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**RADIOACTIVITY  
SURVEY DATA  
in Japan**

**NUMBER 43**

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**National Institute of Radiological Sciences  
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# Radioactivity Survey Data in Japan

## Number 43

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# Environmental Data

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

*(Japan Chemical Analysis Center)*

Under the commission of Science and Technology Agency, Japan Chemical Analysis Center has measured monthly the level of strontium-90 and cesium-137 in rain and dry fallout samples collected in 30 prefectures throughout Japan.

Sampling and pretreatment were performed by 30 prefectoral public health laboratories and institutes. The large tray containing water kept at 10mm in depth 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 on it. These resin and filter papers used were collected to 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 furnace. 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 using the method recommended by Science and Technology Agency.\*

Results obtained and the sampling locations are shown in Table 1 and Figure 1, respectively.

\* : See the appendix (P. 43)

Table 1.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Rain and Dry Fallout  
— April, 1975 to March, 1976 —  
*(Japan Chemical Analysis Center)*  
*(Continued from Table 1, No. 40 of this publication)*

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km <sup>2</sup> )			$^{137}\text{Cs}$ (mCi/km <sup>2</sup> )		
			0.044	±	0.001	0.081	±	0.002
<b>April, 1975</b>								
Sapporo, HOKKAIDO	31	42.5	0.044	±	0.001	0.081	±	0.002
Aomori, AOMORI	31	37.0	0.029	±	0.0009	0.059	±	0.002
Sendai, MIYAGI	30	47.6	0.033	±	0.001	0.048	±	0.002
Akita, AKITA	30	77.0	0.053	±	0.001	0.10	±	0.004
Yamagata, YAMAGATA	30	16.0	0.013	±	0.0007	0.021	±	0.001
Okuma, FUKUSHIMA	30	63.1	0.080	±	0.002	0.13	±	0.004
Shinjuku, TOKYO	30	174.4	0.085	±	0.001	0.15	±	0.004
Yokohama, KANAGAWA	31	175.5	0.089	±	0.002	0.17	±	0.004
Niigata, NIIGATA	32	36.0	0.022	±	0.0009	0.037	±	0.002
Kanazawa, ISHIKAWA	33	137.5	0.081	±	0.001	0.12	±	0.003

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )		$^{137}\text{Cs}$ (mCi/km $^2$ )			
Fukui, FUKUI	31	171.9	0.11	±	0.003	0.17	±	0.004
Shizuoka, SHIZUOKA	27	155.0	0.13	±	0.002	0.24	±	0.005
Nagoya, AICHI	32	169.9	0.077	±	0.002	0.13	±	0.003
Kyoto, KYOTO	32	177.3	0.061	±	0.001	0.11	±	0.002
Osaka, OSAKA	31	160.3	0.046		0.001	0.002		0.074
Kobe, HYOGO	29	164.7	0.065	±	0.001	0.11	±	0.003
Wakayama, WAKAYAMA	30	136.5	0.055	±	0.001	0.085	±	0.002
Tottori, TOTTORI	32	74.30	0.084	±	0.002	0.13	±	0.004
Matsue, SHIMANE	30	118.6	0.10	±	0.003	0.11	±	0.003
Okayama, OKAYAMA	30	108.0	0.047	±	0.001	0.070	±	0.002
Hiroshima, HIROSHIMA	30	154.08	0.061	±	0.001	0.087	±	0.003
Yamaguchi, YAMAGUCHI	33	342.2	0.070	±	0.001	0.15	±	0.004
Kochi, KOCHI	32	290.6	0.14	±	0.002	0.22	±	0.004
Dazaifu, FUKUOKA	30	207.0	0.066	±	0.002	0.10	±	0.003
Saga, SAGA	30	310.0	0.079	±	0.002	0.10	±	0.003
Nagasaki, NAGASAKI	30	292.5	0.078	±	0.002	0.13	±	0.003
Kagoshima, KAGOSHIMA	33	277.2	0.033	±	0.0009	0.087	±	0.002
Naha, OKINAWA	31	247.0	0.040	±	0.001	0.066	±	0.002
May, 1975								
Sapporo, HOKKAIDO	33	36.5	0.077	±	0.001	0.12	±	0.003
Aomori, AOMORI	32	89.5	0.053	±	0.001	0.068	±	0.002
Sendai, MIYAGI	31	50.3	0.035	±	0.001	0.052	±	0.002
Akita, AKITA	31	134.5	0.089	±	0.002	0.16	±	0.005
Yamagata, YAMAGATA	33	48.2	0.033	±	0.001	0.053	±	0.002
Okuma, FUKUSHIMA	31	62.2	0.068	±	0.002	0.11	±	0.003
Mito, IBARAKI	32	73.5	0.032	±	0.001	0.059	±	0.002
Shinjuku, TOKYO	31	153.2	0.067	±	0.001	0.13	±	0.003
Yokohama, KANAGAWA	33	155.0	0.063	±	0.001	0.10	±	0.003
Niigata, NIIGATA	31	102.0	0.061	±	0.001	0.10	±	0.003
Kanazawa, ISHIKAWA	32	151.5	0.064	±	0.001	0.11	±	0.003
Fukui, FUKUI	33	143.3	0.13	±	0.002	0.18	±	0.004
Shizuoka, SHIZUOKA	32	160.0	0.057	±	0.002	0.14	±	0.005
Nagoya, AICHI	33	170.6	0.10	±	0.002	0.18	±	0.003
Kyoto, KYOTO	32	56.6	0.052	±	0.001	0.095	±	0.002
Osaka, OSAKA	32	78.6	0.040	±	0.001	0.070	±	0.002
Kobe, HYOGO	33	39.4	0.032	±	0.001	0.046	±	0.002
Wakayama, WAKAYAMA	32	34.5	0.019	±	0.0008	0.027	±	0.001
Tottori, TOTTORI	32	78.50	0.13	±	0.003	0.19	±	0.004
Matsue, SHIMANE	30	244.3	0.083	±	0.002	0.083	±	0.002
Okayama, OKAYAMA	31	48.3	0.017	±	0.0007	0.065	±	0.002

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )			$^{137}\text{Cs}$ (mCi/km $^2$ )		
Hiroshima, HIROSHIMA	31	67.6	0.037	±	0.001	0.058	±	0.002
Yamaguchi, YAMAGUCHI	33	72.7	0.052	±	0.001	0.11	±	0.003
Kochi, KOCHI	31	254.0	0.20	±	0.003	0.29	±	0.005
Dazaifu, FUKUOKA	31	41.1	0.025	±	0.001	0.043	±	0.002
Saga, SAGA	31	515	0.035	±	0.001	0.057	±	0.002
Nagasaki, NAGASAKI	32	65.0	0.027	±	0.001	0.093	±	0.002
Kagoshima, KAGOSHIMA	28	84.7	0.040	±	0.001	0.11	±	0.003
Naha, OKINAWA	32	415.0	0.046	±	0.001	0.067	±	0.002
June, 1975								
Sapporo, HOKKAIDO	30	67.0	0.036	±	0.001	0.072	±	0.002
Aomori, AOMORI	31	55.5	0.032	±	0.001	0.094	±	0.003
Sendai, MIYAGI	30	92.4	0.060	±	0.001	0.092	±	0.003
Akita, AKITA	30	63.5	0.039	±	0.001	0.062	±	0.002
Yamagata, YAMAGATA	29	50.7	0.049	±	0.001	0.079	±	0.002
Okuma, FUKUSHIMA	30	151.7	0.056	±	0.001	0.088	±	0.003
Mito, IBARAKI	29	137.0	0.016	±	0.0008	0.044	±	0.002
Shinjuku, TOKYO	30	104.8	0.041	±	0.001	0.065	±	0.002
Yokohama, KANAGAWA	30	137.0	0.063	±	0.002	0.11	±	0.004
Niigata, NIIGATA	29	90.0	0.045	±	0.001	0.061	±	0.002
Kanazawa, ISHIKAWA	30	164.5	0.050	±	0.001	0.069	±	0.002
Fukui, FUKUI	31	195.3	0.036	±	0.001	0.10	±	0.003
Shizuoka, SHIZUOKA	29	158.0	0.049	±	0.001	0.082	±	0.002
Nagoya, AICHI	31	196.7	0.039	±	0.001	0.080	±	0.002
Kyoto, KYOTO	33	225.0	0.058	±	0.001	0.096	±	0.003
Osaka, OSAKA	29	243.86	0.033	±	0.001	0.052	±	0.002
Kobe, HYOGO	30	161.3	0.027	±	0.001	0.047	±	0.002
Wakayama, WAKAYAMA	29	142.5	0.030	±	0.001	0.046	±	0.002
Tottori, TOTTORI	30	61.75	0.032	±	0.001	0.053	±	0.002
Matsue, SHIMANE	31	121.3	0.068	±	0.001	0.12	±	0.003
Okayama, OKAYAMA	29	239.6	0.057	±	0.001	0.085	±	0.002
Hiroshima, HIROSHIMA	30	334.86	0.039	±	0.001	0.060	±	0.002
Yamaguchi, YAMAGUCHI	33	336.0	0.050	±	0.001	0.094	±	0.003
Kochi, KOCHI	29	341.5	0.053	±	0.001	0.087	±	0.002
Dazaifu, FUKUOKA	30	282.4	0.023	±	0.001	0.035	±	0.002
Saga, SAGA	30	404.5	0.025	±	0.0009	0.062	±	0.002
Nagasaki, NAGASAKI	29	549	0.030	±	0.0009	0.048	±	0.002
Kagoshima, KAGOSHIMA	36	493.3	0.014	±	0.0007	0.021	±	0.001
Naha, OKINAWA	31	517.5	0.020	±	0.0009	0.034	±	0.002
July, 1975								
Sapporo, HOKKAIDO	32	109.5	0.029	±	0.0008	0.057	±	0.0020

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )			$^{137}\text{Cs}$ (mCi/km $^2$ )		
Aomori, AOMORI	32	131.5	0.026	±	0.0008	0.062	±	0.0021
Sendai, MIYAGI	31	91.1	0.014	±	0.0007	0.030	±	0.001
Akita AKITA	31	231.0	0.025	±	0.0009	0.051	±	0.002
Yamagata, YAMAGATA	31	81.4	0.016	±	0.0008	0.028	±	0.002
Okuma, FUKUSHIMA	31	125.2	0.017	±	0.0008	0.036	±	0.002
Mito, IBARAKI	31	225.0	0.053	±	0.001	0.028	±	0.001
Shinjuku, TOKYO	31	133.0	0.019	±	0.0008	0.035	±	0.002
Yokohama, KANAGAWA	32	185.0	0.019	±	0.0009	0.033	±	0.002
Niigata, NIIGATA	31	152.0	0.027	±	0.0009	0.047	±	0.002
Kanazawa, ISHIKAWA	32	248.5	0.025	±	0.009	0.051	±	0.002
Fukui, FUKUI	31	175.4	0.012	±	0.0006	0.059	±	0.002
Shizuoka, SHIZUOKA	37	279.5	0.023	±	0.0009	0.044	±	0.002
Nagoya, AICHI	33	322.8	0.020	±	0.0008	0.034	±	0.002
Kyoto, KYOTO	34	203.8	0.014	±	0.0008	0.025	±	0.001
Osaka, OSAKA	31	93.21	0.012	±	0.0006	0.022	±	0.001
Kobe, HYOGO	32	182.6	0.014	±	0.0007	0.016	±	0.001
Wakayama, WAKAYAMA	31	108.5	0.008	±	0.0005	0.015	±	0.001
Tottori, TOTTORI	32	66.0	0.016	±	0.0007	0.021	±	0.001
Matsue, SHIMANE	31	118.1	0.008	±	0.0005	0.014	±	0.001
Okayama, OKAYAMA	31	92.4	0.004	±	0.0004	0.010	±	0.0010
Hiroshima, HIROSHIMA	31	198.74	0.010	±	0.0006	0.014	±	0.001
Yamaguchi, YAMAGUCHI	29	242.1	0.008	±	0.0005	0.017	±	0.001
Kochi, KOCHI	31	170.4	0.012	±	0.0007	0.014	±	0.001
Dazaifu, FUKUOKA	31	76.9	0.007	±	0.0006	0.010	±	0.001
Sage, SAGA	31	135.5	0.006	±	0.0005	0.017	±	0.001
Nagasaki NAGASAKI	31	53.5	0.006	±	0.0005	0.011	±	0.001
Kagoshima, KAGOSHIMA	30	107.0	0.016	±	0.0008	0.015	±	0.001
Naha, OKINAWA	32	454.0	0.010	±	0.0007	0.017	±	0.001
August, 1975								
Sapporo, HOKKAIDO	32	342.5	0.020	±	0.0009	0.031	±	0.001
Aomori, AOMORI	32	179.5	0.019	±	0.0007	0.040	±	0.0016
Sendai, MIYAGI	31	55.3	0.008	±	0.0006	0.010	±	0.001
Akita, AKITA	31	98.0	0.017	±	0.0008	0.028	±	0.002
Yamagata, YAMAGATA	30	31.2	0.009	±	0.0006	0.016	±	0.001
Okuma, FUKUSHIMA	31	28.7	0.005	±	0.0005	0.021	±	0.001
Mito, IBARAKI	31	38.0	0.006	±	0.0005	0.005	±	0.0009
Shinjuku, TOKYO	31	27.2	0.005	±	0.0005	0.010	±	0.001
Yokonama, KANAGAWA	32	28.5	0.008	±	0.0006	0.010	±	0.001
Niigata, NIIGATA	31	87.0	0.003	±	0.0004	0.004	±	0.0009
Kanazawa, ISHIKAWA	32	220.5	0.011	±	0.0007	0.030	±	0.002

