.0016	0.031 ± 0.0014
Yamaguchi, YAMAGUCHI	31	126.0	0.015 ± 0.0012	0.021 ± 0.0012
Matsuyama, EHIME	32	114	0.018 ± 0.0012	0.025 ± 0.0012
Kochi, KOCHI	31	228.7	0.042 ± 0.0017	0.050 ± 0.0017
Dazaifu, FUKUOKA	31	123.7	0.013 ± 0.0010	0.017 ± 0.0011
Saga, SAGA	33	84	0.010 ± 0.0011	0.013 ± 0.0010
Nagasaki, NAGASAKI	31	218.0	0.028 ± 0.0016	0.033 ± 0.0014
Kagoshima, KAGOSHIMA	29	106.5	0.013 ± 0.0041	0.037 ± 0.0028
Naha, OKINAWA	31	145.5	0.027 ± 0.0014	0.033 ± 0.0013
September, 1977				
Sapporo, HOKKAIDO	31	104.0	0.070 ± 0.0021	0.10 ± 0.002
Aomori, AOMORI	31	155.5	0.077 ± 0.0020	0.11 ± 0.002
Sendai, MIYAGI	31	167.5	0.029 ± 0.0014	0.054 ± 0.0017
Akita, AKITA	30	110.5	0.071 ± 0.0023	0.11 ± 0.002
Yamagata, YAMAGATA	30	202.2	0.026 ± 0.0015	0.039 ± 0.0014
Ohkuma, FUKUSHIMA	31	290.0	0.035 ± 0.0018	0.060 ± 0.0018
Mito, IBARAKI	31	271.0	0.030 ± 0.0015	0.049 ± 0.0016
Shinjyuku, TOKYO	30	262.0	0.020 ± 0.0011	0.046 ± 0.0016
Yokohama, KANAGAWA	30	365.2	0.038 ± 0.0018	0.061 ± 0.0018
Niigata, NIIGATA	33	249.0	0.041 ± 0.0010	0.058 ± 0.0018
Kanazawa, ISHIKAWA	30	56	0.014 ± 0.0011	0.022 ± 0.0011
Fukui, FUKUI	31	69.3	0.034 ± 0.0015	0.052 ± 0.0017
Nagano, NAGANO	32	26.5	0.012 ± 0.0011	0.020 ± 0.0012
Shizuoka, SHIZUOKA	35	391	0.058 ± 0.0019	0.094 ± 0.0022
Nagoya, AICHI	31	193.4	0.089 ± 0.0023	0.13 ± 0.003

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Kyoto, KYOTO	31	113.6	0.056 ± 0.0021	0.082 ± 0.0021
Osaka, OSAKA	30	63	0.017 ± 0.0011	0.025 ± 0.0012
Kobe, HYOGO	30	64.9	0.020 ± 0.0011	0.031 ± 0.0013
Wakayama, WAKAYAMA	33	123.0	0.044 ± 0.0018	0.064 ± 0.0018
Tottori, TOTTORI	30	139.5	0.052 ± 0.0018	0.083 ± 0.0021
Matsue, SHIMANE	31	57.8	0.026 ± 0.0013	0.040 ± 0.0015
Okayama, OKAYAMA	30	206.8	0.023 ± 0.0012	0.058 ± 0.0018
Hiroshima, HIROSHIMA	30	96.4	0.022 ± 0.0013	0.026 ± 0.0013
Yamaguchi, YAMAGUCHI	34	103.0	0.028 ± 0.0013	0.044 ± 0.0016
Matsuyama, EHIME	30	107.0	0.016 ± 0.0011	0.026 ± 0.0012
Kochi, KOCHI	30	437.9	0.056 ± 0.0020	0.095 ± 0.0022
Dazaifu, FUKUOKA	30	52.9	0.017 ± 0.0012	0.022 ± 0.0012
Saga, SAGA	31	108.0	0.043 ± 0.0017	0.057 ± 0.0018
Nagasaki, NAGASAKI	30	84.0	0.016 ± 0.0012	0.023 ± 0.0012
Kagoshima, KAGOSHIMA	31	147.2	0.019 ± 0.0012	0.016 ± 0.0011
Naha, OKINAWA	34	234.0	0.019 ± 0.0013	0.027 ± 0.0013
October, 1977				
Sapporo, HOKKAIDO	32	20.0	0.037 ± 0.0016	0.054 ± 0.0017
Aomori, AOMORI	32	25.5	0.040 ± 0.0016	0.059 ± 0.0018
Sendai, MIYAGI	32	42.0	0.039 ± 0.0017	0.063 ± 0.0019
Akita, AKITA	32	28.4	0.035 ± 0.0015	0.053 ± 0.0017
Yamagata, YAMAGATA	31	26.8	0.026 ± 0.0013	0.037 ± 0.0014
Ohkuma, FUKUSHIMA	32	82.5	0.081 ± 0.0024	0.12 ± 0.003
Mito, IBARAKI	32	43.0	0.011 ± 0.0010	0.020 ± 0.0011
Shinjyuku, TOKYO	31	54.0	0.020 ± 0.0012	0.023 ± 0.0012
Yokohama, KANAGAWA	32	55.6	0.021 ± 0.0013	0.034 ± 0.0014
Niigata, NIIGATA	31	38.1	0.018 ± 0.0011	0.027 ± 0.0013
Kanazawa, ISHIKAWA	30	36	0.013 ± 0.0010	0.018 ± 0.0010
Fukui, FUKUI	32	35.2	0.029 ± 0.0018	0.061 ± 0.0023
Nagano, NAGANO	32	26.5	0.012 ± 0.0011	0.020 ± 0.0012
Shizuoka, SHIZUOKA	41	196	0.051 ± 0.0034	0.068 ± 0.0020
Nagoya, AICHI	33	26.1	0.024 ± 0.0014	0.037 ± 0.0014
Kyoto, KYOTO	32	48.5	0.016 ± 0.0011	0.029 ± 0.0014
Osaka, OSAKA	31	63	0.019 ± 0.0012	0.024 ± 0.0012
Kobe, HYOGO	31	60.5	0.018 ± 0.0012	0.027 ± 0.0012
Wakayama, WAKAYAMA	33	51.0	0.023 ± 0.0013	0.024 ± 0.0013
Tottori, TOTTORI	32	19.5	0.066 ± 0.0022	0.085 ± 0.0022
Matsue, SHIMANE	32	45.7	0.035 ± 0.0015	0.046 ± 0.0016
Okayama, OKAYAMA	31	46.7	0.009 ± 0.0010	0.019 ± 0.0011
Hiroshima, HIROSHIMA	31	32.3	0.006 ± 0.0009	0.002 ± 0.0007
Yamaguchi, YAMAGUCHI	29	82.0	0.010 ± 0.0010	0.013 ± 0.0010
Matsuyama, EHIME	33	58.5	0.017 ± 0.0012	0.028 ± 0.0012

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Kochi, KOCHI	32	79.2	0.041 ± 0.0017	0.055 ± 0.0018
Dazaifu, FUKUOKA	31	52.9	0.014 ± 0.0012	0.022 ± 0.0013
Saga, SAGA	30	32.0	0.007 ± 0.0013	0.010 ± 0.0009
Nagasaki, NAGASAKI	31	29.0	0.011 ± 0.0010	0.015 ± 0.0010
Kagoshima, KAGOSHIMA	37	6.2	0.004 ± 0.0008	0.003 ± 0.0008
Naha, OKINAWA	29	59.5	0.028 ± 0.0014	0.041 ± 0.0016
November, 1977				
Sapporo, HOKKAIDO	31	136.5	0.056 ± 0.0020	0.080 ± 0.0020
Aomori, AOMORI	31	226.5	0.088 ± 0.0023	0.14 ± 0.003
Sendai, MIYAGI	31	85.4	0.029 ± 0.0014	0.039 ± 0.0015
Akita, AKITA	31	315.1	0.15 ± 0.003	0.23 ± 0.003
Yamagata, YAMAGATA	27	75.0	0.020 ± 0.0013	0.034 ± 0.0015
Ohkuma, FUKUSHIMA	31	87.0	0.027 ± 0.0014	0.045 ± 0.0016
Mito, IBARAKI	31	63.0	0.023 ± 0.0012	0.029 ± 0.0013
Shinjyuku, TOKYO	30	89.4	0.035 ± 0.0016	0.044 ± 0.0016
Yokohama, KANAGAWA	31	130.1	0.034 ± 0.0015	0.044 ± 0.0016
Niigata, NIIGATA	31	215.6	0.13 ± 0.003	0.20 ± 0.003
Kanazawa, ISHIKAWA	34	397.0	0.23 ± 0.004	0.25 ± 0.004
Fukui, FUKUI	31	251.5	0.14 ± 0.003	0.15 ± 0.003
Nagano, NAGANO	31	38	0.013 ± 0.0009	0.021 ± 0.0012
Shizuoka, SHIZUOKA	33	57	0.023 ± 0.0013	0.036 ± 0.0014
Nagoya, AICHI	30	156.8	0.015 ± 0.0011	0.046 ± 0.0016
Kyoto, KYOTO	31	117.6	0.034 ± 0.0015	0.031 ± 0.0014
Osaka, OSAKA	30	177	0.026 ± 0.0013	0.033 ± 0.0014
Kobe, HYOGO	30	128.4	0.028 ± 0.0014	0.034 ± 0.0014
Wakayama, WAKAYAMA	32	135.0	0.016 ± 0.0014	0.023 ± 0.0013
Tottori, TOTTORI	31	152.0	0.070 ± 0.0021	0.094 ± 0.0023
Matsue, SHIMANE	31	158.3	0.096 ± 0.0027	0.12 ± 0.003
Okayama, OKAYAMA	30	124.5	0.021 ± 0.0013	0.041 ± 0.0015
Hiroshima, HIROSHIMA	30	80.3	0.023 ± 0.0013	0.025 ± 0.0013
Yamaguchi, YAMAGUCHI	32	54.5	0.041 ± 0.0017	0.060 ± 0.0018
Matsuyama, EHIME	31	111	0.042 ± 0.0017	0.056 ± 0.0018
Kochi, KOCHI	29	200.5	0.030 ± 0.0014	0.043 ± 0.0016
Dazaifu, FUKUOKA	30	114.9	0.036 ± 0.0015	0.060 ± 0.0018
Saga, SAGA	30	84.0	0.027 ± 0.0014	0.030 ± 0.0014
Nagasaki, NAGASAKI	30	103.0	0.048 ± 0.0018	0.063 ± 0.0019
Kagoshima, KAGOSHIMA	26	75.4	0.024 ± 0.0013	0.028 ± 0.0013
Naha, OKINAWA	29	150.0	0.026 ± 0.0015	0.038 ± 0.0015

Location	Duration (Days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
December, 1977				
Sapporo, HOKKAIDO	28	115.0	0.079 ± 0.0023	0.12 ± 0.002
Aomori, AOMORI	37	199.5	0.17 ± 0.003	0.26 ± 0.004
Sendai, MIYAGI	35	22.9	0.016 ± 0.0014	0.030 ± 0.0014
Akita, AKITA	35	106.0	0.13 ± 0.003	0.19 ± 0.003
Yamagata, YAMAGATA	30	78.7	0.056 ± 0.0019	0.073 ± 0.0021
Ohkuma, FUKUSHIMA	35	12.5	0.016 ± 0.0012	0.025 ± 0.0012
Mito, IBARAKI	35	20.5	0.015 ± 0.0012	0.018 ± 0.0012
Shinjyuku, TOKYO	31	31.5	0.032 ± 0.0016	0.039 ± 0.0015
Yokohama, KANAGAWA	35	66.2	0.042 ± 0.0019	0.065 ± 0.0019
Niigata, NIIGATA	35	214.3	0.20 ± 0.004	0.28 ± 0.004
Kanazawa, ISHIKAWA	32	351	0.31 ± 0.010	0.36 ± 0.004
Fukui, FUKUI	36	296.2	0.29 ± 0.005	0.43 ± 0.006
Nagano, NAGANO	35	41.5	0.029 ± 0.0015	0.044 ± 0.0016
Shizuoka, SHIZUOKA	33	81	0.032 ± 0.0028	0.051 ± 0.0017
Nagoya, AICHI	36	49.5	0.019 ± 0.0012	0.035 ± 0.0015
Kyoto, KYOTO	35	16.9	0.028 ± 0.0015	0.039 ± 0.0015
Osaka, OSAKA	35	40	0.020 ± 0.0012	0.029 ± 0.0014
Kobe, HYOGO	36	38.7	0.022 ± 0.0012	0.032 ± 0.0014
Wakayama, WAKAYAMA	35	43.5	0.035 ± 0.0018	0.041 ± 0.0017
Tottori, TOTTORI	35	268.5	0.23 ± 0.004	0.31 ± 0.004
Matsue, SHIMANE	30	139.2	0.13 ± 0.003	0.20 ± 0.003
Okayama, OKAYAMA	35	11.4	0.011 ± 0.0010	0.020 ± 0.0012
Hiroshima, HIROSHIMA	31	14.6	0.019 ± 0.0025	0.022 ± 0.0015
Yamaguchi, YAMAGUCHI	34	49.0	0.051 ± 0.0019	0.070 ± 0.0020
Matsuyama, EHIME	27	14	0.024 ± 0.0014	0.030 ± 0.0014
Kochi, KOCHI	36	91.1	0.041 ± 0.0016	0.050 ± 0.0017
Dazaifu, FUKUOKA	37	17.4	0.036 ± 0.0017	0.058 ± 0.0018
Saga, SAGA	26	39.0	0.009 ± 0.0010	0.012 ± 0.0010
Nagasaki, NAGASAKI	35	72.5	0.060 ± 0.0020	0.085 ± 0.0022
Kagoshima, KAGOSHIMA	33	70.5	0.046 ± 0.0019	0.037 ± 0.0015
Naha, OKINAWA	31	117.5	0.080 ± 0.0024	0.091 ± 0.0022

Figure 1. Sampling Locations of Rain and Dry Fallout



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

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

Under the commission of Science and Technology Agency, Japan Chemical Analysis Center and prefectural public health laboratories and institutes have determined the levels of strontium-90 and cesium-137 in air-borne dust samples.

Dust samples were collected by the aspiration of 3000m^3 or more air at 1.0 ~ 1.5m above the ground surface in 10 prefectural public health laboratories and institutes. The smaples collected during three months were combined, and were forwarded to Japan Chemical Analysis Center after carbonization.

These samples were ashed in an electric muffle furnance at Japan Chemical Analysis Center. The ash to which both some carriers and hydrochloric acid were added, was destroyed under heating. The solution was dissolved into hydrochloric and filtered, after it was added with nitric acid and heated to dryness. The filtrate was radiochemically analysed for strontium-90 and cesium-137 with low background beta-ray spectrometer.

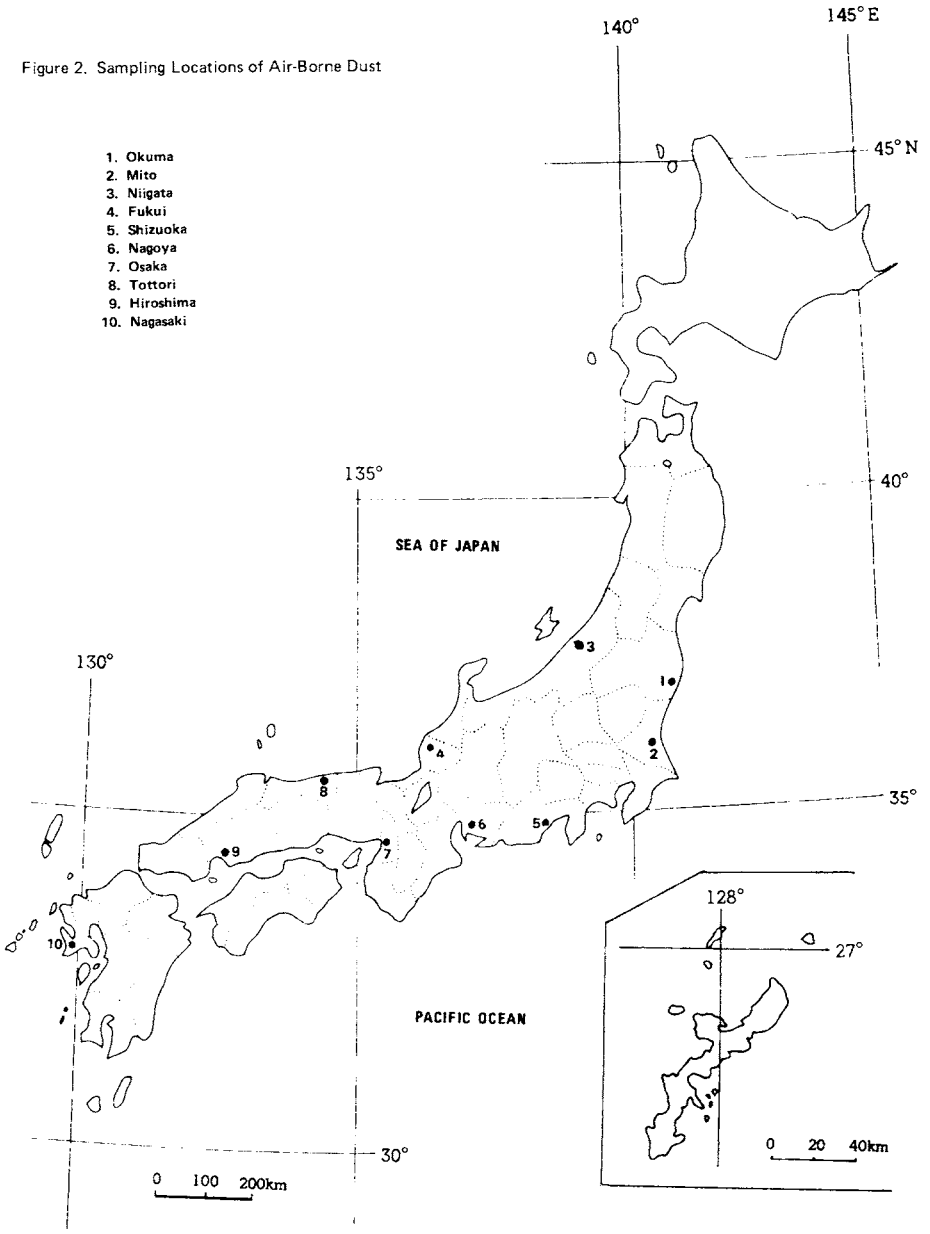
Results obtained are shown in Table 2. And the sampling locations are shown in Figure 2.