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )		$^{137}\text{Cs}$ (mCi/km $^2$ )			
Fukui, FUKUI	32	204.8	0.012	±	0.0006	0.056	±	0.002
Shizuoka, SHIZUOKA	25	236.5	0.012	±	0.0006	0.018	±	0.001
Nagoya, AICHI	29	291.7	0.011	±	0.0007	0.012	±	0.001
Kyoto, KYOTO	28	209.6	0.011	±	0.0006	0.013	±	0.001
Osaka, OSAKA	31	21.9	0.006	±	0.0005	0.012	±	0.001
Kobe, HYOGO	32	116.3	0.011	±	0.0006	0.012	±	0.001
Wakayama, WAKAYAMA	31		0.006	±	0.0005	0.011	±	0.001
Tottori, TOTTORI	32	98.30	0.012	±	0.0006	0.011	±	0.001
Matsue, SHIMANE	31	159.5	0.008	±	0.0006	0.012	±	0.001
Okayama, OKAYAMA	31	86.0	0.007	±	0.0005	0.008	±	0.0009
Hiroshima, HIROSHIMA	31	142.26	0.006	±	0.0005	0.007	±	0.0009
Yamaguchi, YAMAGUCHI	31	69.5	0.011	±	0.0006	0.010	±	0.001
Kochi, KOCHI	31	653.8	0.024	±	0.0008	0.037	±	0.002
Dazaifu, FUKUOKA	32	196.9	0.012	±	0.0007	0.012	±	0.001
Sage, SAGA	31	119	0.005	±	0.0005	0.010	±	0.001
Nagasaki, NAGASAKI	31	126.5	0.007	±	0.0005	0.013	±	0.0011
Kagoshima, KAGOSHIMA	32	136.0	0.007	±	0.0006	0.006	±	0.0009
Naha, OKINAWA	32	370.5	0.009	±	0.0006	0.012	±	0.001
September, 1975								
Sapporo, HOKKAIDO	31	99.5	0.009	±	0.0005	0.015	±	0.0011
Sendai, MIYAGI	30	95.4	0.011	±	0.0007	0.016	±	0.001
Akita, AKITA	30	185.5	0.011	±	0.0008	0.014	±	0.001
Yamagata, YAMAGATA	30	63.2	0.007	±	0.0008	0.008	±	0.0009
Okuma, FUKUSHIMA	30	99.8	0.012	±	0.0007	0.016	±	0.001
Mito, IBARAKI	30	164.5	0.007	±	0.0005	0.009	±	0.0009
Shinjuku, TOKYO	30	140.0	0.010	±	0.0006	0.017	±	0.001
Yokohama, KANAGAWA	31	165.5	0.007	±	0.0005	0.011	±	0.001
Niigata, NIIGATA	30	71.0	0.007	±	0.0005	0.011	±	0.0010
Kanazawa, ISHIKAWA	33	172.0	0.012	±	0.0007	0.029	±	0.001
Fukui, FUKUI	31	180.6	0.011	±	0.0007	0.043	±	0.002
Shizuoka, SHIZUOKA	35	237.0	0.008	±	0.0005	0.013	±	0.001
Nagoya AICHI	31	263.8	0.010	±	0.0006	0.010	±	0.001
Kyoto, KYOTO	33	168.1	0.008	±	0.0006	0.012	±	0.001
Osaka, OSAKA	30	245.6	0.010	±	0.0006	0.019	±	0.001
Kobe, HYOGO	33	91.9	0.017	±	0.0008	0.010	±	0.0010
Wakayama, WAKAYAMA	30	86.5	0.008	±	0.0005	0.008	±	0.0009
Tottori, TOTTORI	31	171.8	0.016	±	0.0008	0.020	±	0.001
Matsue, SHIMANE	30	157.9	0.010	±	0.0006	0.014	±	0.001
Okayama, OKAYAMA	30	134.2	0.006	±	0.0005	0.007	±	0.0009
Hiroshima, HIROSHIMA	30	126.9	0.005	±	0.0005	0.007	±	0.001

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )		$^{137}\text{Cs}$ (mCi/km $^2$ )			
Yamaguchi, YAMAGUCHI	31	186.0	0.009	±	0.0006	0.009	±	0.001
Kochi, KOCHI	30	151.0	0.013	±	0.0006	0.011	±	0.001
Dazaifu, FUKUOKA	30	101.5	0.004	±	0.0005	0.004	±	0.0009
Sage, SAGA	30	136.0	0.007	±	0.0005	0.007	±	0.0008
Nagasaki, NAGASAKI	30	297	0.009	±	0.0006	0.014	±	0.001
Kagoshima, KAGOSHIMA	32	211.7	0.007	±	0.0005	0.014	±	0.001
Naha, OKINAWA	31	114.0	0.004	±	0.0005	0.003	±	0.0007
October, 1975								
Sapporo, HOKKAIDO	31	198.5	0.013	±	0.0006	0.030	±	0.0014
Aomori, AOMORI	32	109.5	0.013	±	0.0007	0.021	±	0.0013
Sendai, MIYAGI	30	105.4	0.013	±	0.0007	0.020	±	0.001
Akita, AKITA	31	181.0	0.026	±	0.001	0.045	±	0.002
Yamagata, YAMAGATA	31	78.0	0.006	±	0.0005	0.008	±	0.001
Okuma, FUKUSHIMA	31	97.5	0.010	±	0.0007	0.013	±	0.001
Mito, IBARAKI	31	138.0	0.007	±	0.0005	0.009	±	0.0009
Shinjuku, TOKYO	31	268.4	0.014	±	0.0006	0.023	±	0.0013
Yokohama, KANAGAWA	32	365.5	0.014	±	0.0007	0.016	±	0.0011
Niigata, NIIGATA	31	284.0	0.019	±	0.0008	0.025	±	0.0014
Kanazawa, ISHIKAWA	30	235.5	0.016	±	0.0007	0.034	±	0.0016
Fukui, FUKUI	32	209.5	0.005	±	0.0004	0.045	±	0.0018
Shizuoka, SHIZUOKA	26	273.0	0.009	±	0.0007	0.020	±	0.0020
Nagoya, AICHI	37	243.9	0.011	±	0.0006	0.016	±	0.0011
Kyoto, KYOTO	28	188.6	0.007	±	0.0005	0.007	±	0.0008
Osaka, OSAKA	31	195.0	0.008	±	0.0006	0.013	±	0.0011
Kobe, HYOGO	30	242.9	0.013	±	0.0008	0.014	±	0.0011
Wakayama, WAKAYAMA	31	202.0	0.007	±	0.0005	0.012	±	0.0011
Matsue, SHIMANE	31	182.8	0.016	±	0.0007	0.027	±	0.0014
Okayama, OKAYAMA	31	155.3	0.006	±	0.0005	0.007	±	0.0009
Hiroshima, HIROSHIMA	31	93.45	0.009	±	0.0006	0.010	±	0.001
Yamaguchi, YAMAGUCHI	35	122.0	0.010	±	0.0006	0.014	±	0.0010
Kochi, KOCHI	31	266.3	0.020	±	0.0008	0.026	±	0.0014
Dazaifu, FUKUOKA	31	151.5	0.007	±	0.0005	0.004	±	0.0008
Saga, SAGA	31	174.5	0.006	±	0.0004	0.005	±	0.0009
Nagasaki, NAGASAKI	31	228.0	0.010	±	0.0006	0.013	±	0.0011
Kagoshima, KAGOSHIMA	32	110.5	0.007	±	0.0005	0.012	±	0.0011
Naha, OKINAWA	32	298.5	0.003	±	0.0003	0.008	±	0.0009
November, 1975								
Sapporo, HOKKAIDO	31	179.0	0.010	±	0.0005	0.018	±	0.0012
Aomori, AOMORI	31	94.5	0.012	±	0.0006	0.025	±	0.0013
Sendai, MIYAGI	30	247.5	0.015	±	0.0007	0.024	±	0.0013

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )		$^{137}\text{Cs}$ (mCi/km $^2$ )			
Akita, AKITA	30	176.5	0.018	±	0.0008	0.034	±	0.0016
Yamagata, YAMAGATA	31	96.4	0.008	±	0.0005	0.012	±	0.0010
Okuma, FUKUSHIMA	32	21.8	0.023	±	0.0008	0.033	±	0.0020
Mito, IBARAKI	30	162.5	0.012	±	0.0006	0.017	±	0.0011
Shinjuku, TOKYO	30	242.9	0.016	±	0.0007	0.024	±	0.0013
Yokohama, KANAGAWA	32	265.0	0.014	±	0.0006	0.023	±	0.0013
Niigata, NIIGATA	30	129.5	0.017	±	0.0007	0.029	±	0.0015
Kanazawa, ISHIKAWA	30	182.5	0.025	±	0.0008	0.032	±	0.0016
Fukui, FUKUI	31	125.7	0.014	±	0.0007	0.035	±	0.0016
Shizuoka, SHIZUOKA	28	161.5	0.006	±	0.0005	0.013	±	0.0010
Nagoya, AICHI	26	175.4	0.011	±	0.0006	0.013	±	0.0011
Kyoto, KYOTO	31	60.8	0.006	±	0.0005	0.006	±	0.0008
Osaka, OSAKA	30	66.7	0.006	±	0.0005	0.008	±	0.0010
Kobe, HYOGO	31	93.9	0.006	±	0.0004	0.009	±	0.0009
Wakayama, WAKAYAMA	30	58.0	0.004	±	0.0004	0.005	±	0.0007
Matsue, SHIMANE	30	143.4	0.018	±	0.0008	0.030	±	0.0016
Okayama, OKAYAMA	30	99.7	0.007	±	0.0004	0.005	±	0.0001
Hiroshima, HIROSHIMA	30	83.4	0.007	±	0.0005	0.008	±	0.0008
Yamaguchi, YAMAGUCHI	28	111.0	0.008	±	0.0007	0.012	±	0.0011
Kochi, KOCHI	30	275.7	0.021	±	0.0008	0.031	±	0.0016
Dazaifu, FUKUOKA	30	80.8	0.005	±	0.0004	0.006	±	0.0009
Saga, SAGA	31	64.0	0.004	±	0.0004	0.005	±	0.0008
Nagasaki, NAGASAKI	30	123.5	0.007	±	0.0006	0.010	±	0.0009
Kagoshima, KAGOSHIMA	31	85.5	0.007	±	0.0005	0.005	±	0.0008
Naha, OKINAWA	31	40.0	0.006	±	0.0004	0.003	±	0.0007
December, 1975								
Sapporo, HOKKAIDO	36	85.5	0.012	±	0.0006	0.017	±	0.0011
Aomori, AOMORI	37	100.5	0.024	±	0.0008	0.043	±	0.0019
Sendai, MIYAGI	31	10.3	0.006	±	0.0005	0.003	±	0.0006
Akita, AKITA	31	113.5	0.030	±	0.0009	0.059	±	0.0020
Okuma, FUKUSHIMA	36	42.3	0.007	±	0.0005	0.006	±	0.0009
Mito, IBARAKI	37	43.5	0.017	±	0.0007	0.010	±	0.0009
Shinjuku, TOKYO	36	54.0	0.004	±	0.0004	0.007	±	0.0007
Yokohama, KANAGAWA	36	74.5	0.008	±	0.0005	0.009	±	0.0010
Niigata, NIIGATA	36	204.0	0.028	±	0.0009	0.047	±	0.0019
Kanazawa, ISHIKAWA	36	328.5	0.052	±	0.0013	0.068	±	0.0022
Fukui, FUKUI	37	376.7	0.043	±	0.0012	0.090	±	0.0025
Nagoya, AICHI	37	61.6	0.007	±	0.0005	0.007	±	0.0008
Kyoto, KYOTO	37	59.7	0.010	±	0.0005	0.009	±	0.0010
Osaka, OSAKA	30	67.1	0.011	±	0.0006	0.012	±	0.0011
Kobe, HYOGO	37	72.9	0.011	±	0.0007	0.019	±	0.0013

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )		$^{137}\text{Cs}$ (mCi/km $^2$ )			
Wakayama, WAKAYAMA	36	79.5	0.006	±	0.0005	0.013	±	0.0010
Matue, SHIMANE	26	175.2	0.031	±	0.0009	0.050	±	0.0019
Okayama, OKAYAMA	36	42.2	0.005	±	0.0004	0.006	±	0.0008
Hiroshima, HIROSHIMA	31	35.5	0.005	±	0.0004	0.007	±	0.0008
Yamaguchi, YAMAGUCHI	37	47.0	0.014	±	0.0008	0.018	±	0.0014
Kochi, KOCHI	36	66.9	0.013	±	0.0006	0.013	±	0.0011
Dazaifu, FUKUOKA	36	56.1	0.016	±	0.0006	0.023	±	0.0014
Nagasaki, NAGASAKI	35	104.0	0.010	±	0.0007	0.014	±	0.0011
Kagoshima, KAGOSHIMA	33	78.5	0.009	±	0.0005	0.014	±	0.0010
Naha, OKINAWA	32	84.5	0.007	±	0.0005	0.010	±	0.0009
January, 1976								
Sapporo, HOKKAIDO	29	111.0	0.011	±	0.0007	0.019	±	0.0013
Aomori, AOMORI	27	168.5	0.029	±	0.0009	0.058	±	0.0021
Sendai, MIYAGI	31	8.4	0.005	±	0.0005	0.009	±	0.0010
Akita, AKITA	31	128.0	0.020	±	0.0010	0.040	±	0.0019
Yamagata, YAMAGATA	28	47.9	0.013	±	0.0007	0.020	±	0.0015
Okuma, FUKUSHIMA	28	5.2	0.007	±	0.0006	0.009	±	0.0011
Mito, IBARAKI	26	3.0	0.005	±	0.0005	0.003	±	0.0008
Shinjuku, TOKYO	26	0	0.001	±	0.0003	0.001	±	0.0006
Yokohama, KANAGAWA	29	0	0.002	±	0.0004	0.005	±	0.0008
Niigata, NIIGATA	28	192.5	0.043	±	0.0011	0.075	±	0.0023
Kanazawa, ISHIKAWA	28	240.0	0.051	±	0.0013	0.091	±	0.0028
Fukui, FUKUI	28	267.1	0.067	±	0.0015	0.12	±	0.003
Shizuoka, SHIZUOKA	67	71.5	0.007	±	0.0007	0.024	±	0.0010
Nagoya, AICHI	28	0	0.002	±	0.0003	0.006	±	0.0008
Kyoto, KYOTO	27	0.8	0.004	±	0.0003	0.016	±	0.0013
Osaka, OSAKA	32	6.4	0.005	±	0.0004	0.012	±	0.0010
Kobe, HYOGO	28	0.8	0.009	±	0.0005	0.010	±	0.0010
Wakayama, WAKAYAMA	27	3.0	0.003	±	0.0004	0.008	±	0.0009
Matsue, SHIMANE	36	120.6	0.036	±	0.0011	0.071	±	0.0023
Okayama, OKAYAMA	27	19.7	0.003	±	0.0004	0.005	±	0.0008
Hiroshima, HIROSHIMA	31	14.0	0.004	±	0.0004	0.010	±	0.0010
Yamaguchi, YAMAGUCHI	29	23.5	0.008	±	0.0006	0.013	±	0.0011
Kochi, KOCHI	27	1.6	0.006	±	0.0005	0.002	±	0.0006
Dazaifu, FUKUOKA	27	29.0	0.016	±	0.0007	0.026	±	0.0014
Nagasaki, NAGASAKI	28	110.2	0.017	±	0.0007	0.037	±	0.0016
Kagoshima, KAGOSHIMA	32	32.0	0.006	±	0.0005	0.012	±	0.0011
Naha, OKINAWA	32	24.0	0.007	±	0.0005	0.023	±	0.0010