Table 2: ^{90}Sr and ^{137}Cs in Air-borne Dusts
(Japan Chemical Analysis Center)
– April 1977 to Sep. 1977 –
(Continued from Table 4, No. 47 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, 1977				
Ohkuma, FUKUSHIMA	5 ~ 6	12509	1.7 ± 0.06	3.1 ± 0.07
Mito, IBARAKI	4 ~ 6	10980	1.0 ± 0.06	1.5 ± 0.05
Niigata, NIIGATA	4 ~ 6	11525.1	1.7 ± 0.09	3.0 ± 0.09
Fukui, FUKUI	4 ~ 6	32121	1.0 ± 0.03	1.9 ± 0.03
Shizuoka, SHIZUOKA	6	10365	0.3 ± 0.04	0.5 ± 0.03
Nagoya, AICHI	4 ~ 6	16320	1.0 ± 0.05	1.5 ± 0.04
Osaka, OSAKA	4 ~ 6	7786.5	0.7 ± 0.11	1.5 ± 0.11
Tottori, TOTTORI	4 ~ 6	12857	1.4 ± 0.06	2.4 ± 0.06
Hiroshima, HIROSHIMA	4 ~ 6	10800	0.1 ± 0.03	0.3 ± 0.03
Nagasaki, NAGASAKI	4 ~ 6	6900	0.9 ± 0.08	1.8 ± 0.07
July ~ Sep., 1977				
Ohkuma, FUKUSHIMA	7 ~ 9	11346	1.8 ± 0.07	2.8 ± 0.07
Mito, IBARAKI	7 ~ 9	11196	0.7 ± 0.05	1.2 ± 0.05
Niigata, NIIGATA	7 ~ 9	14034.1	2.2 ± 0.07	3.7 ± 0.07
Fukui, FUKUI	7 ~ 9	26137	1.1 ± 0.04	2.2 ± 0.04
Shizuoka, SHIZUOKA	7 ~ 9	11277	0.1 ± 0.03	0.03±0.019

Location	Sampling period	Absorption volume (m^3)	^{90}Sr (10^{-3} pCi/m^3)	^{137}Cs (10^{-3} pCi/m^3)
Nagoya, AICHI	7 ~ 9	20211	1.2 ± 0.04	1.5 ± 0.04
Osaka, OSAKA	7 ~ 9	9072	1.2 ± 0.07	1.6 ± 0.06
Tottori, TOTTORI	7 ~ 9	12250	1.8 ± 0.07	2.8 ± 0.07
Hiroshima, HIROSHIMA	7 ~ 9	10800	0.5 ± 0.05	0.8 ± 0.04
Nagasaki, NAGASAKI	7 ~ 9	10900	1.0 ± 0.05	1.5 ± 0.05

Figure 2. Sampling Locations of Air-Borne Dust



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

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

Prefectural public health laboratories and institutes and Japn Chemical Analysis Center have analysed the contents of strontium-90 and cesium-137 in service water under the commission of Science and Technology Agency.

At each prefectural public health laboratories and institutes, 100 literes of service water (8 prefectures, water from the intake of each station of water works) and tap water (32 prefectures) were collected as sample twice a year. The smaples were filtrated with large filter papers after addition and mixture of both some carries. The filtration was then applied on a column filled the sodium cation exchange resin, and all the cations were absorbed on it. These resin and filter papers were collected at Japan Chemical Analysis Center.

At Japan Chemical Analysis Center, these collected samples were radiochemically analysed for strontium-90 and cesium-137 using the method applied for the analysis of rain and dry fallout materials.

Results obtained are shown in Table 3. And the sampling locations are shown in Figures 3, 4.

Table 3: ^{90}Sr and ^{137}Cs in Service Water
– April, 1977 to September, 1977 –
(Japan Chemical Analysis Center)
(Continued from Table 5, No. 47 of this publication)

(Source Water) Source: Water Purification Station

Location	Month to be Sampled	pH	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
Sapporo, HOKKAIDO	June	7.2	0.12 ± 0.007	0.02 ± 0.004
Katsushika, TOKYO	〃	7.1	0.13 ± 0.007	0.04 ± 0.004
Shiroyama, KANAGAWA	〃	7.9	0.03 ± 0.004	0.01 ± 0.003
Inuyama, AICHI	〃	6.9	0.11 ± 0.008	0.02 ± 0.004
Moriguchi, OSAKA	〃	7	0.31 ± 0.010	0.02 ± 0.004
Kyoto, KYOTO	July	7.3	0.40 ± 0.011	0.03 ± 0.004
Fukuoka, FUKUOKA	June	7.4	0.13 ± 0.008	0.02 ± 0.004

(Tap Water) Source: Institute of Public Health

Location	Month to be Sampled	pH	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
Wakkanai, HOKKAIDO	June	6.8	0.33 ± 0.011	0.01 ± 0.003
Aomori, AOMORI	〃	7.2	0.08 ± 0.006	0.02 ± 0.005
Sendai, MIYAGI	〃	7.7	0.10 ± 0.007	0.01 ± 0.003
Akita, AKITA	July	6.1	0.26 ± 0.011	0.03 ± 0.004
Yamagata, YAMAGATA	June	6.7	0.10 ± 0.005	0.01 ± 0.004

Location	Month to be Sampled	pH	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
Iizaka, FUKUSHIMA	July	–	0.14 ± 0.008	0.01 ± 0.003
Mito, IBARAKI	June	6.2	0.08 ± 0.006	0.01 ± 0.003
Yokohama, KANAGAWA	July	7.6	0.06 ± 0.005	0.01 ± 0.003
Shizuoka, SHIZUOKA	August	7.5	0.001±0.003	0.01 ± 0.003
Niigata, NIIGATA	June	7.4	0.21 ± 0.008	0.02 ± 0.004
Kanazawa, ISHIKAWA	July	7.1	0.14 ± 0.006	0.01 ± 0.003
Fukui, FUKUI	June	6.9	0.06 ± 0.005	0.01 ± 0.003
Nagano, NAGANO	August	7.3	0.04 ± 0.005	0.04 ± 0.004
Nagoya, AICHI	June	6.6	0.10 ± 0.007	0.01 ± 0.003
Kyoto, KYOTO	July	7.3	0.35 ± 0.011	0.02 ± 0.004
Osaka, OSAKA	June	6.8	0.16 ± 0.008	0.01 ± 0.003
Kobe, HYOGO	〃	6.5	0.22 ± 0.019	0.01 ± 0.003
Wakayama, WAKAYAMA	August	7.4	0.11 ± 0.006	0.01 ± 0.003
Tottori, TOTTORI	June	6.6	0.12 ± 0.007	0.000± 0.003
Matsue, SHIMANE	July	6.6	0.23 ± 0.010	0.01 ± 0.003
Okayama, OKAYAMA	June	6.7	0.10 ± 0.006	0.001± 0.003
Hiroshima, HIROSHIMA	August	7.2	0.14 ± 0.007	0.01 ± 0.003
Ube, YAMAGUCHI	June	6.4	0.12 ± 0.006	0.004± 0.003
Matsuyama, EHIME	July	–	0.07 ± 0.005	0.01 ± 0.003
Kochi, KOCHI	June	7.3	0.09 ± 0.006	0.005± 0.003
Dazaifu, FUKUOKA	June	6.7	0.13 ± 0.008	0.02 ± 0.004
Saga, SAGA	〃	7.6	0.14 ± 0.007	0.01 ± 0.003
Nagasaki, NAGASAKI	July	7.2	0.10 ± 0.006	0.01 ± 0.003
Kagoshima, KAGOSHIMA	〃	6.8	0.01 ± 0.003	0.01 ± 0.003
Naha, OKINAWA	August	7.2	0.23 ± 0.009	0.004± 0.003