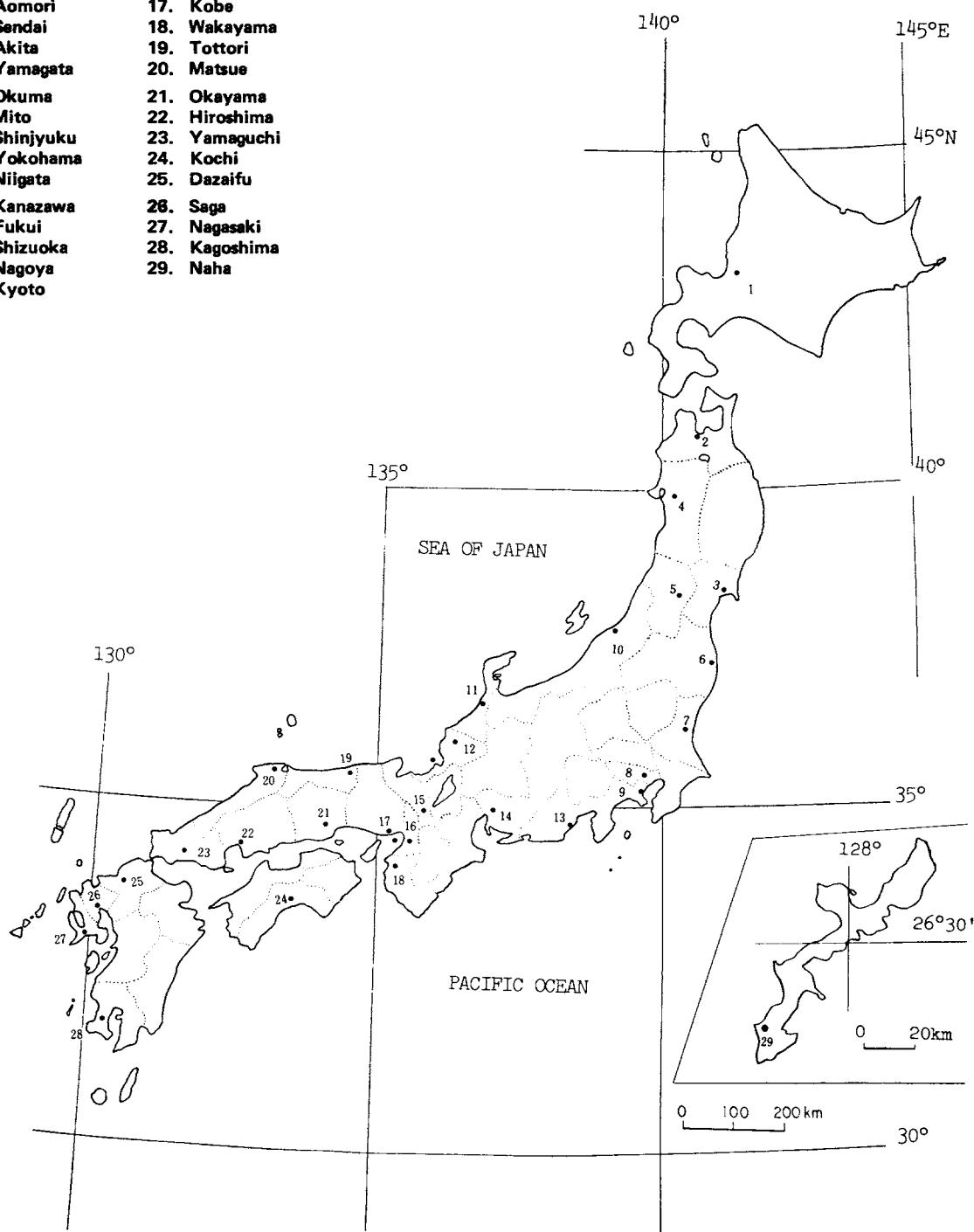
Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km $^2$ )			$^{137}\text{Cs}$ (mCi/km $^2$ )	
<b>February, 1976</b>							
Sapporo, HOKKAIDO	29	58.0	0.018	±	0.0007	0.030	± 0.0014
Aomori, AOMORI	19	71.5	0.021	±	0.0008	0.031	± 0.0015
Sendai, MIYAGI	29	70.4	0.010	±	0.0006	0.018	± 0.0013
Akita, AKITA	29	98.5	0.016	±	0.0008	0.036	± 0.0017
Yamagata, YAMAGATA	28	60.7	0.015	±	0.0007	0.020	± 0.0010
Okuma, FUKUSHIMA	29	81.1	0.011	±	0.0006	0.017	± 0.0012
Mito, IBARAKI	28	118.0	0.009	±	0.0006	0.016	± 0.0010
Shinjuku, TOKYO	28	123.3	0.013	±	0.0007	0.029	± 0.0016
Yokohama, KANAGAWA	28	162.0	0.014	±	0.0007	0.025	± 0.0015
Niigata, NIIGATA	28	192.0	0.032	±	0.0009	0.061	± 0.0022
Kanazawa, ISHIKAWA	28	114.5	0.028	±	0.0009	0.050	± 0.0020
Fukui, FUKUI	28	203.8	0.033	±	0.0010	0.017	± 0.0022
Shizuoka, SHIZUOKA	33	255.0	0.022	±	0.0008	0.039	± 0.0017
Nagoya, AICHI	29	134.5	0.015	±	0.0009	0.024	± 0.0014
Kyoto, KYOTO	30	93.7	0.013	±	0.0006	0.030	± 0.0015
Osaka, OSAKA	29	99.7	0.009	±	0.0005	0.015	± 0.0011
Kobe, HYOGO	31	66.9	0.013	±	0.0006	0.023	± 0.0013
Wakayama, WAKAYAMA	29	85.5	0.012	±	0.0006	0.024	± 0.0014
Matsue, SHIMANE	28	154.5	0.038	±	0.0010	0.076	± 0.0020
Okayama, OKAYAMA	28	86.3	0.012	±	0.0007	0.018	± 0.0012
Hiroshima, HIROSHIMA	31	160.0	0.016	±	0.0007	0.025	± 0.0014
Yamaguchi, YAMAGUCHI	29	217.5	0.031	±	0.0009	0.057	± 0.0020
Kochi, KOCHI	29	319.3	0.036	±	0.0010	0.048	± 0.0018
Dazaifu, FUKUOKA	29	178.5	0.021	±	0.0008	0.040	± 0.0016
Nagasaki, NAGASAKI	28	185.0	0.019	±	0.0010	0.032	± 0.0015
Kagoshima, KAGOSHIMA	25	183.0	0.020	±	0.0008	0.033	± 0.0015
Naha, OKINAWA	30	61.5	0.007	±	0.0005	0.010	± 0.0010
<b>March, 1976</b>							
Sapporo, HOKKAIDO	32	73.0	0.017	±	0.0007	0.029	± 0.0014
Aomori, AOMORI	31	106.0	0.015	±	0.0007	0.036	± 0.0016
Sendai, MIYAGI	31	33.8	0.006	±	0.0005	0.012	± 0.0012
Akita, AKITA	31	85.0	0.015	±	0.0009	0.027	± 0.0015
Yamagata, YAMAGATA	31	26.1	0.007	±	0.0005	0.012	± 0.0010
Okuma, FUKUSHIMA	36	35.4	0.008	±	0.0005	0.011	± 0.0010
Mito, IBARAKI	31	63.0	0.021	±	0.0007	0.029	± 0.0015
Shinjuku, TOKYO	31	77.4	0.023	±	0.0009	0.039	± 0.0017
Yokohama, KANAGAWA	32	132.5	0.022	±	0.0008	0.035	± 0.0016
Niigata, NIIGATA	30	81.0	0.012	±	0.0006	0.023	± 0.0014
Kanazawa, ISHIKAWA	32	174.5	0.017	±	0.0007	0.031	± 0.0020
Fukui, FUKUI	32	161.6	0.018	±	0.0010	0.059	± 0.0024

Location	Duration (days)	Precipitation (mm)	$^{90}\text{Sr}$ (mCi/km <sup>2</sup> )			$^{137}\text{Cs}$ (mCi/km)		
				$\pm$		$\pm$		
Shizuoka, SHIZUOKA	25	240.5	0.018	$\pm$	0.0007	0.035	$\pm$	0.0016
Nagoya, AICHI	36	151.3	0.020	$\pm$	0.0009	0.031	$\pm$	0.0020
Kyoto, KYOTO	32	170.9	0.011	$\pm$	0.0006	0.020	$\pm$	0.0013
Osaka, OSAKA	30	119.1	0.013	$\pm$	0.0007	0.019	$\pm$	0.0012
Kobe, HYOGO	30	88.5	0.020	$\pm$	0.0008	0.034	$\pm$	0.0016
Wakayama, WAKAYAMA	24	47.0	0.006	$\pm$	0.0005	0.010	$\pm$	0.0010
Tottori, TOTTORI	32	103.3	0.030	$\pm$	0.0009	0.042	$\pm$	0.0017
Matsue, SHIMANE	31	97.4	0.021	$\pm$	0.0008	0.042	$\pm$	0.0020
Okayama, OKAYAMA	31	67.6	0.011	$\pm$	0.0007	0.016	$\pm$	0.0010
Hiroshima, HIROSHIMA	31	106.0	0.013	$\pm$	0.0007	0.023	$\pm$	0.0013
Yamaguchi, YAMAGUCHI	30	124.0	0.020	$\pm$	0.0008	0.039	$\pm$	0.0017
Kochi, KOCHI	30	134.6	0.017	$\pm$	0.0007	0.024	$\pm$	0.0013
Dazaifu, FUKUOKA	31	106.5	0.015	$\pm$	0.0006	0.021	$\pm$	0.0012
Saga, SAGA	30	98.5	0.018	$\pm$	0.0007	0.021	$\pm$	0.0013
Nagasaki, NAGASAKI	31	118.5	0.013	$\pm$	0.0006	0.022	$\pm$	0.0013
Kagoshima, KAGOSHIMA	35	192.0	0.008	$\pm$	0.0006	0.012	$\pm$	0.0010
Naha, OKINAWA	32	70.5	0.012	$\pm$	0.0006	0.019	$\pm$	0.0012

Figure 1.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Rain and Dry Fallout

— April, 1975 to March, 1976 —  
(Japan Chemical Analysis Center)

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



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

*(Japan Chemical Analysis Center)*

The levels of strontium-90 and cesium-137 in air-borne dust have been determined by Japan Chemical Analysis Center under the contact with Science and Technology Agency.

Dust samples were collected at 1.0 ~ 1.5m above the ground surface with electrostatic precipitators or on filter papers by each prefectoral public health laboratories and institutes in 9 prefectures, and these samples were forwarded to Japan Chemical Analysis Center after the carbonization.

These samples were asked in an electric muffle furnace at Japan Chemical Analysis Center. The ask

to which both some carriers and hydrochloric acid were added, was destroyed under heating. The solution was dissolved into hydrochloric acid and filtered, after it was added with nitric acid and heated to dryness. The filtrate was analysed for strontium-90 and cesium-137 using the method recommended by Science and Technology Agency.\*

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

\* : See the appendix. (P. 43 )

**Table 2.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Air-Borne Dust**  
**- Apr., 1975 to Mar., 1976 -**  
*(Japan Chemical Analysis Center)*  
*(Continued from Table 2, No. 40 of this publication)*

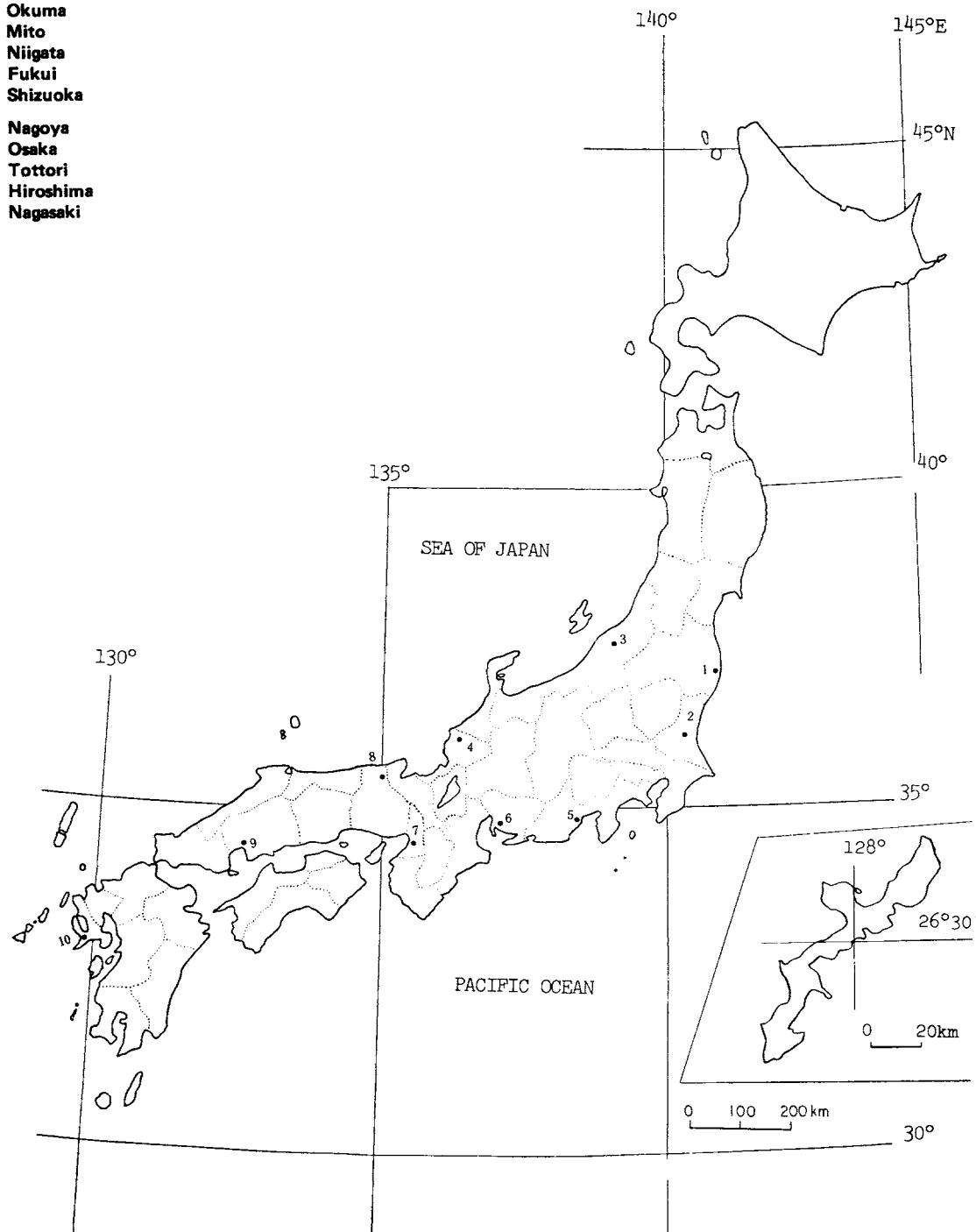
Location	Sampling period	Absorption volume ( $\text{m}^3$ )	$^{90}\text{Sr}$			$^{137}\text{Cs}$		
			( $10^{-3}$ pCi/m $^3$ )			( $10^{-3}$ pCi/m $^3$ )		
Okuma, FUKUSHIMA	05-06/75	13169	1.0	±	0.04	1.7	±	0.06
Mito, IBARAKI	04-06/75	11232	0.30	±	0.03	0.26	±	0.03
Niigata, NIIGATA	04-06/75	13000	0.29	±	0.02	0.93	±	0.05
Fukui, FUKUI	04-06/75	15850	0.36	±	0.02	0.68	±	0.03
Shizuoka, SHIZUOKA	06/75	10020	0.57	±	0.03	1.1	±	0.06
Nagoya, AICHI	05-06/75	17583	1.6	±	0.04	2.6	±	0.06
Osaka, OSAKA	04-06/75	7776	0.92	±	0.05	1.5	±	0.07
Tottori, TOTTORI	04-06/75	5698.5	1.6	±	0.07	2.8	±	0.11
Hiroshima, HIROSHIMA	04-06/75	10200	1.3	±	0.05	1.9	±	0.07
Nagasaki, NAGASAKI	04-06/75	7100	1.6	±	0.07	2.9	±	0.1
Okuma, FUKUSHIMA	07-09/75	10682	0.21	±	0.02	0.38	±	0.04
Mito, IBARAKI	07-09/75	12096	0.04	±	0.02	0.10	±	0.03
Niigata, NIIGATA	07-09/75	13000	0.08	±	0.02	0.22	±	0.03
Fukui, FUKUI	07-09/75	8300	0.36	±	0.03	0.60	±	0.05
Shizuoka, SHIZUOKA	09/75	10054.2	0.13	±	0.02	0.16	±	0.03
Nagoya, AICHI	07-09/75	17429	0.27	±	0.02	0.44	±	0.03
Osaka, OSAKA	07-09/75	11016	0.32	±	0.03	0.47	±	0.04
Tottori, TOTTORI	07-09/75	6347.4	0.27	±	0.03	0.51	±	0.06

Location	Sampling period	Absorption volume (m <sup>3</sup> )	90Sr			137Cs		
			(10 <sup>-3</sup> pCi/m <sup>3</sup> )			(10 <sup>-3</sup> pCi/m <sup>3</sup> )		
Hiroshima, HIROSHIMA	07-09/75	10800	0.10	±	0.02	0.16	±	0.03
Nagasaki, NAGASAKI	07-09/75	7800	0.3	±	0.03	0.4	±	0.04
Okuma, FUKUSHIMA	10-12/75	17172	0.14	±	0.02	0.23	±	0.02
Mito, IBARAKI	10-12/75	9504	0.1	±	0.02	0.1	±	0.02
Niigata, NIIGATA	10-12/75	12000	0.1	±	0.01	0.2	±	0.03
Fukui, FUKUI	10-12/75	6588	0.3	±	0.03	0.6	±	0.05
Shizuoka, SHIZUOKA	11-12/75	11880	0.1	±	0.02	0.2	±	0.03
Nagoya, AICHI	10-12/75	39511	0.2	±	0.01	0.3	±	0.01
Osaka, OSAKA	10-12/75	7776	0.2	±	0.02	0.3	±	0.04
Tottori, TOTTORI	10-12/75	7053.3	0.3	±	0.03	0.5	±	0.05
Hiroshima, HIROSHIMA	10-12/75	10800	0.1	±	0.02	0.3	±	0.03
Nagasaki, NAGASAKI	10-12/75	6600	0.2	±	0.03	0.4	±	0.05
Okuma, FUKUSHIMA	01-03/76	12251	0.1	±	0.02	0.2	±	0.03
Mito, IBARAKI	01-03/76	17208	0.1	±	0.01	0.1	±	0.02
Niigata, NIIGATA	01-03/76	12000	0.1	±	0.02	0.2	±	0.02
Fukui, FUKUI	01-03/76	12214	0.4	±	0.02	0.8	±	0.04
Shizuoka, SHIZUOKA	03/76	10644	0.2	±	0.02	0.4	±	0.03
Nagoya, AICHI	01-03/76	31279	0.3	±	0.01	0.7	±	0.02
Osaka, OSAKA	01-03/76	8424	0.2	±	0.02	0.6	±	0.05
Tottori, TOTTORI	01-03/76	12291	0.5	±	0.02	0.9	±	0.04
Hiroshima, SHIROSHIMA	01-03/76	10800	0.1	±	0.01	0.1	±	0.02
Nagasaki, NAGASAKI	01-03/76	7350	0.5	±	0.03	1.0	±	0.06

Figure 2.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Air-Borne Dust

— April, 1975 to March, 1976 —  
(Japan Chemical Analysis Center)

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



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

*(Japan Chemical Analysis Center)*

Japan Chemical Analysis Center has analysed the contents of strontium-90 and cesium-137 in service water collected from 29 prefectures in Japan under the commission by Science and Technology Agency.

The service water was divided into following two categories, namely, (1) the source water obtained from the intake of each station of waterworks using the water collector, and (2) the tap water obtained from the cock of each house of building. One hundred liters of sample water were filtrated with large filter papers after addition and mixture of both some carriers. The filtration was then applied on a column filled the sodium cation exchange resin, and all the cations were absorbed in it. These resin and filter papers were col-

lected at Japan Chemical Analysis Center.

At Japan Chemical Analysis Center, the cations containing strontium-90 and cesium-137 absorbed on the resin were eluted with the addition of 3N-hydrochloric acid, and eluted solution and filter papers were asked. Then, the ask was treated with hydrochloric acid, and it was eluted with hydrochloric acid and water and filtered. The filtrate was radiochemically analysed for strontium-90 and cesium-137 using the method recommended by Science and Technology Agency.\*

Results obtained are shown in Table 3. Sampling locations of service water are shown in Figure 3.

\* : See the appendix (P. 43).

**Table 3.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Service Water**  
**- January 1975 to February 1976 -**  
*(Japan Chemical Analysis Center)*  
*(Continued from Table 2, No. 41 of this publication)*

Location	Source	Type	pH	$^{90}\text{Sr}$ (pci/l)	$^{137}\text{Cs}$ (pci/l)	Note
June, 1975						
Sapporo, HOKKAIDO	Water Purification Station	S.W.	7.1	0.12 ± 0.004	0.023 ± 0.005	
Aomori, AOMORI	"	T.W.	6.7	0.09 ± 0.004	0.030 ± 0.004	
Yamagata, YAMAGATA	Institute of Public Health	T.W.	6.85	0.13 ± 0.005	0.021 ± 0.005	
Kanamachi, TOKYO	Water Purification Station	S.W.	6.8	0.14 ± 0.005	0.026 ± 0.004	
Kanamachi, TOKYO	"	T.W.	6.8	0.13 ± 0.004	0.009 ± 0.003	
Yokohama, KANAGAWA	Water Purification Station	S.W.	7.8	0.040 ± 0.003	0.007 ± 0.004	
Niigata, NIIGATA	"	T.W.	7.39	0.24 ± 0.006	0.022 ± 0.004	
Kanazawa, ISHIKAWA	Institute of Public Health	T.W.	6.6	0.21 ± 0.006	0.017 ± 0.004	
Fukui, FUKUI	"	T.W.	7.0	0.01 ± 0.002	0.005 ± 0.003	
Nagoya, AICHI	"	T.W.	6.8	0.12 ± 0.005	0.016 ± 0.003	
Nagoya, AICHI	Water Purification Station	S.W.	7.0	0.10 ± 0.005	0.023 ± 0.005	
Higashiyama, KYOTO	Institute of Public Health	T.W.	7.1	0.45 ± 0.008	0.022 ± 0.004	
Higashiyama, KYOTO	Water Purification Station	S.W.	7.44	0.10 ± 0.004	0.032 ± 0.005	
Kobe, HYOGO	"	T.W.	7.1	0.22 ± 0.006	0.020 ± 0.004	
Tottori, TOTTORI	Institute of Public Health	T.W.	6.4	0.088 ± 0.003	0.001 ± 0.003	
Okayama, OKAYAMA	"	T.W.	7.2	0.03 ± 0.003	0.000 ± 0.002	
Ube, YAMAGUCHI	"	T.W.	7.0	0.19 ± 0.006	0.004 ± 0.003	

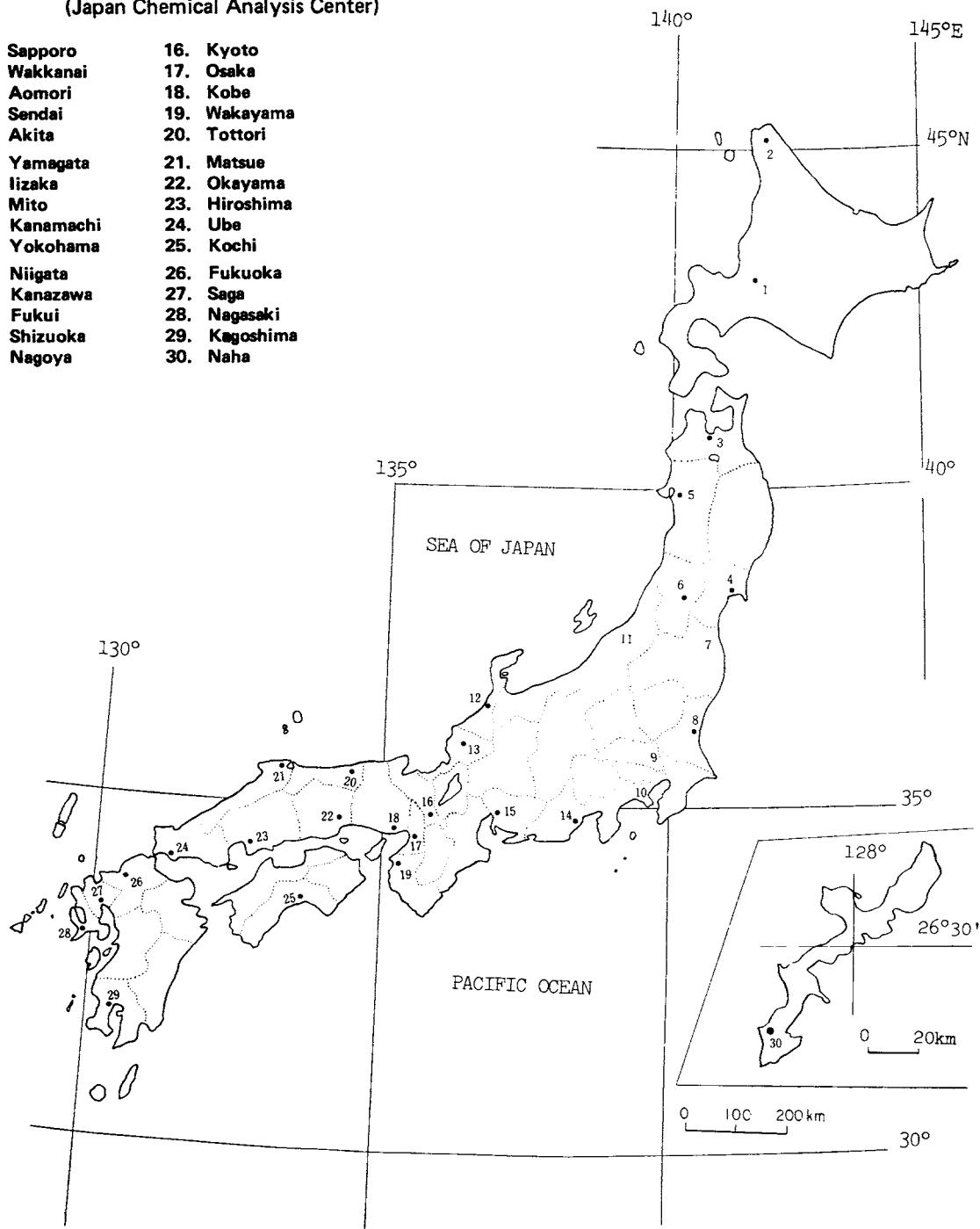
Location	Source	Type	pH	$^{90}\text{Sr}$ (pci/l)	$^{137}\text{Cs}$ (pci/l)	Note
Kochi, KOCHI	"	T.W.	7.0	0.090 ± 0.004	0.009 ± 0.003	
Fukuoka, FUKUOKA	Water Purification Station	S.W.	6.8	0.12 ± 0.005	0.014 ± 0.004	
Fukuoka, FUKUOKA	"	T.W.	7.3	0.10 ± 0.004	0.026 ± 0.004	
Saga, SAGA	Institute of Public Health	T.W.	7.19	0.11 ± 0.004	0.010 ± 0.003	
July, 1975						
Wakkanai, HOKKAIDO	"	T.W.	6.7	0.37 ± 0.009	0.019 ± 0.005	
Akita, AKITA	"	T.W.	6.7	0.31 ± 0.007	0.022 ± 0.004	
Mito, IBARAKI	"	T.W.	7.1	0.091 ± 0.004	0.018 ± 0.004	
Yokohama, KANAGAWA	"	T.W.	6.9	0.052 ± 0.003	0.008 ± 0.003	
Shizuoka, SHIZUOKA	"	T.W.	6.85	0.02 ± 0.002	0.001 ± 0.002	
Osaka, OSAKA	Water Purification Station	T.W.	6.6	0.20 ± 0.006	0.020 ± 0.003	
Higashinari-ku, OSAKA	Institute of Public Health	T.W.	6.8	0.22 ± 0.006	0.005 ± 0.003	
Matsue, SHIMANE	"	T.W.	6.56	0.27 ± 0.006	0.022 ± 0.004	
Hiroshima, HIROSHIMA	"	T.W.	7.2	0.11 ± 0.004	0.009 ± 0.003	
August, 1975						
Naha, OKINAWA	Water Purification Station	S.W.	7.5	0.17 ± 0.005	0.01 ± 0.004	
September, 1975						
Sendai, MIYAGI	Institute of Public Health	T.W.	7.6	0.14 ± 0.005	0.003 ± 0.003	
Iizaka, FUKUSHIMA	Water Purification Station	T.W.	6.6	0.15 ± 0.005	0.022 ± 0.005	
Wakayama, WAKAYAMA	Institute of Public Health	T.W.	7.0	0.43 ± 0.008	0.004 ± 0.003	
Nagasaki, NAGASAKI	"	T.W.	7.6	0.14 ± 0.006	0.015 ± 0.003	
October, 1975						
Kagoshima, KAGOSHIMA	"	T.W.	6.8	0.02 ± 0.002	0.004 ± 0.003	
November, 1975						
Kanazawa, ISHIKAWA	"	T.W.	7.4	0.16 ± 0.005	0.01 ± 0.004	
December, 1975						
Sapporo, HOKKAIDO	Water Purification Station	S.W.	7.0	0.10 ± 0.004	0.01 ± 0.003	
Aomori, AOMORI	"	T.W.	7.1	0.06 ± 0.003	0.02 ± 0.005	
Sendai, MIYAGI	Institute of Public Health	T.W.	7.6	0.10 ± 0.004	0.004 ± 0.003	
Yamagata, YAMAGATA	"	T.W.	6.95	0.14 ± 0.004	0.01 ± 0.003	
Kanamachi, TOKYO	Water Purification Station	S.W.	6.8	0.09 ± 0.003	0.01 ± 0.003	
Kanamachi, TOKYO	"	T.W.	6.8	0.09 ± 0.004	0.01 ± 0.005	
Yokohama, KANAGAWA	"	S.W.	8.1	0.02 ± 0.002	0.002 ± 0.003	
Yokohama, KANAGAWA	Institute of Public Health	T.W.	7.0	0.03 ± 0.003	0.000 ± 0.003	
Niigata, NIIGATA	Water Purification Station	T.W.	7.36	0.19 ± 0.005	0.02 ± 0.004	
Shizuoka, SHIZUOKA	Institute of Public Health	T.W.	6.85	0.01 ± 0.002	0.01 ± 0.005	
Nagoya, AICHI	Water Purification Station	S.W.	6.9	0.09 ± 0.004	0.009 ± 0.003	
Nagoya, AICHI	Institute of Public Health	T.W.	6.9	0.09 ± 0.004	0.007 ± 0.003	
Kyoto, KYOTO	Water Purification Station	S.W.	7.68	0.31 ± 0.007	0.02 ± 0.004	
Kyoto, KYOTO	Institute of Public Health	T.W.	7.2	0.30 ± 0.006	0.01 ± 0.003	