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

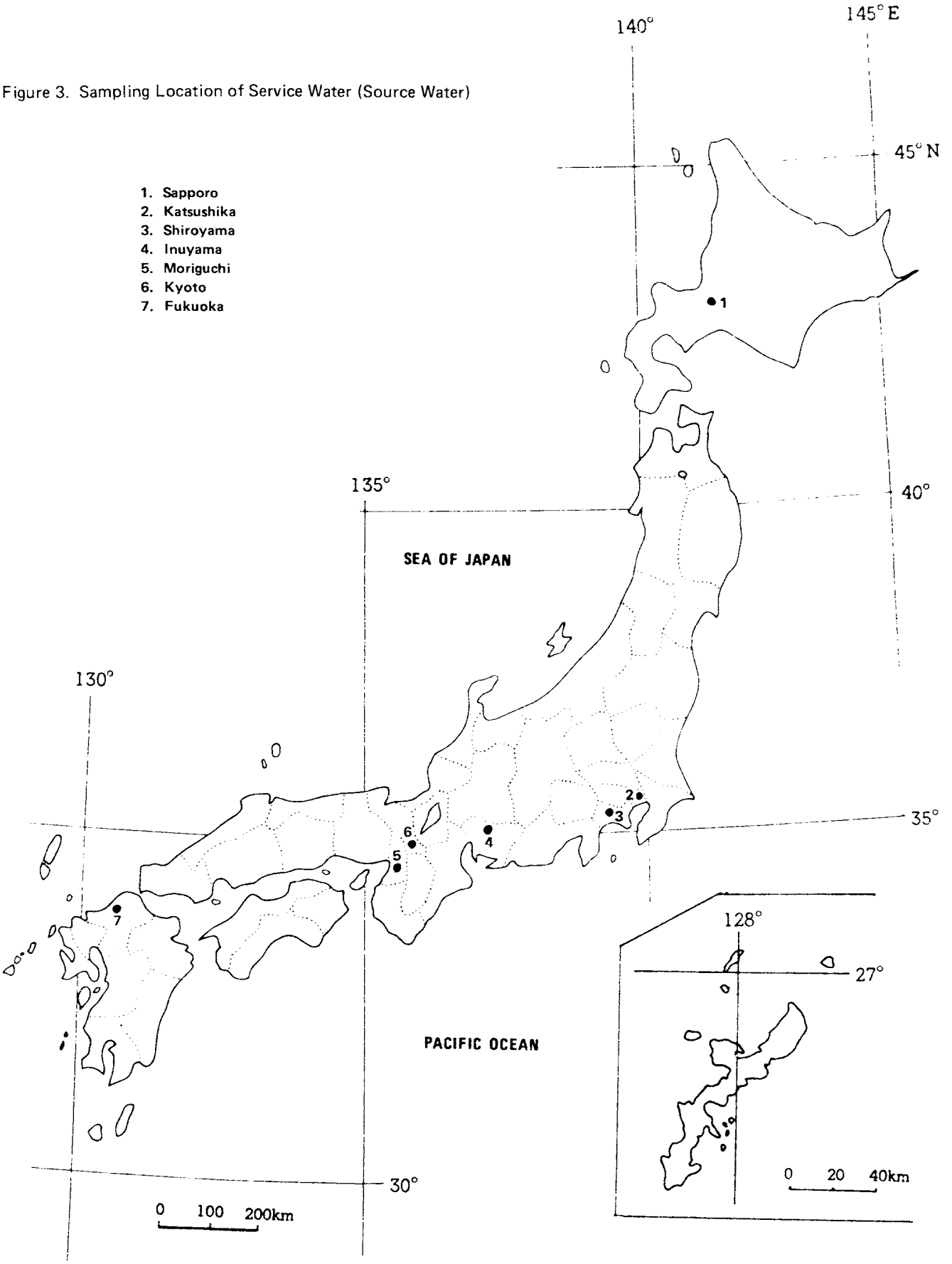
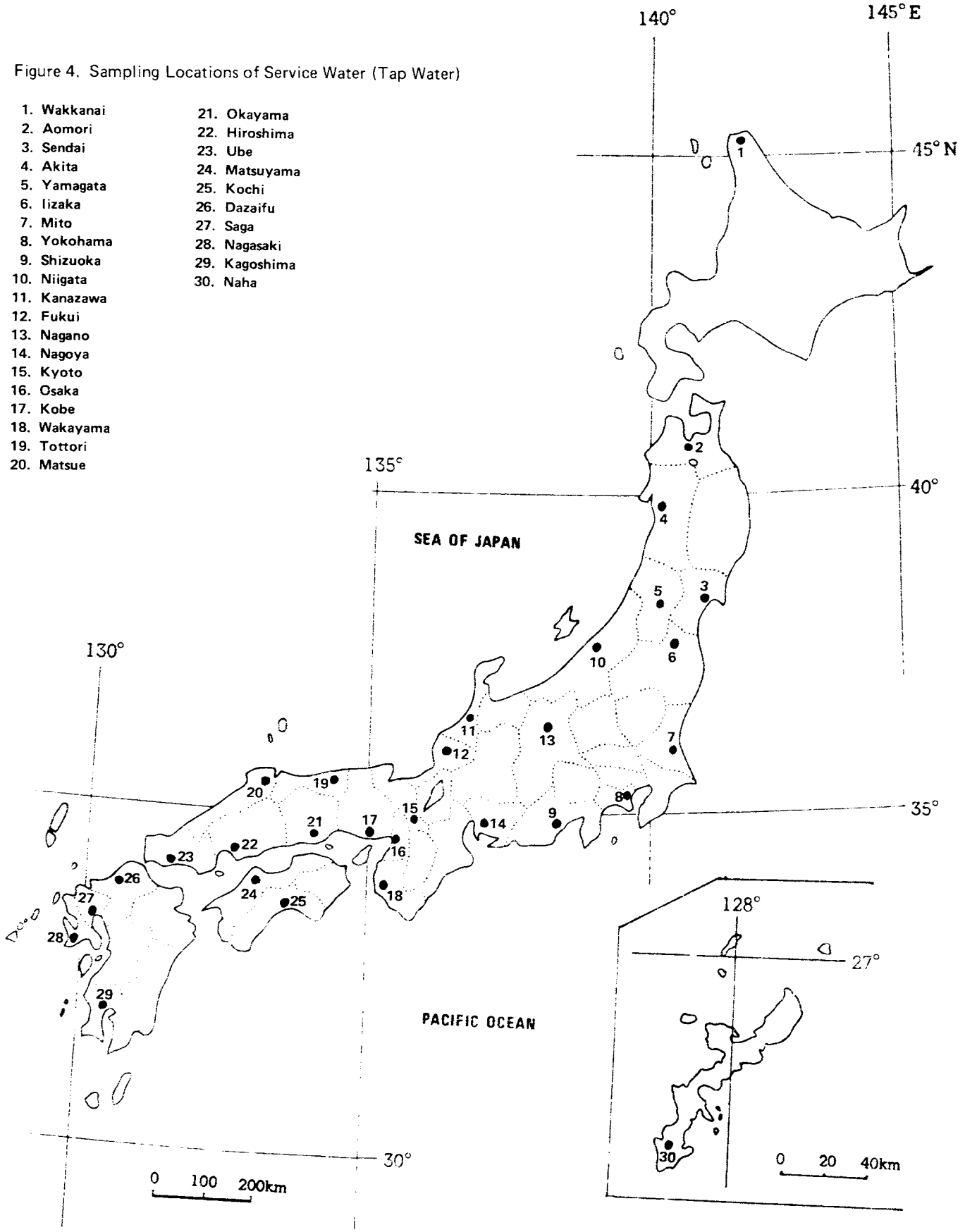


Figure 4. Sampling Locations of Service Water (Tap Water)

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



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

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

To determine the contents of strontium-90 and cesium-137, prefectural public health laboratories and institutes and Japan Chemical Analysis Center have conducted the analysis of sea water samples under the commission of Science and Technology Agency.

Samples were collected by each prefectural public health laboratories and institutes once a year. Sampling was carried out at the points without the inflow of river water after the continuation of fine weather during few days. And samples were collected at the bows of ships before its stoppage to keep off the mixture of waste materials in it. These samples were collected in Japan Chemical Analysis Center, and the radioactivity of the nuclides separated checmically from the samples were measured for yttrium-90 of which reached the radioactive equivallence to strontium-90, and cesium-137.

Results obtained are shown in Table 4. And the sampling locations are shown in Figure 5.

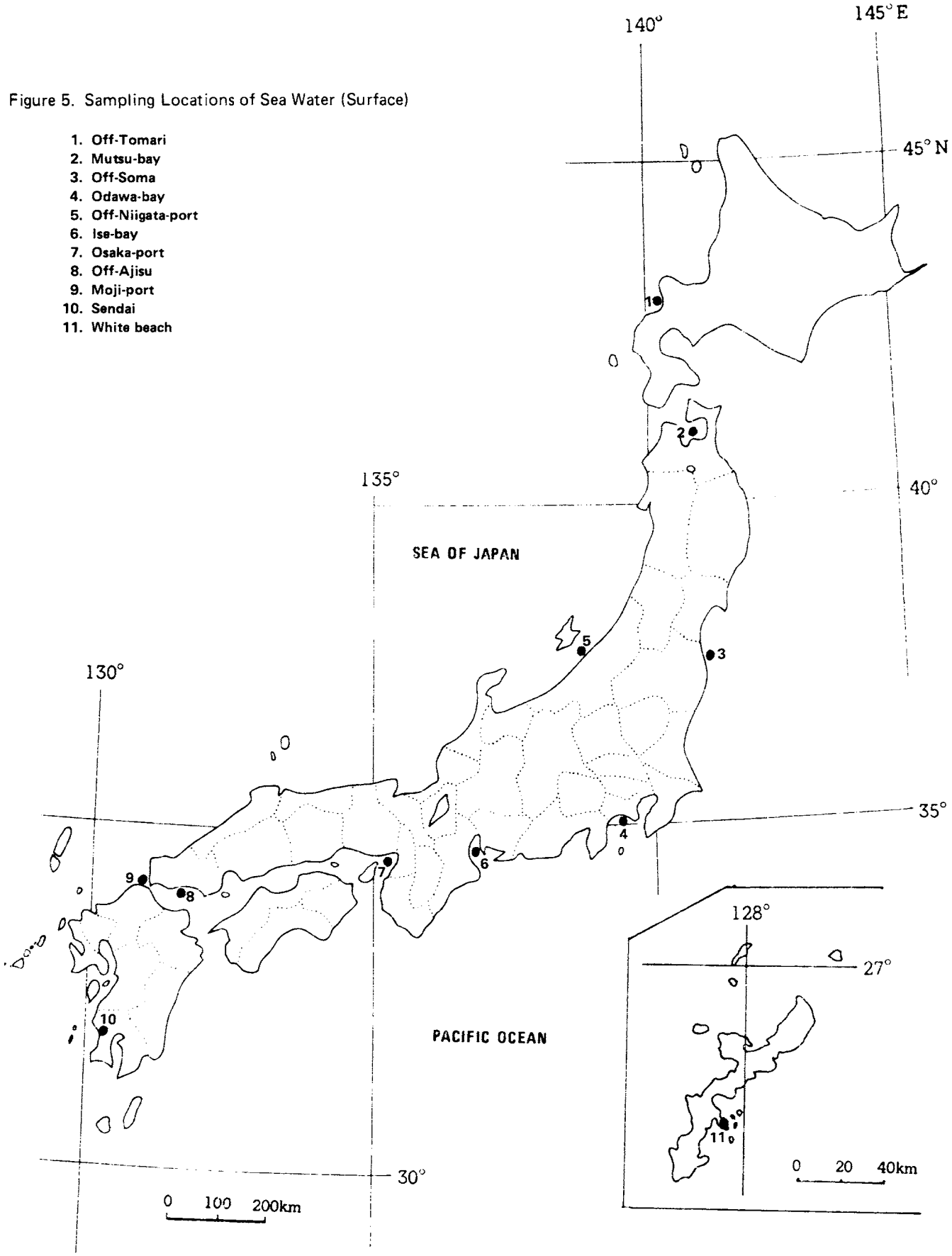
Table 4: ^{90}Sr and ^{137}Cs in Sea Water (Surface)
– April, 1977 to October 1977 –
(Japan Chemical Analysis Center)
(Continued from Table 1, No. 45 of this publication)

Location	Month to be Sampled	Cl(‰)	^{90}Sr (pCi/ℓ)	^{137}Cs (pCi/ℓ)
off-Tomari, HOKKAIDO	July	18.8	0.15 ± 0.016	0.16 ± 0.012
Mutsu-bay, AOMORI	August	17.7	0.16 ± 0.015	0.16 ± 0.011
off-Soma, FUKUSHIMA	September	16.4	0.16 ± 0.020	0.15 ± 0.011
Odawa-bay, KANAGAWA	〃	17.9	0.13 ± 0.018	0.15 ± 0.011
off-Niigata port, NIIGATA	July	16.4	0.13 ± 0.015	0.14 ± 0.011
Ise-bay, AICHI	〃	12.1	0.18 ± 0.021	0.14 ± 0.011
Osaka-port, OSAKA	August	13.4	0.18 ± 0.018	0.12 ± 0.010
off-Ajisu, YAMAGUCHI	〃	17.0	0.11 ± 0.017	0.15 ± 0.011
Moji-port, FUKUOKA	July	17.5	0.13 ± 0.017	0.13 ± 0.010
Sendai, KAGOSHIMA	August	18.5	0.10 ± 0.018	0.19 ± 0.012
White beach, OKINAWA	October	19.1	0.13 ± 0.019	0.13 ± 0.010

Note: Sample volume analyzed (ℓ): 35 ~ 40

Figure 5. Sampling Locations of Sea Water (Surface)

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



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

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

Prefectural public health laboratories and institutes and Japan Chemical Analysis Center have analysed or strontium-90 and cesium-137 contents in marine sediments under the commission of Science and Technology Agency.

Samples of marine sediments were collected by each prefectural public health laboratories and institutes once a year. As a rule, samples were collected at the same points following sea water smapling. Samples were obtained from the muddy bottom with one or more meters of depths at a low tide and without the migration of bottom sediments. Samples were dryed at 105°C after removal of stones and shells mixed in samples, and then ground into powder which pass a rieve of 2mm. The powdered samples were forward to Japan Chemical Analysis Center as materials.

At Japan Chemical Analysis Center, 100 grams of materials to which both some carriers and sodium hydroxide were added, were destroyed under heating, and were filtered. Filtrates and water used for washing to which added nitric acid were destroyed under heating. After reneutralization, the nuclides of yttrium-90 of which reached radioactive equivallence to strontium-90, and cesium-137 were chemically separated, and the radioactivity was measured with low back ground β-ray spectrometer.

Results obtained are shown in Table 5. And the sampling locations are shown in Figure 6.

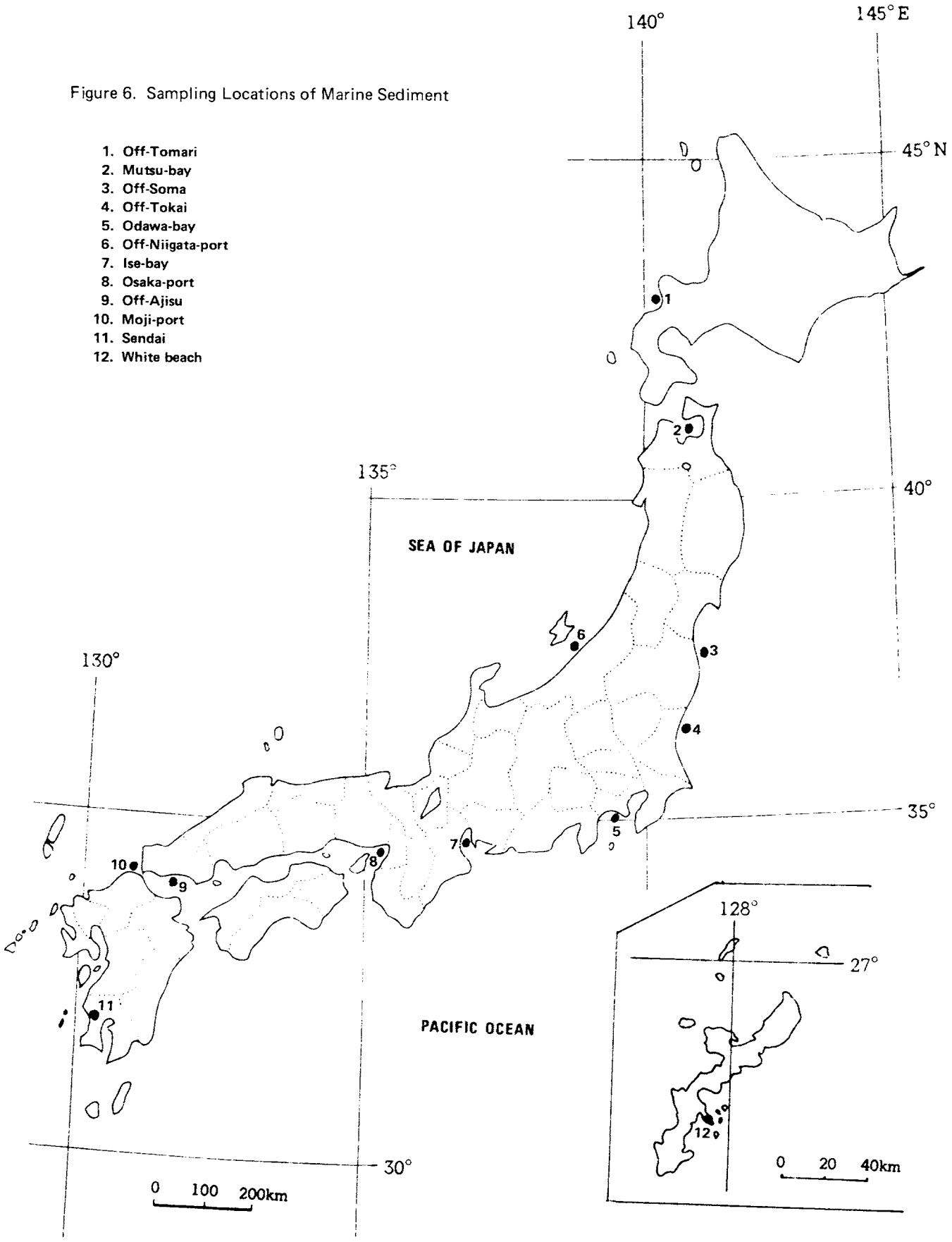
Table 5: ^{90}Sr and ^{137}Cs in Marine Sediment
– April, 1977 to October, 1977 –
(Japan Chemical Analysis Center)
(Continued from Table 2, No. 45 of this publication)

Location	Month to be Sampled	Depth (m)	^{90}Sr (pCi/kg)	^{137}Cs (pCi/kg)
off-Tomari, HOKKAIDO	July	30	0.0 ± 2.7	23 ± 3.0
Mutsu-bay, AOMORI	August	14	28 ± 4.7	210 ± 8
off-Soma, FUKUSHIMA	September	5	2 ± 3.0	14 ± 3.5
off-Tokai, IBARAKI	July	20	7 ± 3.2	26 ± 3.3
Odawa-bay, KANAGAWA	September	7	4 ± 2.9	110 ± 6
off-Niigata-Port, NIIGATA	July	20	6 ± 3.9	130 ± 6
Ise-bay, AICHI	"	20	13 ± 3.7	210 ± 8
Osaka-port, OSAKA	August	7	2 ± 3.5	200 ± 8
off-Ajisu, YAMAGUCHI	"	5	7 ± 3.5	180 ± 7
Moji-port, FUKUOKA	July	7.5	6 ± 2.8	130 ± 6
Sendai, KAGOSHIMA	August	1.5	0.0 ± 3.1	21 ± 3.8
White beach, OKINAWA	October	14	0.4 ± 2.7	9.3 ± 3.6

Note; Air-soil:100g

Figure 6. Sampling Locations of Marine Sediment

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



Dietary Data

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

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

Under the commission of Science and Technology Agency, prefectural public health laboratories and institutes and Japan Chemical Analysis Center have collected total diet samples, and determined the contents of strontium-90 and cesium-137 in these samples.

Thirty-two prefectural public health laboratoreis and institutes have collected 2 times a year all the daily regular diet consumed for five persons, namely three meals and other eating between them. These samples were collected at Japan Chemical Analysis Center after carbonization without smoke rising.

At Japan Chemical Analysis Center, these samples were ashed in an electric muffle furnace. And the ash to which both some carriers were added were destroyed with hydrochloric acid and nitric acid. The nuclides were dissolved into hydrochloric acid and filtrated, after it was added with nitric acid. The nuclides were dissolved into hydrochloric acid and filtrated, after it was added with nitric acid. The samples solution including radionuclides was extracted with hydrochloric acid and water, and yttrium-90 which reached radioactive equivallence to strontium-90, and cesium-137 were chemically separated from it. And the radioactivity was measured with low back ground beta-ray spectrometer.

Results obtained are shown in Table 6. And the sampling locations are shown in Figure 7.

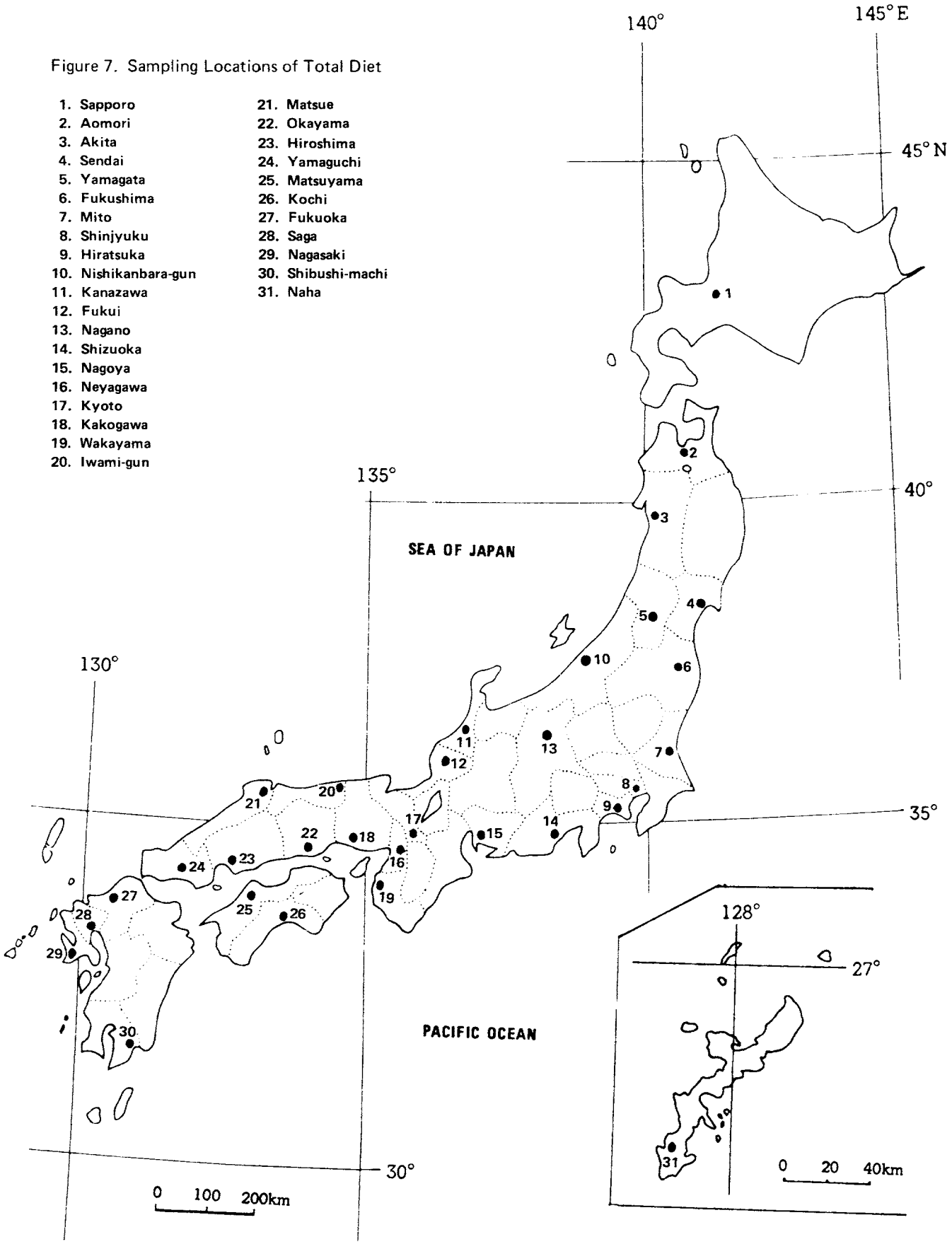
Table 6: ^{90}Sr and ^{137}Cs in Total Diet
– April, 1977 to September 1977 –
(Japan Chemical Analysis Center)
(Continued from Table 6, No.47 of this publication)