Location	Source	Type	pH	$^{90}\text{Sr}$ (pci/l)	$^{137}\text{Cs}$ (pci/l)	Note
Osaka, OSAKA	Water Purification Station	S.W.	6.9	0.24 ± 0.006	0.02 ± 0.004	
Osaka, OSAKA	Institute of Public Health	T.W.	6.9	0.16 ± 0.005	0.00 ± 0.003	
Tottori, TOTTORI	"	T.W.	6.4	0.07 ± 0.003	0.005 ± 0.003	
Matsue, SHIMANE	"	T.W.	7.01	0.14 ± 0.004	0.01 ± 0.004	
Okayama, OKAYAMA	"	T.W.	6.5	0.04 ± 0.002	0.002 ± 0.003	
Hiroshima, HIROSHIMA	"	T.W.	6.2	0.14 ± 0.005	0.003 ± 0.003	
Ube, YAMAGUCHI	"	T.W.	6.5	0.10 ± 0.004	0.001 ± 0.003	
Kochi, KOCHI	"	T.W.	7.0	0.07 ± 0.004	0.01 ± 0.003	
Fukuoka, FUKUOKA	Water Purification Station	S.W.	6.8	0.10 ± 0.004	0.01 ± 0.003	
Fukuoka, FUKUOKA	"	T.W.	6.8	0.09 ± 0.004	0.04 ± 0.004	
Saga, SAGA	Institute of Public Health	T.W.	7.55	0.07 ± 0.003	0.00 ± 0.003	
Nagasaki, NAGASAKI	"	T.W.	7.5	0.08 ± 0.004	0.008 ± 0.003	
Naha, OKINAWA	Water Purification Station	S.W.	7.9	0.11 ± 0.004	0.01 ± 0.003	
<b>January, 1976</b>						
Wakkanai, HOKKAIDO	Institute of Public Health	T.W.	6.8	0.44 ± 0.008	0.03 ± 0.004	
Fukushima, FUKUSHIMA	Water Purification Station	T.W.		0.13 ± 0.005	0.004 ± 0.003	
Mito, IBARAKI	Institute of Public Health	T.W.	7.0	0.05 ± 0.003	0.01 ± 0.003	
Kobe, HYOGO	"	T.W.	7.6		0.01 ± 0.003	
<b>February, 1976</b>						
Akita, AKITA	"	T.W.	6.8	0.17 ± 0.005	0.01 ± 0.003	
Fukui, FUKUI	"	T.W.	7.0	0.02 ± 0.002	0.00 ± 0.003	
Wakayama, WAKAYAMA	"	T.W.	7.5	0.09 ± 0.004	0.001 ± 0.003	
Kagoshima, KAGOSHIMA	"	T.W.	7.35	0.01 ± 0.002	0.003 ± 0.003	

Type S.W. : Source Water  
 T.W. : Treated Water

**Figure 3.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Service Water**  
**— January 1975 to February 1976 —**  
**(Japan Chemical Analysis Center)**

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



# Dietary Data

## (1) Strontium-90 and Cesium-137 in Total Diet.

(Japan Chemical Analysis Center)

Under the commission of Science and Technology Agency, Japan Chemical Analysis Center has analysed total diet samples collected from 30 prefectures (2 times per year), and determined the content of strontium-90 and cesium-137 in these samples.

Each Prefectural public health laboratories and institutes have collected all the daily regular diet consumed for five persons, namely three meals and other eating between meals, for radiochemical analysis in polyethylene containers. These samples were collected to Japan Chemical Analysis Center after carbonization without smoke rising in the large stainless dish.

At Japan Chemical Analysis Center, these samples were ashed in an electric muffle furnace. And the ash to which both some carriers and hydrochloric acid were added, was destroyed under heating. The nuclides were dissolved into hydrochloric acid and filtrated, after it was added with nitric acid and heated to dryness. The filtrates was analysed for strontium-90 and cesium-137 using the method recommended by Science and Technology Agency.\*

Results obtained and the sampling locations are shown in Table 4 and Figure 4, respectively.

\* : See the appendix (P. 43 )

**Table 4.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Total Diet**  
**- June, 1975 to March, 1976 -**  
*(Japan Chemical Analysis Center)*  
*(Continued from Table 3, No.41 of this publication)*

Location	Ash	Ca	K	$^{90}\text{Sr}$		$^{137}\text{Cs}$	
	(g/p/d)	(mg/p/d)	(mg/p/d)	(PCi/p/d)	(PCi/gCa)	(PCi/p/d)	(PCi/gK)
June, 1975							
Sapporo, HOKKAIDO	12.1	336	1,800	4.4 ± 0.32	13 ± 0.9	6.1 ± 0.52	3.4 ± 0.29
Aomori, AOMORI	19.7	540	2,520	13 ± 0.7	24 ± 1.2	9.9 ± 0.86	3.9 ± 0.34
Sendai, MIYAGI	19.0	435	2,320	3.6 ± 0.39	8.0 ± 0.89	5.3 ± 0.69	2.3 ± 0.30
Akita, AKITA	14.3	526	2,030	6.8 ± 0.43	13 ± 0.8	16 ± 0.9	7.9 ± 0.46
Yamagata, YAMAGATA	21.4	563	2,800	10 ± 0.6	18 ± 1.1	6.4 ± 0.83	2.3 ± 0.30
Fukushima, FUKUSHIMA	14.9	389	1,850	2.6 ± 0.33	7.0 ± 0.86	15 ± 0.8	8.1 ± 0.41
Meguro-ku, TOKYO	15.4	276	1,850	3.0 ± 0.35	11 ± 1.3	6.5 ± 0.57	3.5 ± 0.31
Hiratsuka, KANAGAWA	16.9	531	2,040	4.2 ± 0.52	8.0 ± 0.98	10 ± 0.9	4.9 ± 0.42
Nishikanbara-gun							
Yoshida-cho, NIIGATA	23.2	559	3,090	7.4 ± 0.63	13 ± 1.1	8.3 ± 0.79	2.7 ± 0.26
Kanazawa, ISHIKAWA	19.2	642	1,700	3.9 ± 0.42	6.1 ± 0.65	9.5 ± 0.84	5.6 ± 0.49
Fukui, FUKUI	17.6	591	1,580	3.8 ± 0.39	6.4 ± 0.70	2.8 ± 0.56	1.7 ± 0.35
Nagoya, AICHI	18.0	464	2,160	3.5 ± 0.37	8.0 ± 0.80	5.4 ± 0.59	2.5 ± 0.27
Neyagawa, OSAKA	18.4	486	2,370	4.7 ± 0.42	10 ± 0.9	5.8 ± 0.69	2.4 ± 0.29
Iwami-qun, TOTTORI	15.9	537	1,760	4.5 ± 0.37	1.3 ± 0.23	3.3 ± 0.61	2.4 ± 0.44
Okayama, OKAYAMA	13.8	360	1,450	3.6 ± 0.34	10 ± 0.9	4.4 ± 0.49	3.0 ± 0.34

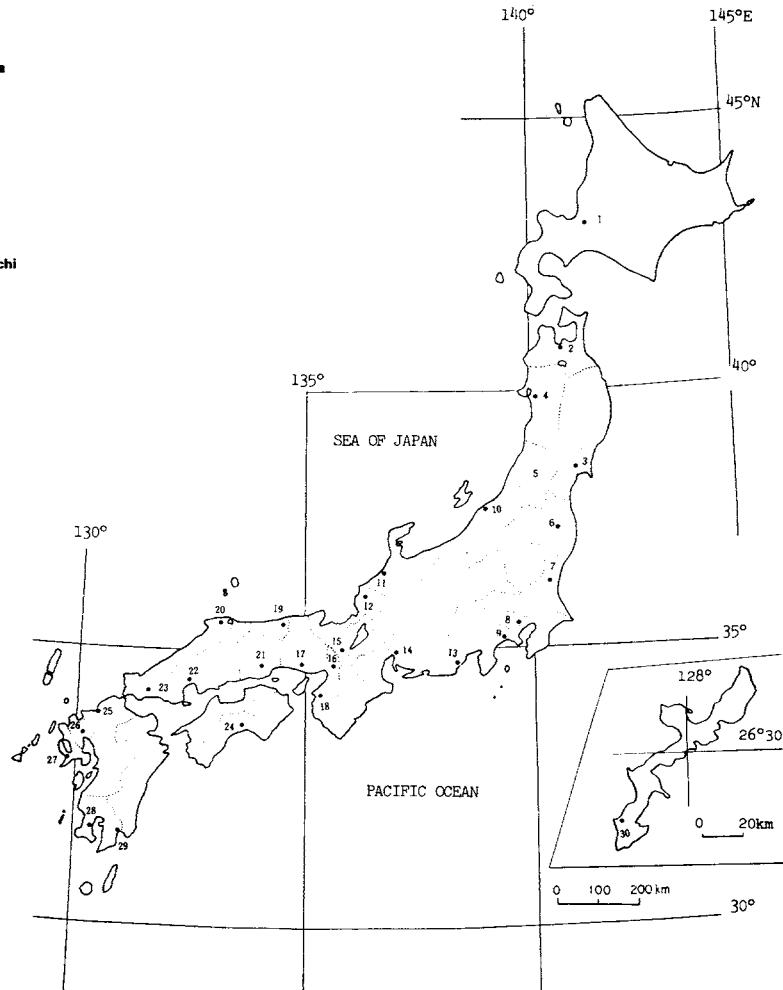
Location	Ash (g/p/d)(g)	Ca (mg/p/d)	K (mg/p/d)	<sup>90</sup> Sr (PCi/p/d)	<sup>90</sup> Sr (PCi/gCa)	<sup>137</sup> Cs (PCi/p/d)	<sup>137</sup> Cs (PCi/gK)
Fukuoka, FUKUOKA	16.2	316	1,880	3.1 ± 0.37	10 ± 1.2	4.9 ± 0.63	2.6 ± 0.34
Saga, SAGA	20.6	620	2,120	4.5 ± 0.44	7.2 ± 0.71	5.7 ± 0.74	2.7 ± 0.35
<b>July, 1975</b>							
Shizuoka, SHIZUOKA	13.3	418	1,850	3.6 ± 0.30	9.0 ± 0.71	7.1 ± 0.53	3.8 ± 0.29
Matsue, SHIMANE	19.6	623	2,330	7.4 ± 0.49	10 ± 0.8	6.3 ± 0.72	2.7 ± 0.31
Hiroshima, HIROSHIMA	18.7	350	1,910	4.1 ± 0.44	12 ± 1.3	3.4 ± 0.59	1.8 ± 0.31
Yamaguchi, YAMAGUCHI	16.8	474	2,080	3.7 ± 0.38	7.8 ± 0.80	5.5 ± 0.58	2.7 ± 0.28
Kochi, KOCHI	13.8	382	1,840	3.4 ± 0.35	9.0 ± 0.92	4.1 ± 0.47	2.2 ± 0.25
Nagasaki, NAGASAKI	13.6	626	1,570	2.6 ± 0.27	4.1 ± 0.43	4.1 ± 0.40	2.6 ± 0.29
Kagoshima, KAGOSHIMA	13.3	443	1,410	3.0 ± 0.30	6.9 ± 0.68	4.4 ± 0.53	3.2 ± 0.38
<b>August, 1975</b>							
Wakayama, WAKAYAMA	23.8	740	2,400	4.6 ± 0.32	6.1 ± 0.43	7.3 ± 0.52	3.0 ± 0.22
<b>September, 1975</b>							
Mito, IBARAKI	18.2	559	1,810	3.3 ± 0.36	5.9 ± 0.64	2.7 ± 0.56	1.5 ± 0.31
Kyoto, KYOTO	17.4	722	2,060	6.2 ± 0.45	8.6 ± 0.70	7.5 ± 0.70	3.7 ± 0.34
<b>October, 1975</b>							
Naha, OKINAWA	16.0	400	1,680	3.5 ± 0.35	8.6 ± 0.88	6.1 ± 0.57	3.7 ± 0.34
<b>November, 1975</b>							
Sapporo, HOKKAIDO	17.7	570	2,520	4.6 ± 0.25	8.0 ± 0.45	6.0 ± 0.39	2.4 ± 0.15
Sendai, MIYAGI	20.2	581	2,050	4.5 ± 0.44	7.8 ± 0.76	6.5 ± 0.71	3.2 ± 0.35
Yamagata, YAMAGATA	24.9	478	2,570	7.3 ± 0.57	15 ± 1.2	15 ± 1.1	5.9 ± 0.44
Fukushima, FUKUSHIMA	13.8	370	2,150	4.9 ± 0.34	13 ± 0.9	9.7 ± 0.62	4.5 ± 0.29
Hiratsuka, KANAGAWA	19.1	552	1,840	4.4 ± 0.43	8.0 ± 0.78	5.2 ± 0.74	2.8 ± 0.40
Nishikanbara-gun Yoshida-cho, NIIGATA	25.5	500	2,700	11 ± 0.6	21 ± 1.3	5.9 ± 0.71	2.2 ± 0.26
Kanazawa, ISHIKAWA	11.7	330	1,130	2.7 ± 0.16	9.1 ± 0.53	4.7 ± 0.27	4.1 ± 0.24
Fukui, FUKUI	21.9	1,311	2,030	7.1 ± 0.59	5.4 ± 0.45	5.4 ± 0.83	2.7 ± 0.41
Shizuoka, SHIZUOKA	14.9	530	1,830	4.4 ± 0.22	8.2 ± 0.42	4.9 ± 0.33	2.7 ± 0.18
Nagoya, AICHI	13.4	360	2,000	4.7 ± 0.20	13 ± 0.6	9.0 ± 0.40	4.5 ± 0.20
Neyagawa, OSAKA	22.3	2,030	2,340	5.1 ± 0.50	2.5 ± 0.25	4.7 ± 0.63	2.0 ± 0.27
Iwami-gun Fukube-mura, TOTTORI	17.8	380	1,880	6.7 ± 0.45	18 ± 1.2	6.5 ± 0.66	3.5 ± 0.35
Matsue, SHIMANE	14.8	686	1,610	4.9 ± 0.37	7.2 ± 0.54	5.2 ± 0.52	3.2 ± 0.32
Okayama, OKAYAMA	15.6	430	1,730	3.6 ± 0.21	8.2 ± 0.48	4.7 ± 0.32	2.7 ± 0.19
Kochi, KOCHI	16.9	661	1,970	5.9 ± 0.43	8.9 ± 0.65	10 ± 0.7	5.2 ± 0.37
Fukuoka, FUKUOKA	14.7	550	2,090	3.7 ± 0.33	6.7 ± 0.60	5.0 ± 0.47	2.4 ± 0.23
Saga, SAGA	20.9	1,570	2,260	4.4 ± 0.28	2.8 ± 0.27	4.8 ± 0.60	2.1 ± 0.26
<b>December, 1975</b>							
Aomori, AOMORI	16.2	580	1,860	4.5 ± 0.37	7.7 ± 0.64	10 ± 0.8	5.6 ± 0.41
Akita, AKITA	17.6	390	1,720	5.1 ± 0.38	13 ± 1.0	5.0 ± 0.55	2.9 ± 0.32
Mito, IBARAKI	17.0	720	1,310	4.0 ± 0.23	5.7 ± 0.32	8.6 ± 0.44	6.5 ± 0.34
Meguro-ku, TOKYO	17.9	540	2,000	4.7 ± 0.41	8.7 ± 0.75	4.6 ± 0.54	2.3 ± 0.27

Location	Ash	Ca	K	$^{90}\text{Sr}$		$^{137}\text{Cs}$	
	(g/p/d)(g)	(mg/p/d)	(mg/p/d)	(PCi/p/d)	(PCi/gCa)	(PCi/p/d)	(PCi/gK)
Kyoto, KYOTO	16.2	720	1,950	5.8 + 0.28	8.1 + 0.39	5.3 + 0.36	2.7 + 0.18
Wakayama, WAKAYAMA	21.1	1,729	1,390	2.3 + 0.39	8.0 + 0.69	4.8 + 0.56	2.7 + 0.32
Hiroshima, HIROSHIMA	15.9	298	1,590	4.8 + 0.48	16 + 1.3	4.9 + 0.52	3.1 + 0.33
Nagasaki, NAGASAKI	13.9	650	1,530	3.9 + 0.33	6.0 + 0.50	3.6 + 0.41	2.4 + 0.27
Soo-gun Shibushi-machi, KAGOSHIMA	16.4	520	2,070	6.4 + 0.44	12 + 0.84	6.8 + 0.57	3.3 + 0.28
<b>January, 1976</b>							
Kakogawa, HYOGO	20.6	821	2,780	8.5 + 0.57	10 + 0.7	5.7 + 0.71	2.0 + 0.26
Yamaguchi, YAMAGUCHI	16.2	600	1,880	3.5 + 0.21	5.9 + 0.35	3.7 + 0.32	2.0 + 0.17
<b>March, 1976</b>							
Naha, OKINAWA	17.8	610	1,730	2.7 + 0.22	4.5 + 0.37	3.2 + 0.31	1.8 + 0.18

Figure 4.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Total Diet

— June, 1975 to March, 1976 —  
(Japan Chemical Analysis Center)

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



## (2) Strontium-90 and Cesium-137 in Milk.

(Japan Chemical Analysis Center)

The milk samples have been collected from 30 prefectures by prefectural public health laboratories and institutes (raw milk : 4 times per year for the report to WHO, and raw and city milk : 2 times per year), and analysed for strontium-90 and cesium-137 content at Japan Chemical Analysis Center.

Collected samples were the raw milk and the city ones for the producing districts and the consuming ones, respectively. Three liters of fresh milk were carbonized in each prefectural public health laboratories and institutes, and then it was asked at Japan Chemical

Analysis Center. The ask to which both some carriers and hydrochloric acid were added, was destroyed under heating. The nuclides was dissolved into hydrochloric acid and filtrated, after it was added with nitric acid and heated to dryness. The filtrate was radiochemically analysed for strontium-90 and cesium-137 using the method recommended by Science and Technology Agency.\*

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

\* : See the appendix (P. 43 ).

**Table 5.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Milk**  
**- May, 1975 to March, 1976 -**  
*(Japan Chemical Analysis Center)*  
*(Continued from Table 5, No.41 of this publication)*

Location	Type	Component			$^{90}\text{Sr}$		$^{137}\text{Cs}$	
		Ash(g/l)	Ca(g/l)	K(g/l)	(PCi/l)	S.U	(PCi/l)	C.U
<b>May, 1975</b>								
Yatsuka-gun, SHIMANE Yakumo-mura	F	7.52	1.16	1.83	2.2 ±0.15	1.9 ±0.13	5.0±0.33	2.7±0.18
Kasuya-gun, FUKUOKA Koga-cho	"	7.28	1.08	1.57	2.0 ±0.16	1.9 ±0.15	4.1±0.29	2.6±0.18
Aira-gun, KAGOSHIMA Kajiki-cho	"	6.40	0.95	1.37	2.4 ±0.18	2.5 ±0.19	6.7±0.34	4.9±0.25
<b>June, 1975</b>								
Sapporo, HOKKAIDO	F	6.98	1.15	1.72	2.5 ±0.17	2.2 ±0.15	10 ±0.4	5.9±0.26
Hachijo-Island, TOKYO	"	7.60	1.26	1.77	4.3 ±0.22	3.4 ±0.17	54 ±1.0	30 ±0.6
Nishikanbara-gun, NIIGATA Nishikawa-cho	"	7.26	1.05	1.78	1.5 ±0.14	1.4 ±0.13	4.3±0.30	2.4±0.17
Katsuyama, FUKUI	"	7.08	1.12	1.50	8.7 ±0.29	7.8 ±0.26	10 ±0.5	6.8±0.31
Toyono-gun, OSAKA Nose-cho	"	7.28	1.11	1.62	1.7 ±0.16	1.6 ±0.14	2.7±0.26	1.7±0.16
Shobara, HIROSHIMA	"	7.39	1.08	1.66	1.9±0.16	1.8±0.15	4.7±0.33	2.9±0.20
Kochi, KOCHI	"	7.45	1.14	1.59	2.4±0.18	2.1±0.16	4.5±0.33	2.8±0.21
Saga-gun, SAGA Yamato-cho	"	7.57	1.13	1.64	0.80±0.12	0.70±0.11	4.5±0.32	2.7±0.20

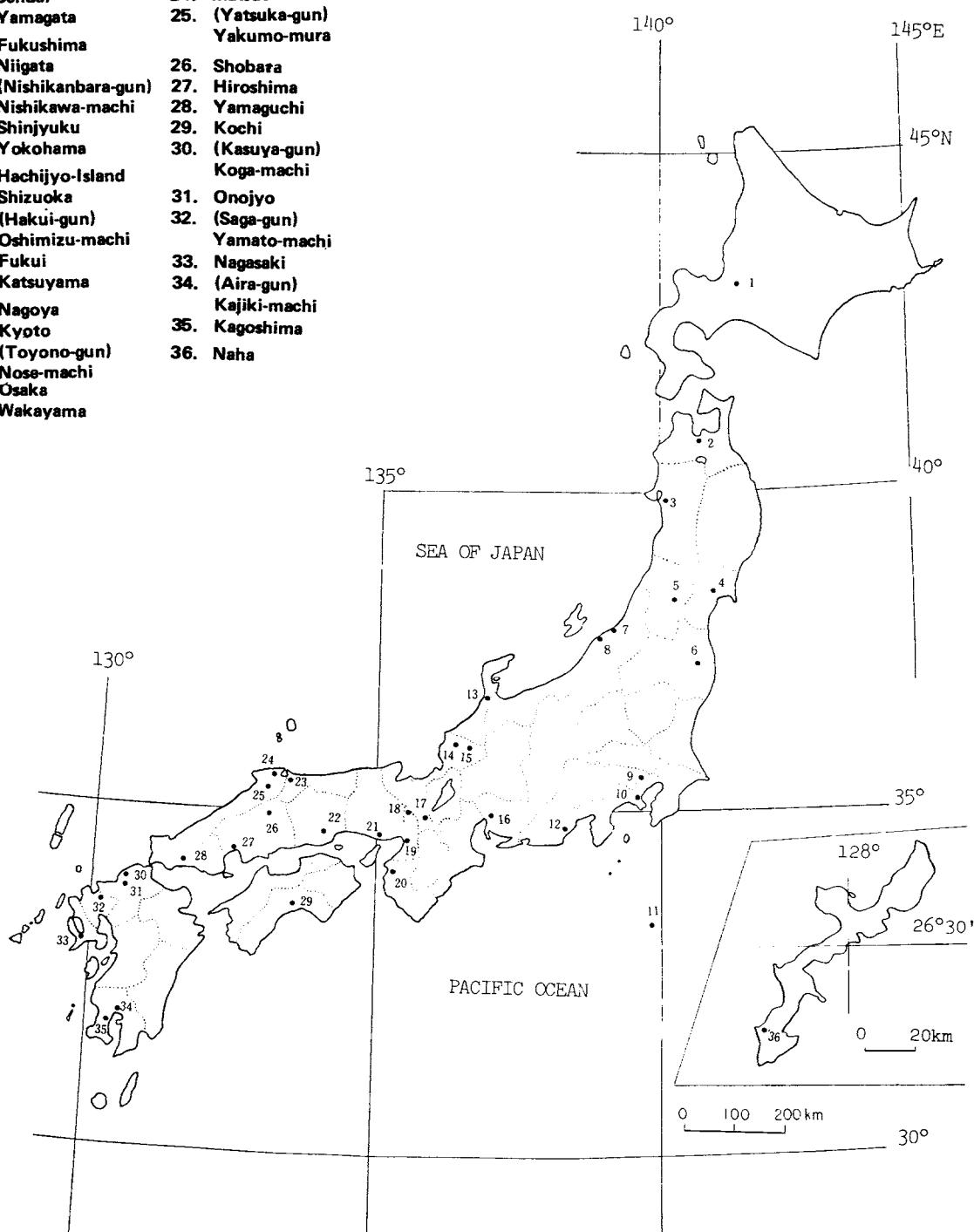
Location	Type	Ash(g/l)	Component Ca(g/l)	K(g/l)	$^{90}\text{Sr}$ (PCi/l)	S.U	$^{137}\text{Cs}$ (PCi/l)	C.U
<b>July, 1975</b>								
Hakui-gun, ISHIKAWA Oshimizu-cho	F	7.50	1.10	1.88	2.0 ±0.17	1.8 ±0.15	5.6±0.35	3.0±0.19
Katsuyama, FUKUI	"	7.64	1.16	1.67	5.5 ±0.25	4.8 ±0.22	9.5±0.43	5.7±0.26
Yatsuka-gun, SHIMANE Yakumo-mura	"	7.24	1.16	1.59	3.3 ±0.19	2.9 ±0.16	4.9±0.32	3.1±0.20
Matsue, SHIMANE	"	7.15	1.07	1.66	2.8 ±0.17	2.6 ±0.16	7.2±0.37	4.3±0.20
<b>August, 1975</b>								
Sapporo, HOKKAIDO	*M.	7.66	1.15	1.75	3.3 ±0.20	2.9 ±0.17	12 ±0.5	6.9±0.27
Sapporo, HOKKAIDO	"	7.00	1.07	1.64	6.3 ±0.26	5.6 ±0.24	19 ±0.6	12 ±0.3
Sendai, MIYAGI	"	7.10	1.07	1.85	2.2 ±0.15	2.1 ±0.14	5.9±0.37	3.2±0.20
Akita, AKITA	"	8.43	1.18	1.99	4.0 ±0.23	3.4 ±0.19	6.7±0.41	3.4±0.21
Yamagata, YAMAGATA	"	7.22	1.11	1.73	2.0 ±0.16	1.8 ±0.14	4.0±0.29	2.3±0.17
Fukushima, FUKUSHIMA	"	7.13	1.14	1.72	2.2 ±0.16	2.0 ±0.14	8.3±0.24	4.8±0.24
Hachijyo-Island, TOKYO	F	6.73	0.97	1.65	4.0 ±0.21	4.1 ±0.22	28 ±0.7	17 ±0.1
Shinjuku, TOKYO	M	5.60	0.80	1.25	1.4 ±0.12	1.8 ±0.15	3.0±0.23	2.4±0.18
Yokohama, KANAGAWA	F	6.78	0.88	1.40	1.1 ±0.13	1.3 ±0.15	4.3±0.29	3.1±0.21
Nishikanbara-gun, NIIGATA	"	7.47	1.11	1.77	2.1 ±0.16	1.9 ±0.14	7.1±0.41	4.0±0.23
Niigata, NIIGATA	M	7.78	1.21	1.23	2.6 ±0.18	2.3 ±0.16	4.2±0.32	2.4±0.18
Fukui, FUKUI	"	7.18	1.07	1.53	2.4 ±0.15	2.2 ±0.14	9.6±0.43	6.3±0.27
Shizuoka, SHIZUOKA	"	8.30	1.01	1.64	3.6 ±0.21	3.6 ±0.21	12 ±0.5	7.3±0.30
Kyoto, KYOTO	F	7.78	1.13	1.74	2.2 ±0.18	2.0 ±0.16	4.3±0.32	2.4±0.16
Toyono-gun, OSAKA	F	7.09	1.10	1.65	1.8 ±0.16	1.6 ±0.15	2.8±0.26	1.7±0.16
Nose-cho								
(Yukijirushi Milk) Osaka, OSAKA	M	7.28	1.10	1.70	2.3 ±0.17	2.1 ±0.15	4.7±0.34	2.8±0.20
Akashi, HYOGO	F	7.31	1.03	1.70	2.3 ±0.14	0.8 ±0.14	2.5±0.27	1.5±0.16
Yonago, TOTTORI	M	7.65	1.07	1.61	3.0 ±0.19	2.8 ±0.18	15 ±0.6	9.4±0.34
Okayama, OKAYAMA	"	7.47	1.20	1.75	2.2 ±0.18	1.9 ±0.15	3.7±0.30	2.1±0.17
Shobara, HIROSHIMA	F	7.04	1.05	1.67	1.4 ±0.14	1.3 ±0.13	2.6±0.29	1.6±0.17
Kochi, KOCHI	M	7.49	1.15	1.63	3.8 ±0.22	3.3 ±0.19	4.1±0.32	2.5±0.20
Kochi, KOCHI	"	6.85	1.02	1.64	1.3 ±0.13	1.3 ±0.13	3.7±0.32	2.3±0.20
Kasuya-gun, FUKUOKA Koga-cho	"	7.44	1.04	1.51	1.7 ±0.16	1.6 ±0.15	4.4±0.31	2.9±0.21
Onojo, FUKUOKA	M	7.02	1.02	1.61	2.0 ±0.16	2.0 ±0.16	4.6±0.31	2.9±0.19
Nagasaki, NAGASAKI	"	7.15	1.05	1.63	1.5 ±0.14	1.4 ±0.13	6.7±0.36	4.1±0.22
<b>September , 1975</b>								
Wakayama, WAKAYAMA	"	7.72	1.40	1.63	1.9 ±0.18	1.4 ±0.13	9.4±0.45	5.8±0.28
Aira-gun, KAGOSHIMA Kajiki-cho	F	7.24	1.06	1.64	2.6 ±0.18	2.5 ±0.17	15 ±0.5	9.1±0.32
<b>October, 1975</b>								
Nagoya, AICHI	M	7.35	1.02	1.43	2.2 ±0.17	2.2 ±0.17	19 ±0.6	13 ±0.4
Saga-gun, SAGA Yamato-cho	F	6.66	0.99	1.34	1.1 ±0.12	1.2 ±0.12	2.1±0.27	1.6±0.20
Kagoshima, KAGOSHIMA	M	7.15	1.00	1.61	3.1 ±0.19	3.1 ±0.19	15 ±0.6	9.3±0.34