Location	Month to be Sampled	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.)
Sapporo, HOKKAIDO	June	15.8	530	1920	2.1 ± 0.38	3.9 ± 0.72	2.9 ± 0.26	1.5 ± 0.14
Aomori, AOMORI	〃	21.4	1050	2460	11 ± 0.7	10 ± 0.7	4.2 ± 0.36	1.7 ± 0.15
Akita, AKITA	July	13.0	458	1540	5.5 ± 0.43	12 ± 0.9	4.5 ± 0.27	2.9 ± 0.18
Sendai, MIYAGI	May	21.2	500	1770	1.9 ± 0.48	3.9 ± 0.96	2.8 ± 0.33	1.6 ± 0.19
Yamagata, YAMAGATA	June	22.5	920	2810	5.2 ± 0.52	5.7 ± 0.57	4.3 ± 0.38	1.5 ± 0.13
Fukushima, FUKUSHIMA	〃	18.4	1110	2360	3.4 ± 0.42	3.1 ± 0.38	4.7 ± 0.35	2.0 ± 0.15
Mito, IBARAKI	〃	16.0	690	1570	2.9 ± 0.35	4.2 ± 0.51	2.6 ± 0.26	1.7 ± 0.17
Shinjyuku, TOKYO	〃	21.8	1080	2240	3.4 ± 0.51	3.1 ± 0.48	4.2 ± 0.36	1.9 ± 0.16
Hiratsuka, KANAGAWA	July	27.5	430	2190	2.0 ± 0.39	4.7 ± 0.92	2.9 ± 0.29	1.3 ± 0.13
Nishikanbara, NIIGATA	June	19.4	540	2190	5.5 ± 0.56	10 ± 1.0	5.3 ± 0.37	2.4 ± 0.17

Location	Month to be Sampled	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.)
Kanazawa, ISHIKAWA	June	19.9	555	1950	3.9 ± 0.51	7.0 ± 0.93	4.7 ± 0.35	2.4 ± 0.18
Fukui, FUKUI	"	13.4	420	1540	2.0 ± 0.33	4.8 ± 0.79	2.5 ± 0.22	1.6 ± 0.14
Nagano, NAGANO	"	18.3	700	2180	3.1 ± 0.47	4.4 ± 0.67	2.9 ± 0.30	1.3 ± 0.14
Shizuoka, SHIZUOKA	"	16.3	551	2050	5.3 ± 0.46	9.6 ± 0.83	2.3 ± 0.25	1.1 ± 0.12
Nagoya, AICHI	July	19.6	910	2350	3.7 ± 0.50	4.1 ± 0.55	3.1 ± 0.30	1.3 ± 0.13
Neyagawa, OSAKA	June	32.5	546	1970	3.3 ± 0.62	6.0 ± 1.1	2.2 ± 0.41	1.1 ± 0.21
Kyoto, KYOTO	"	17.4	650	2630	2.9 ± 0.47	4.4 ± 0.73	3.2 ± 0.29	1.2 ± 0.11
Kakogawa, HYOGO	"	20.7	900	1780	4.8 ± 0.46	5.4 ± 0.52	3.3 ± 0.32	1.9 ± 0.19
Wakayama, WAKAYAMA	"	20.1	1900	1140	4.1 ± 0.46	2.2 ± 0.24	2.1 ± 0.29	1.9 ± 0.25
Iwami, TOTTORI	July	17.5	400	1550	4.2 ± 0.42	11 ± 1.1	2.0 ± 0.24	1.3 ± 0.16
Matsue, SHIMANE	"	22.4	1230	2160	5.3 ± 0.41	4.3 ± 0.33	3.9 ± 0.29	1.8 ± 0.13
Okayama, OKAYAMA	June	21.5	510	2000	3.2 ± 0.46	6.2 ± 0.91	2.7 ± 0.30	1.3 ± 0.15
Hiroshima, HIROSHIMA	July	13.1	213	1350	3.1 ± 0.38	14 ± 1.8	1.8 ± 0.23	1.3 ± 0.17
Yamaguchi, YAMAGUCHI	June	21.4	490	2050	3.6 ± 0.49	7.3 ± 1.0	2.6 ± 0.31	1.3 ± 0.15
Matsuyama, EHIME	"	17.4	540	1980	2.6 ± 0.44	4.9 ± 0.83	2.3 ± 0.26	1.2 ± 0.13
Kochi, KOCHI	"	22.0	440	2380	4.1 ± 0.48	9.3 ± 1.1	3.1 ± 0.34	1.3 ± 0.14
Fukuoka, FUKUOKA	"	14.1	380	1560	2.0 ± 0.34	5.4 ± 0.90	3.7 ± 0.26	2.3 ± 0.16
Saga, SAGA	"	19.5	975	2220	2.3 ± 0.41	2.4 ± 0.42	3.4 ± 0.31	1.5 ± 0.14
Nagasaki, NAGASAKI	"	14.8	541	1600	3.3 ± 0.50	6.1 ± 0.93	2.8 ± 0.31	1.8 ± 0.19
Shibushi, KAGOSHIMA	July	12.5	716	1750	2.9 ± 0.35	4.1 ± 0.49	4.8 ± 0.28	2.7 ± 0.16
Naha, OKINAWA	Sep.	13.6	516	1810	5.9 ± 0.41	11 ± 0.80	3.9 ± 0.28	2.2 ± 0.15

Figure 7. Sampling Locations of Total Diet

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



(7) Strontium-90 and Cesium-137 in Raw Milk

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

Under the commission of Science and Technology Agency, prefectural public health laboratories and institutes and Japan Chemical Analysis Center have measured the levels of strontium-90 and cesium-137 in milk samples.

Sampling was done as follows: 4 times of raw milk samples a year in 10 prefectures for the report to WHO, 2 times of raw milk samples a year in 4 prefectures; and 2 times of city milk samples a year in 29 prefectures. Three litters of fresh milk were collected and carbonated in the prefectural public health laboratories and institutes of each prefecture, and the carbonated samples were collected at Japan Chemical Analysis Center.

At Japan Chemical Analysis Center, these collected samples were radiochemically analysed for strontium-90 and cesium-137 using the method applied for the analysis of the radionuclides contents in total diet materials.

Results obtained are shown in Tables 7, 8. And the sampling locations are shown in Figures 8, 9.

TAble 7: ^{90}Sr and ^{137}Cs in Milk (Report to WHO)
– April, 1977 to March, 1978 –
(Japan Chemical Analysis Center)

Location	Month	Component			^{90}Sr		^{137}Cs	
		Ash (g/ℓ)	Ca (g/ℓ)	K (g/ℓ)	(pCi/ℓ)	(S.U.)	(pCi/ℓ)	(C.U.)
April ~ June, 1977								
Sapporo, HOKKAIDO	June	7.57	1.22	1.78	3.2 ± 0.41	2.6 ± 0.34	8.6 ± 0.38	4.8 ± 0.21
Nishikanbara, NIIGATA	〃	6.67	0.86	1.61	2.1 ± 0.28	2.4 ± 0.32	1.5 ± 0.20	0.9 ± 0.12
Hachijyoshima, TOKYO	May	7.64	1.06	1.86	4.0 ± 0.38	3.7 ± 0.36	48 ± 0.8	26 ± 0.5
Katsuyama, FUKUI	June	6.77	1.02	1.49	2.1 ± 0.32	2.1 ± 0.32	5.2 ± 0.29	3.5 ± 0.19
Toyono, OSAKA	〃	7.33	1.07	1.57	1.7 ± 0.28	1.6 ± 0.27	1.7 ± 0.22	1.1 ± 0.14
Yagumo, SHIMANE	〃	7.28	1.13	1.51	3.2 ± 0.39	2.8 ± 0.35	3.6 ± 0.27	2.4 ± 0.18
Shobara, HIROSHIMA	June	6.94	1.05	1.49	1.3 ± 0.30	1.3 ± 0.29	1.7 ± 0.21	1.1 ± 0.14
Kochi, KOCHI	May	7.87	1.00	1.90	3.1 ± 0.37	3.1 ± 0.36	2.3 ± 0.24	1.2 ± 0.13
Koga, FUKUOKA	〃	7.57	1.17	1.51	1.1 ± 0.26	0.9 ± 0.22	7.1 ± 0.36	4.7 ± 0.24
Kajiki, KAGOSHIMA	June	7.12	1.07	1.58	3.1 ± 0.33	2.9 ± 0.31	7.2 ± 0.35	4.5 ± 0.22
July ~ September, 1977								
Sapporo, HOKKAIDO	Sep.	7.66	1.24	1.71	4.5 ± 0.36	3.6 ± 0.29	6.0 ± 0.33	3.5 ± 0.19
Nishikanbara, NIIGATA	Aug.	6.76	1.06	1.60	1.7 ± 0.37	1.6 ± 0.34	2.8 ± 0.32	1.8 ± 0.20
Hachijyoshima, TOKYO	〃	7.62	1.15	1.80	4.4 ± 0.40	3.8 ± 0.34	36 ± 0.7	20 ± 0.4
Katsuyama, FUKUI	〃	7.12	1.12	1.44	4.8 ± 0.44	4.3 ± 0.39	8.3 ± 0.36	5.8 ± 0.25
Toyono, OSAKA	〃	6.67	0.99	1.43	1.7 ± 0.30	1.7 ± 0.31	1.7 ± 0.21	1.2 ± 0.15