Location	Type	Component			$^{90}\text{Sr}$		$^{137}\text{Cs}$	
		Ash(g/1)	Ca(g/1)	K(g/1)	(PCi/1)	S.U	(PCi/1)	C.U
<b>November, 1975</b>								
Sapporo, HOKKAIDO	F	6.92	1.19	1.50	3.8 ±0.19	3.2 ±0.16	9.0±0.42	6.0±0.28
Aomori, AOMORI	M	7.27	1.13	1.53	4.8 ±0.22	4.3 ±0.19	12 ±0.5	7.9±0.32
Hachijyo-Island, TOKYO	F	7.07	1.11	1.55	8.8 ±0.30	7.0 ±0.27	66 ±1.0	42 ±0.7
Nishikanbara-gun, NIIGATA Nishikawa-cho	"	7.14	1.15	1.74	2.0 ±0.16	1.6 ±0.13	2.7±0.28	2.2±0.18
Katsuyama, FUKUI	"	7.30	1.04	1.69	3.3 ±0.19	3.2 ±0.18	4.5±0.31	2.7±0.18
Toyono-gun, OSAKA	"	7.39	1.14	1.54	1.9 ±0.16	1.7 ±0.14	2.7±0.26	1.8±0.17
Yatsuka-gun, SHIMANE Yagamo-cho	M	6.36	0.95	1.34	2.1 ±0.15	2.2 ±0.16	3.4±0.30	2.5±0.22
Matsue, SHIMANE	F	7.53	1.20	1.57	1.7 ±0.19	2.6 ±0.16	12 ±0.5	7.4±0.30
Shobara, HIROSHIMA	M	7.23	1.07	1.49	1.9 ±0.15	1.7 ±0.14	3.7±0.28	7.5±0.19
Hiroshima, HIROSHIMA	"	6.91	1.02	1.44	1.9 ±0.15	1.9 ±0.15	3.0±0.26	2.1±0.18
Kochi, KOCHI	F	7.65	1.19	1.57	2.3 ±0.17	2.0 ±0.14	2.6±0.26	1.7±0.17
Kasuya-gun, FUKUOKA Koga-cho	"	7.64	1.03	1.38	1.6 ±0.15	1.6 ±0.15	3.0±0.27	2.2±0.20
Aira-gun, KAGOSHIMA Kajiki-cho	"	7.03	1.04	1.43	2.6 ±0.17	2.5 ±0.16	8.4±0.38	5.8±0.28
<b>January, 1976</b>								
Sapporo, HOKKAIDO	M	7.48	1.28	1.52	3.2 ±0.19	2.5 ±0.15	9.3±0.48	6.1±0.32
Fukushima, FUKUSHIMA	"	7.65	1.24	1.71	2.2 ±0.17	1.8 ±0.14	5.2±0.34	3.0±0.20
Yokohama, KANAGAWA	M	8.43	1.35	1.85	2.1 ±0.21	1.6 ±0.15	5.7±0.38	3.1±0.21
Kyoto, KYOTO	"	6.86	1.04	1.46	1.8 ±0.14	1.7 ±0.14	2.2±0.25	1.5±0.17
Wakayama, WAKAYAMA	"	7.78	1.07	1.56	1.3 ±0.14	1.2 ±0.13	1.8±0.24	1.2±0.16
Yatsuka-gun, SHIMANE Yagumo-cho	F	6.96	1.15	1.38	1.6 ±0.14	1.4 ±0.12	6.0±0.36	4.3±0.26
Yamaguchi, YAMAGUCHI	M	6.16	0.83	1.26	1.2 ±0.12	1.4 ±0.14	3.3±0.25	2.6±0.20
Kagoshima, KAGOSHIMA	"	7.08	1.17	1.56	2.7 ±0.18	2.3 ±0.15	9.9±0.45	6.3±0.29
<b>February, 1976</b>								
Sapporo, HOKKAIDO	"	7.18	1.16	1.65	4.8 ±0.23	4.2 ±0.20	12 ±0.5	7.5±0.29
Aomori, AOMORI	"	6.95	1.10	1.64	2.8 ±0.18	2.6 ±0.17	8.2±0.56	5.0±0.34
Akita, AKITA	F	7.76	1.20	1.64	4.3 ±0.23	3.6 ±0.19	4.9±0.36	3.0±0.22
Yamagata, YAMAGATA	M	7.37	1.17	1.68	1.4 ±0.14	1.2 ±0.12	4.5±0.32	2.7±0.19
Hachijyo-Island, TOKYO	F	7.42	1.16	1.69	6.2 ±0.26	5.3 ±0.22	43 ±0.9	25 ±0.5
Shinjuku, TOKYO	M	7.02	1.05	1.57	1.8 ±0.15	1.7 ±0.14	3.8±0.29	2.4±0.19
Nishikanbara-gun, NIIGATA Nishikawa-cho	F	7.17	1.05	1.79	1.4 ±0.14	1.3 ±0.14	5.1±0.33	2.8±0.19
Niigata, NIIGATA	M	7.85	1.18	1.75	2.7 ±0.19	2.3 ±0.16	5.5±0.36	3.1±0.20
Hakui-gun, ISHIKAWA Oshimizu-cho	F	8.27	1.141	1.80	2.7 ±0.19	1.9 ±0.14	8.6±0.44	4.8±0.24
Katsuyama, FUKUI	"	7.12	1.24	1.50	2.6 ±0.17	2.1 ±0.14	6.7±0.36	4.5±0.24
Fukui, FUKUI	M	6.89	1.08	1.46	1.9 ±0.14	1.8 ±0.13	6.0±0.37	4.1±0.25
Shizuoka, SHIZUOKA	"	9.74	1.58	2.11	4.0 ±0.25	2.6 ±0.16	6.6±0.44	3.1±0.21
Nagoya, AICHI	"	7.52	1.17	1.71	1.6 ±0.15	1.3 ±0.12	2.3±0.26	1.3±0.15

Location	Type	Component			<sup>90</sup> Sr		<sup>137</sup> Cs	
		Ash(g/1)	Ca(g/1)	K(g/1)	(PCi/1)	S.U	(PCi/1)	C.U
Toyono-gun, OSAKA Nose-cho	F	7.05	1.08	1.46	1.8 ±0.14	1.7 ±0.13	2.4±0.26	1.7±0.18
Osaka, OSAKA	M	7.29	1.10	1.58	2.2 ±0.16	2.0 ±0.14	3.3±0.29	2.1±0.19
Yanago, TOTTORI	"	7.44	1.11	1.58	2.7 ±0.18	2.4 ±0.16	12 ±0.5	7.3±0.30
Okayama, OKAYAMA	"	7.00	1.14	1.52	2.0 ±0.16	1.8 ±0.14	4.3±0.31	2.8±0.20
Shobara, HIROSHIMA	F	6.88	1.08	1.56	2.0 ±0.16	1.8 ±0.15	2.7±0.26	1.7±0.17
Hiroshima, HIROSHIMA	M	7.04	1.07	1.56	1.9 ±0.16	1.8 ±0.15	3.2±0.26	2.0±0.17
Kochi, KOCHI	F	7.56	1.25	1.59	3.9 ±0.20	3.1 ±0.16	2.3±0.24	1.4±0.15
Kochi, KOCHI	M	6.78	1.15	1.47	2.3 ±0.16	2.0 ±0.14	2.7±0.27	1.8±0.18
Kasuya-gun, FUKUOKA Koga-cho	F	7.47	1.23	1.46	2.4 ±0.18	1.9 ±0.14	4.2±0.34	2.9±0.23
Onojo, FUKUOKA	M	7.03	1.12	1.61	2.1 ±0.16	1.9 ±0.14	6.5±0.37	4.0±0.23
Nagasaki, NAGASAKI	F	6.67	1.05	1.49	1.3 ±0.13	1.2 ±0.12	3.0±0.27	2.0±0.18
Aira-gun, KAGOSHIMA Kajiki-cho	"	7.14	1.17	1.61	16 ±0.4	13 ±0.4	11 ±0.5	7.0±0.29
Naha, OKINAWA	M	7.66	1.29	1.66	3.5 ±0.21	2.7 ±0.16	5.1±0.33	3.1±0.20
March, 1976								
Sendai, MIYAGI	M	7.12	1.13	1.66	1.9 ±0.15	1.7 ±0.14	5.2±0.37	3.1±0.22
Akashi, HYOGO	F	7.89	1.04	1.26	1.1 ±0.14	1.0 ±0.14	2.1±0.27	1.7±0.21
Yamaguchi, YAMAGUCHI	M	7.12	1.07	1.59	1.4 ±0.14	1.3±0.13	2.4±0.24	1.5±0.15
Naha, OKINAWA	"	8.12	1.38	1.65	3.4 ±0.22	2.5 ±0.16	7.3±0.40	4.4±0.24

Figure 5.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Milk  
— May, 1975 to March, 1976 —

- |  |                                  |
|--|----------------------------------|
| 1. Sapporo                               | 21. Akashi                       |
| 2. Aomori                                | 22. Okayama                      |
| 3. Akita                                 | 23. Yonago                       |
| 4. Sendai                                | 24. Matsue                       |
| 5. Yamagata                              | 25. (Yatsuka-gun)<br>Yakumo-mura |
| 6. Fukushima                             | 26. Shobara                      |
| 7. Niigata                               | 27. Hiroshima                    |
| 8. (Nishikanbara-gun)<br>Nishikawa-machi | 28. Yamaguchi                    |
| 9. Shinjyuku                             | 29. Kochi                        |
| 10. Yokohama                             | 30. (Kasuya-gun)<br>Koga-machi   |
| 11. Hachijyo-Island                      | 31. Onojo                        |
| 12. Shizuoka                             | 32. (Saga-gun)<br>Yamato-machi   |
| 13. (Hakui-gun)<br>Oshimizu-machi        | 33. Nagasaki                     |
| 14. Fukui                                | 34. (Aira-gun)<br>Kajiki-machi   |
| 15. Katsuyama                            | 35. Kagoshima                    |
| 16. Nagoya                               | 36. Naha                         |
| 17. Kyoto                                |                                  |
| 18. (Toyono-gun)<br>Nose-machi           |                                  |
| 19. Osaka                                |                                  |
| 20. Wakayama                             |                                  |



**(3) Strontium-90 and Cesium-137 in Powdered Milk.**

*(Japan Chemical Analysis Center)*

Japan Chemical Analysis Center has analysed the strontium-90 and cesium-137 content in powdered milk. The samples were purchased on the open market in Tokyo from the powdered milk producers. The analysis of Strontium-90 and Cesium-137 content was

carried out using the method recommended by Science and Technology Agency.\*

Results obtained are shown in Table 6.

\* : See the appendix (P. 43 ).

**Table 6.  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  in Powdered Milk**

*(Japan Chemical Analysis Center)*

*(Continued from Table 6, No.41 of this publication)*

Name of Producer	Date	Ash (g)	Component (%by weight)			$^{90}\text{Sr}$		$^{137}\text{Cs}$	
			Ash (%)	Ca (%)	K (%)	(pci/kg)	S.V	(pCi/kg)	C.V
MORINAGA	Nov. 18, 1975	20	2.38	0.30	0.56	20 ±0.6	6.7±0.19	150±2	28 ±0.4
WAKODO	"	20	2.57	0.31	0.57	8.7±0.39	2.8±0.13	20±1.0	3.6±0.17
YUKIJIRUSHI	"	10	2.06	0.24	0.43	19 ±0.8	8.0±0.33	92±2.4	21 ±0.6
MORINAGA*	"	30	7.00	1.04	1.57	32 ±1.1	3.1±0.11	83±2.2	5.3±0.14
MEIJI	Dec. 2, 1975	30	3.00	0.45	0.63	25 ±0.6	5.5±0.13	160±2	25 ±0.4
MEIJI*	"	30	8.17	1.26	1.72	72 ±1.7	5.7±0.14	220±5	13 ±0.3
MORINAGA	Feb. 3, 1976	20	2.34	0.32	0.53	20 ±0.6	6.4±0.17	190±2	35 ±0.5
YUKIJIRUSHI	"	20	2.21	0.28	0.46	18 ±0.5	6.3±0.18	170±2	37 ±0.5
WAKODO	"	20	2.61	0.33	0.61	7.4±0.37	2.0±0.10	26±1.0	4.3±0.16
MEIJI	"	20	2.92	0.37	0.61	21 ±0.6	4.4±0.13	170±3	28 ±0.4
MEIJI*	Feb. 5, 1976	50	8.28	1.38	1.81	22 ±0.7	1.6±0.05	41±1.4	2.3±0.08
MORINAGA*	Feb. 6, 1976	50	8.26	1.32	1.78	31 ±0.8	2.3±0.06	61±1.6	3.4±0.09

\* : skim milk

# Data of the 21st Nuclear Explosion Test of the People's Republic of China.

The news of Kyodo-Reuter said that on 17 November 1976 the Energy Research and Development Administration (ERDA), U.S.A., announced for the 21st nuclear explosion test of the People's Republic of China as follows:

Date of test : 17 November, 1976 (3:00 PM Japanese Time).

Scale of test : about 4 megatons

Place of test : the upper atmospheric level over the Lop Nor district, the western region of China.

## (1) Gross Beta-Radioactivity in Upper Air

*(Japan Defence Agency)*

Concerning this test, Research and Development H.Q., Japan Defence Agency, has collected the dust samples in upper atmosphere of the northern, middle, and western regions of Japan during the period from

The radioactivity surveillance was carried out for the period from 18 November 1976 to 25 November 1976. From the results of the surveillance, a few effects of this nuclear explosion test were detected in the radioactivity measurement of rain, dry fallout, and air-borne dust.

The results of radioactivity surveillance were described in the following articles.

November 19 to November 24, 1976, and has measured the gross beta-radioactivity of these samples.

Results obtained are shown in Table 7. And the sampling areas and flight course are shown in Figure 6.