Location	Month	Component			^{90}Sr		^{137}Cs	
		Ash (g/ℓ)	Ca (g/ℓ)	K (g/ℓ)	(pCi/ℓ)	(S.U.)	(pCi/ℓ)	(C.U.)
Yagumo, SHIMANE	Sep.	7.33	1.08	1.63	4.1 ± 0.43	3.8 ± 0.40	3.7 ± 0.28	2.3 ± 0.17
Shobara, HIROSHIMA	Aug.	6.76	1.01	1.50	0.8 ± 0.44	0.8 ± 0.43	2.0 ± 0.28	1.3 ± 0.19
Kochi, KOCHI	〃	7.34	1.06	1.57	1.1 ± 0.59	1.0 ± 0.55	1.0 ± 0.44	0.6 ± 0.28
Koga, FUKUOKA	〃	7.62	1.27	1.59	1.1 ± 0.25	0.9 ± 0.20	2.6 ± 0.24	1.6 ± 0.15
Kajiki, KAGOSHIMA	〃	6.92	1.10	1.47	2.8 ± 0.30	2.5 ± 0.27	5.7 ± 0.30	3.9 ± 0.21
October ~ December, 1977								
Sapporo, HOKKAIDO	Dec.	7.56	1.26	1.79	3.7 ± 0.33	2.9 ± 0.26	10 ± 0.4	5.8 ± 0.23
Nishikanbara, NIIGATA	Nov.	6.83	1.05	1.51	2.1 ± 0.28	2.0 ± 0.27	2.6 ± 0.23	1.7 ± 0.15
Hachijyoshima, TOKYO	〃	7.16	1.10	1.61	5.9 ± 0.43	5.4 ± 0.39	53 ± 0.9	33 ± 0.6
Katsuyama, FUKUI	〃	7.01	1.13	1.47	3.9 ± 0.35	3.4 ± 0.31	7.0 ± 0.33	4.8 ± 0.23
Toyono, OSAKA	〃	7.36	1.12	1.44	2.2 ± 0.29	2.0 ± 0.26	2.1 ± 0.22	1.5 ± 0.16
Yagumo, SHIMANE	〃	7.18	1.14	1.55	4.8 ± 0.36	4.2 ± 0.31	5.6 ± 0.30	3.6 ± 0.20
Shobara, HIROSHIMA	〃	6.91	1.07	1.46	1.2 ± 0.26	1.1 ± 0.24	1.8 ± 0.21	1.2 ± 0.14
Kochi, KOCHI	〃	7.52	1.22	1.51	2.5 ± 0.32	2.1 ± 0.26	2.1 ± 0.22	1.4 ± 0.15
Koga, FUKUOKA	〃	7.27	1.14	1.56	1.2 ± 0.26	1.0 ± 0.23	2.9 ± 0.26	1.9 ± 0.17
Kajiki, KAGOSHIMA	〃	7.45	1.15	1.67	2.9 ± 0.31	2.5 ± 0.27	7.1 ± 0.34	4.2 ± 0.21
January ~ March, 1977								
Sapporo, HOKKAIDO	Feb.	6.29	1.10	1.33	2.9 ± 0.30	2.7 ± 0.27	8.0 ± 0.32	6.0 ± 0.24
Nishikanbara, NIIGATA	〃	6.32	0.91	1.46	1.5 ± 0.26	1.7 ± 0.28	1.7 ± 0.19	1.1 ± 0.13
Hachijyoshima, TOKYO	〃	7.71	1.23	1.85	6.2 ± 0.41	5.0 ± 0.33	29 ± 0.7	16 ± 0.4
Katsuyama, FUKUI	〃	7.04	1.09	1.60	2.0 ± 0.32	1.8 ± 0.29	4.5 ± 0.28	2.8 ± 0.17
Toyono, OSAKA	Jan.	7.29	1.07	1.50	2.1 ± 0.28	1.9 ± 0.26	2.5 ± 0.25	1.7 ± 0.17
Shobara, HIROSHIMA	Feb.	6.55	1.01	1.50	1.6 ± 0.23	1.6 ± 0.23	2.9 ± 0.24	1.9 ± 0.16
Kochi, KOCHI	〃	7.49	1.15	1.69	4.2 ± 0.39	3.6 ± 0.34	3.2 ± 0.30	1.9 ± 0.18
Koga, FUKUOKA	〃	6.55	1.08	1.32	0.85± 0.22	0.79± 0.21	3.7 ± 0.24	2.8 ± 0.18
Kajiki, KAGOSHIMA	Mar.	7.17	1.14	1.58	2.8 ± 0.30	2.5 ± 0.26	9.9 ± 0.38	6.3 ± 0.24

Figure 8. Sampling Locations of Milk (Report to WHO)

1. Sapporo
2. Nishikanbara-gun
3. Hachijyoshima
4. Katsuyama
5. Toyono-gun
6. Yagumo
7. Shobara
8. Kochi
9. Koga
10. Kajiki

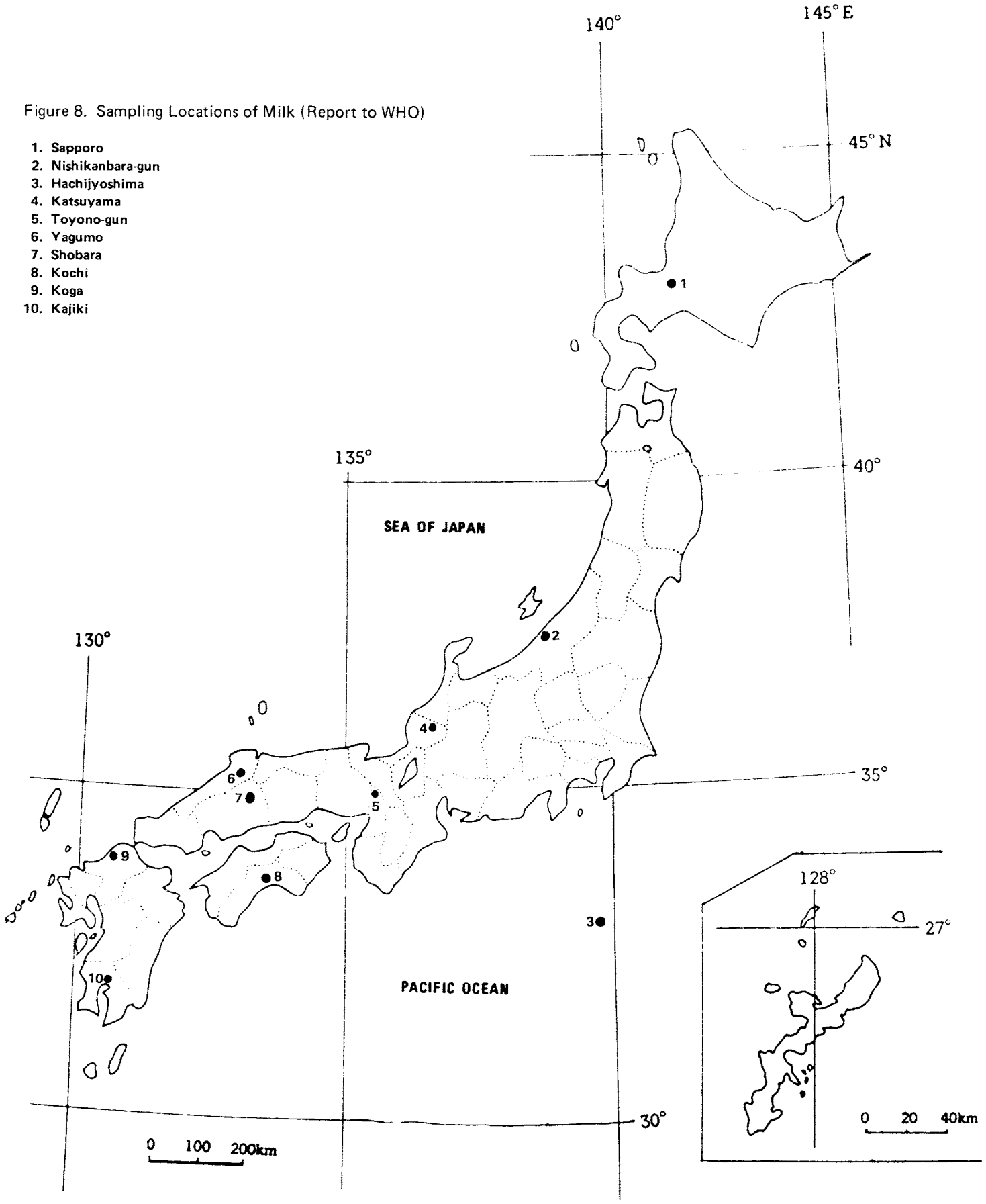
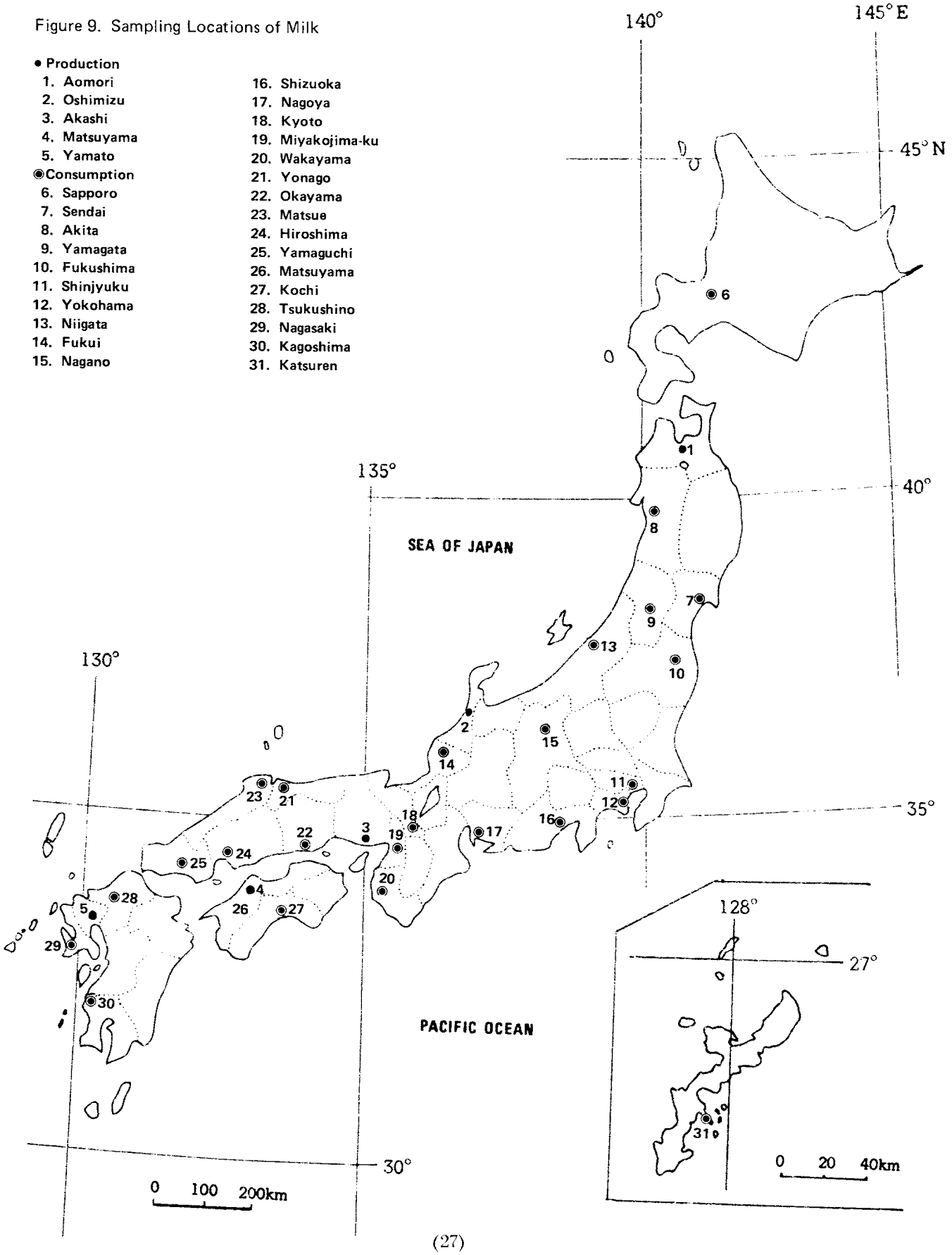


Table 8: ^{90}Sr and ^{137}Cs in Milk
– April, 1977 to September, 1977 –
(Japan Chemical Analysis Center)

Location	Month	Component			^{90}Sr		^{137}Cs	
		Ash (g/ℓ)	Ca (g/ℓ)	K (g/ℓ)	(pCi/ℓ)	(S.U.)	(pCi/ℓ)	(C.U.)
(Production)								
Aomori, AOMORI	July	7.18	0.99	1.48	18 ± 0.6	18 ± 0.6	14 ± 0.4	9.4 ± 0.30
Oshimizu, ISHIKAWA	June	6.44	0.905	1.68	1.9 ± 0.26	2.1 ± 0.29	5.2 ± 0.30	3.1 ± 0.18
Akashi, HYOGO	Aug.	7.07	1.14	1.38	1.5 ± 0.46	1.3 ± 0.40	1.1 ± 0.32	0.77± 0.23
Matsuyama, EHIME	〃	7.28	1.14	1.43	1.4 ± 0.27	1.3 ± 0.24	2.0 ± 0.22	1.4 ± 0.16
Yamato, SAGA	June	7.64	1.12	1.67	1.9 ± 0.30	1.7 ± 0.27	2.2 ± 0.24	1.3 ± 0.14
(Consumption)								
Sapporo, HOKKAIDO	Aug.	7.17	1.14	1.57	4.5 ± 0.36	3.9 ± 0.31	10 ± 0.4	6.4 ± 0.25
Sendai, MIYAGI	〃	7.32	1.14	1.66	1.7 ± 0.33	1.5 ± 0.29	3.9 ± 0.31	2.3 ± 0.19
Akita, AKITA	June	6.98	1.14	1.15	4.1 ± 0.35	3.6 ± 0.31	3.0 ± 0.24	2.0 ± 0.16
Yamagata, YAMAGATA	Aug.	6.99	1.07	1.55	3.5 ± 0.58	3.3 ± 0.54	5.1 ± 0.49	3.3 ± 0.32
Fukushima, FUKUSHIMA	〃	7.12	1.06	1.58	2.7 ± 0.31	2.5 ± 0.29	7.1 ± 0.34	4.5 ± 0.22
Shinjyuku, TOKYO	〃	6.53	0.99	1.48	2.9 ± 0.30	3.0 ± 0.30	10 ± 0.4	6.9 ± 0.26
Yokohama, KANAGAWA	〃	7.10	1.10	1.56	1.6 ± 0.26	1.4 ± 0.24	3.2 ± 0.25	2.1 ± 0.16
Niigata, NIIGATA	〃	7.48	1.18	1.56	3.1 ± 0.34	2.7 ± 0.29	4.1 ± 0.28	2.6 ±0.18
Fukui, FUKUI	〃	6.82	1.02	1.44	1.4 ± 0.25	1.4 ± 0.25	3.0 ± 0.24	2.1 ± 0.16
Nagano, NAGANO	〃	6.88	1.10	1.54	1.8 ± 0.25	1.6 ± 0.23	2.5 ± 0.23	1.6 ± 0.15
Shizuoka, SHIZUOKA	〃	7.13	1.07	1.56	1.8 ± 0.26	1.7 ± 0.24	1.7 ± 0.21	1.1 ± 0.14
Nagoya, AICHI	〃	7.35	1.00	1.44	1.5 ± 0.42	1.5 ± 0.42	1.8 ± 0.30	1.2 ± 0.21
Kyoto, KYOTO	May	6.78	1.00	1.54	1.4 ± 0.26	1.4 ± 0.26	2.4 ± 0.23	1.6 ± 0.15
Miyakojima-ku, OSAKA	Aug.	7.37	1.07	1.79	2.6 ± 0.42	2.5 ± 0.40	3.2 ± 0.27	1.8 ± 0.15
Wakayama, WAKAYAMA	Sep.	6.88	0.98	1.49	1.8 ± 0.26	1.8 ± 0.27	4.5 ± 0.27	3.0 ± 0.18
Yonago, TOTTORI	Aug.	7.17	1.18	1.57	3.4 ± 0.33	2.9 ± 0.28	9.1 ± 0.37	5.8 ± 0.24
Okayama, OKAYAMA	〃	6.88	1.14	1.53	1.3 ± 0.23	1.1 ± 0.20	1.8 ± 0.21	1.2 ± 0.14
Matsue, SHIMANE	July	8.67	1.21	1.81	3.1 ± 0.44	2.6 ± 0.36	4.6 ± 0.33	2.6 ± 0.18
Hiroshima, HIROSHIMA	Aug.	6.19	0.95	1.35	1.4 ± 0.24	1.5 ± 0.25	2.8 ± 0.23	2.1 ± 0.17
Yamaguchi, YAMAGUCHI	〃	7.06	1.09	1.56	2.1 ± 0.28	2.0 ± 0.26	2.9 ± 0.24	1.9 ± 0.16
Matsuyama, EHIME	〃	7.69	1.24	1.58	1.9 ± 0.31	1.6 ± 0.25	1.8 ± 0.23	1.2 ± 0.15
Kochi, KOCHI	〃	6.97	1.09	1.58	2.2 ± 0.31	2.0 ± 0.29	3.5 ± 0.28	2.2 ± 0.17
Tsukushino, FUKUOKA	〃	7.09	1.07	1.54	1.7 ± 0.27	1.6 ± 0.25	2.6 ± 0.23	1.7 ± 0.15
Nagasaki, NAGASAKI	〃	6.70	1.02	1.40	2.3 ± 0.28	2.2 ± 0.28	4.0 ± 0.26	2.8 ± 0.18
Kagoshima, KAGOSHIMA	〃	6.99	1.09	1.54	1.4 ± 0.23	1.3 ± 0.23	9.0 ± 0.38	5.8 ± 0.24
Katsuren, OKINAWA	Sep.	7.09	1.12	1.52	0.8 ± 0.2	0.8 ± 0.2	3.2 ± 0.26	2.1 ± 0.17

Figure 9. Sampling Locations of Milk



General Plan of Radioactivity Survey in Japan (from April, 1977 to March, 1978)
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, July)	~4 kg
Soil (5~20 cm)	32	1 time/year (June, July)	~4 kg
Sea Water	12	1 time/year (July, August)	40 ℓ
Marine Sediments	12	1 time/year (July, August)	~4 kg
Diet Materials			
Total Diet	32	2 times/year (June, November, 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 disrticts)	4	2 times/year (August, February)	3 ℓ
Milk (Consuming districts)	29	2 times/year (August, February)	3 ℓ
Vegitables (Producing districts)	19	1 time/year (Producing season)	4 kg
Vegitables (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

Editted by National Institute of Radiological Sciences, under the supervision of Science and Technology Agency of Japanese Government.