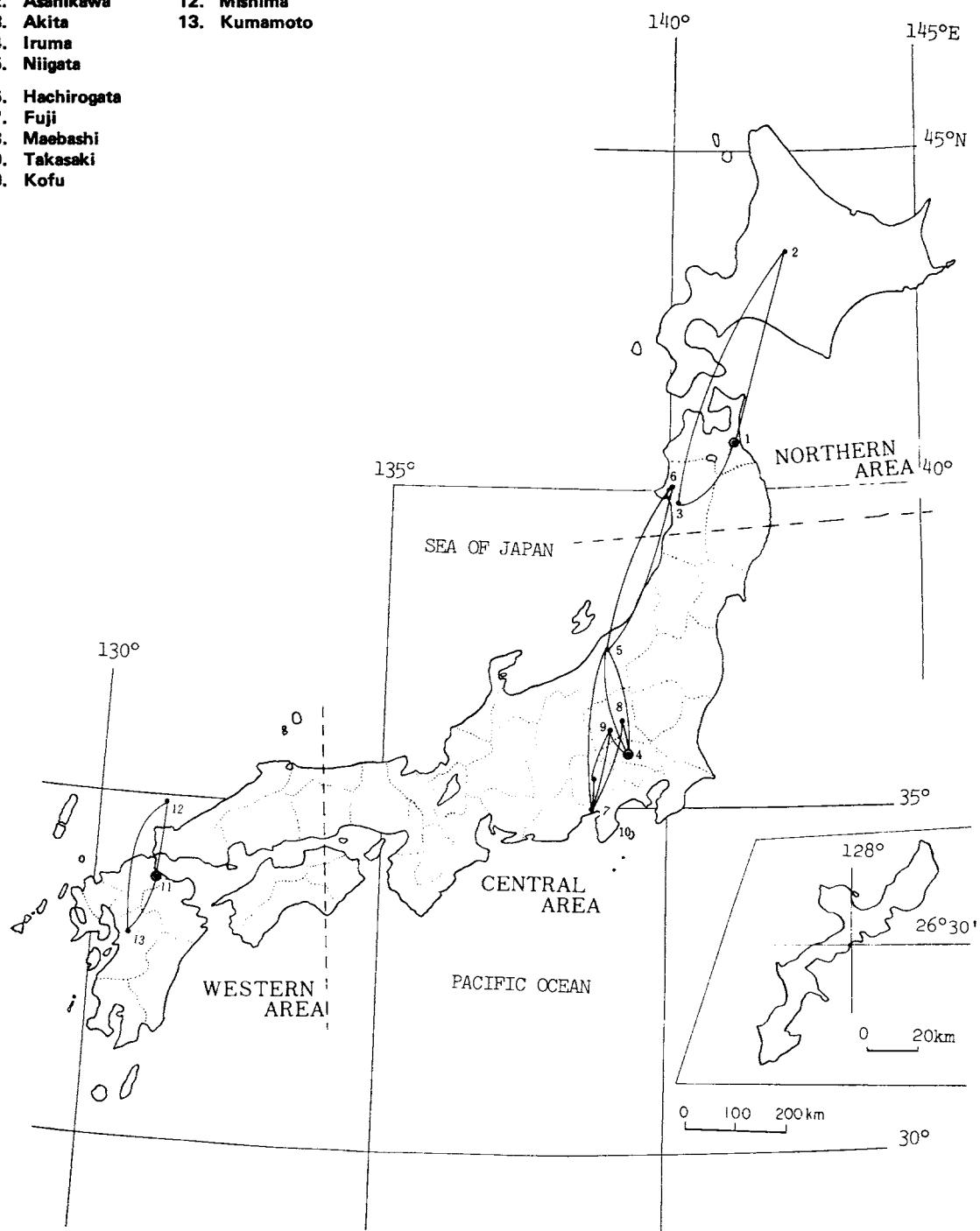
Table 7. Gross Beta-Radioactivity in Upper Air  
*(Japan Defence Agency)*

(pCi/m<sup>3</sup>)

Area	Take-Off		Flight Course	Altitude (m)	Activity (pCi/m <sup>3</sup> )
	Date	Time			
Northern Area (Misawa)	Nov. 19th	08:20–09:57	Misawa–Asahikawa–Akita–Misawa	11,400	1.34±0.03
Central Area (Iruma)	Nov. 19th	08:40–10:05	Iruma–Niigata–Hachirogata–Niigata–Iruma	7,500	0.15±0.01
	Nov. 19th	15:40–16:45	Iruma–Niigata–Hachirogata–Niigata–Iruma	7,500	0.36±0.01
	Nov. 21st	09:35–11:00	Iruma–Niigata–Fuji–Maebashi–Iruma	7,500	0.19±0.01
	Nov. 22nd	09:28–10:40	Iruma–Niigata–Fuji–Takasaki–Iruma	7,500	0.32±0.01
	Nov. 24th	09:30–10:40	Iruma–Niigata–Fuji–Kofu–Takasaki–Iruma	7,500	0.63±0.02
Western Area (Tsuiki)	Nov. 19th	15:42–16:52	Tsuiki–Mishima–Kumamoto–Tsuiki	6,000	0.24±0.01

**Figure 6. Gross Beta-Radioactivity in Upper Air  
(Japan Defence Agency)**

- |                |              |
|----------------|--------------|
| 1. Misawa      | 11. Tsuiki   |
| 2. Asahikawa   | 12. Mishima  |
| 3. Akita       | 13. Kumamoto |
| 4. Iruma       |              |
| 5. Niigata     |              |
| 6. Hachirogata |              |
| 7. Fuji        |              |
| 8. Maebashi    |              |
| 9. Takasaki    |              |
| 10. Kofu       |              |



**(2) Gross Beta-Radioactivity in Surface Air at the Monitoring Posts.**

*(Japan Meteorological Agency)  
(Prefectural Public Health Laboratories and Institutes.)*

Gross beta-radioactivity in surface air was measured in two monitoring posts of Japan Meteorological Agency, and 19 prefectural monitoring ones. However,

activity measured showed the same value as normal.

Results obtained and the locations of monitoring posts are shown in Table 8 and Figure 7, respectively.

**Table 8. Counting Rate Obtained with the Monitoring Posts**

*(Japan Meteorological Agency)  
(Prefectural Institutes and Laboratories)*

Station	Nov. 17~Nov. 25		Normal State	
	Highest Value	Lowest Value	Highest Value	Lowest Value
Asahikawa	21.0	12.0	27.0	8.0
Wajima	30.0	13.0	25.0	12.0
Sapporo, HOKKAIDO	12.0	9.9	29.0	7.0
Aomori, AOMORI	11.6	9.0	28.2	5.0
Akita, AKITA	22.5	14.0	29.0	9.0
Yamagata, YAMAGATA	14.3	11.8	18.7	10.0
Sendai, MIYAGI	14.7	11.3	24.8	8.2
Okuma, FUKUSHIMA	14.5	13.3	20.8	11.3
Niigata, NIIGATA	25.2	20.8	37.3	18.8
Fukui, FUKUI	23.0	16.5	24.5	11.0
Kanazawa, ISHIKAWA	25.4	15.0	28.9	11.0
Shizuoka, SHIZUOKA	21.1	18.1	28.5	15.0
Osaka, OSAKA	18.0	14.0	17.5	11.4
Tottori, TOTTORI	23.9	18.5	35.8	13.0
Matsue, SHIMANE	24.1	14.8	39.7	13.0
Yamaguchi, YAMAGUCHI	31.0	21.0	43.5	17.0
Kochi, KOCHI	16.4	9.4	14.4	8.1
Dazaifu, FUKUOKA	20.0	16.8	28.0	13.5
Saga, SAGA	21.7	13.2	24.2	10.4
Kagoshima, KAGOSHIMA	16.0	15.0	21.5	13.0
Naha, OKINAWA	14.2	10.8	12.0	10.0

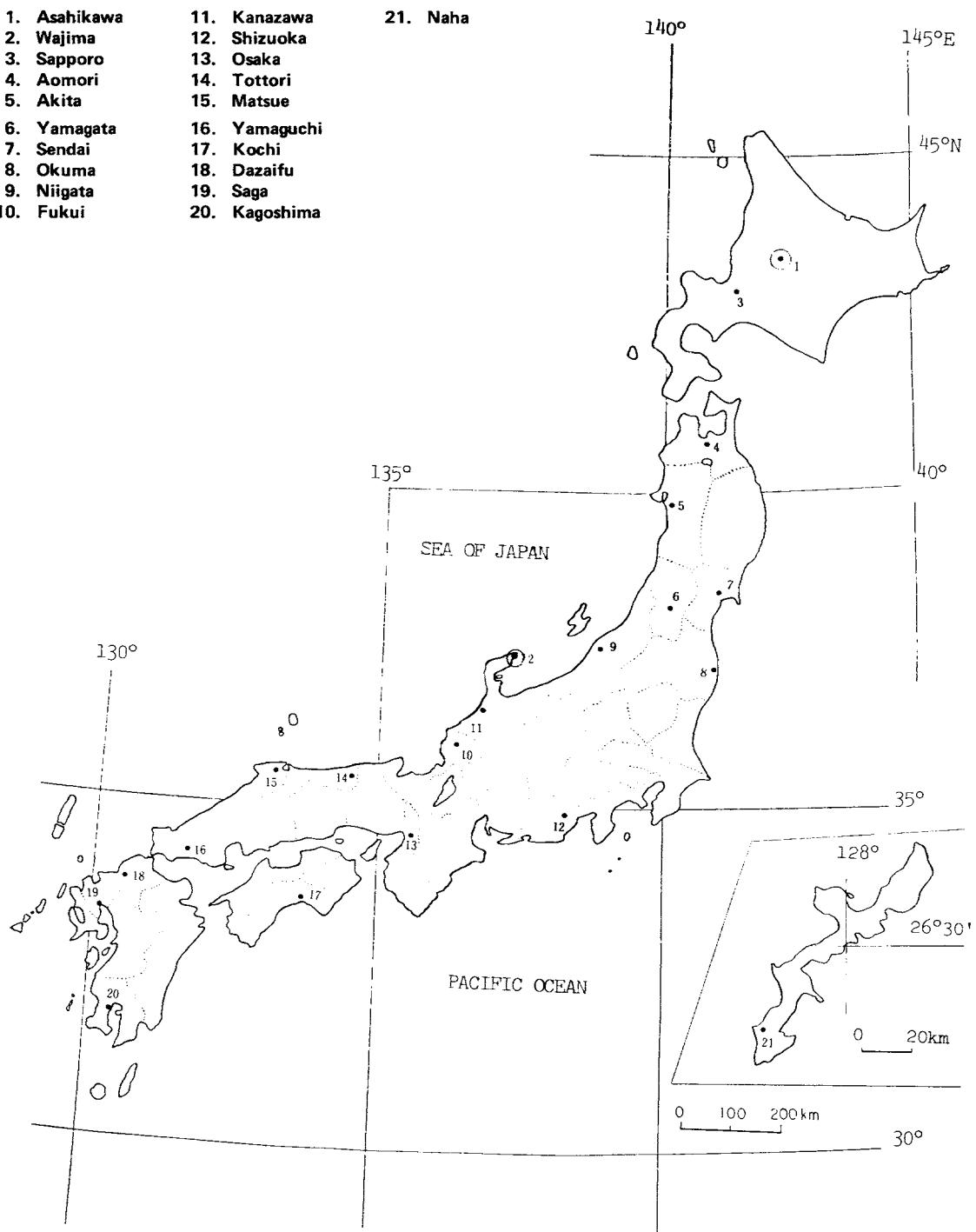
Figure 7. Counting Rate Obtained with the

Monitoring Posts

○ (Japan Meteorological Agency)

• (Prefectural Institutes and Laboratories)

- |              |               |          |
|--------------|---------------|----------|
| 1. Asahikawa | 11. Kanazawa  | 21. Naha |
| 2. Wajima    | 12. Shizuoka  |          |
| 3. Sapporo   | 13. Osaka     |          |
| 4. Aomori    | 14. Tottori   |          |
| 5. Akita     | 15. Matsue    |          |
| 6. Yamagata  | 16. Yamaguchi |          |
| 7. Sendai    | 17. Kochi     |          |
| 8. Okuma     | 18. Dazaifu   |          |
| 9. Niigata   | 19. Saga      |          |
| 10. Fukui    | 20. Kagoshima |          |



**(3) Gross Beta-Radioactivity in Rain and Dry Fallout.**

*(Japan Meteorological Agency)  
(Prefectural Public Health Laboratories  
and Institutes.)*

Gross beta-radioactivity in rain and dry fallout samples was measured by Japan Meteorological Agency (13 locations,) and 30 prefectural public health laboratories and institutes. A relatively high radioactivity was detected in the samples collected from Ishikawa, Hiroshima, and Tottori Prefectures, whereas the same

value as normal was observed in the samples collected from other localities.

Results obtained by Japan Meteorological Agency and 30 prefectural public health laboratories and institutes are shown in Tables 9 and 10, respectively.

And Figures 8 and 9 show the sampling locations in Japan.

**Table 9. Gross Beta-Radioactivity in Rain and Dry Fallout**

*(Japan Meteorological Agency)*

Upper row : Concentration (PCi/cm<sup>3</sup>)  
(Lower row) : Deposition (mCi/km<sup>2</sup>)

Station \ Date	Nov. 18-19	19-20	10-21	21-22	22-23	23-24	24-25
Wakkai	0.0 (0.0)		0.0 (0.0)	0.0 (0.0)		0.0 (0.0)	0.0 (0.0)
Sapporo	0.0 (0.0)		0.2 (0.3)				
Kushiro	0.0 (0.0)		0.0 (0.0)		0.3 (1.0)		
Sendai			0.0 (0.0)				
Akita	0.0 (0.0)		0.1 (2.0)		0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Tokyo			0.1 (0.7)				
Wajima	0.0 (0.0)		0.1 (3.0)	0.4 (1.2)	0.1 (4.0)	0.0 (0.0)	0.1 (0.8)
Osaka			0.1 (0.2)				
Yonago	0.1 (2.0)		0.1 (0.6)	0.0 (0.0)	0.1 (0.2)	0.0 (0.0)	0.1 (0.3)
Murotomisaki			0.0 (0.0)				

Date Station	Nov. 18-19	19-20	10-21	21-22	22-23	23-24	24-25
Fukuoka						0.1 (0.2)	
Kagoshima	0.2 (3.3)				0.1 (0.4)	0.0 (0.0)	
Hachijyo Island		0.0 (0.0)	0.0 (0.0)			0.1 (0.9)	0.0 (0.0)

- Notes : 1) Daily rain and dry fallout samples were continuously collected during the period from 9:00 A.M. to the next 9:00 A.M.
- 2) In the ordinary condition, concentration and deposition of radioactive nuclides in rain and dry fallout samples were the values less than 1 pCi/cm<sup>3</sup> and 2~3 mCi/km<sup>2</sup>, respectively.

**Table 10. Gross Beta-Radioactivity in Rain and Dry Fallout  
(Prefectural Institutes and Laboratories)**

Upper row : Concentration (pCi/cm<sup>3</sup>)  
(Lower row): Deposition (mCi/km<sup>2</sup>)

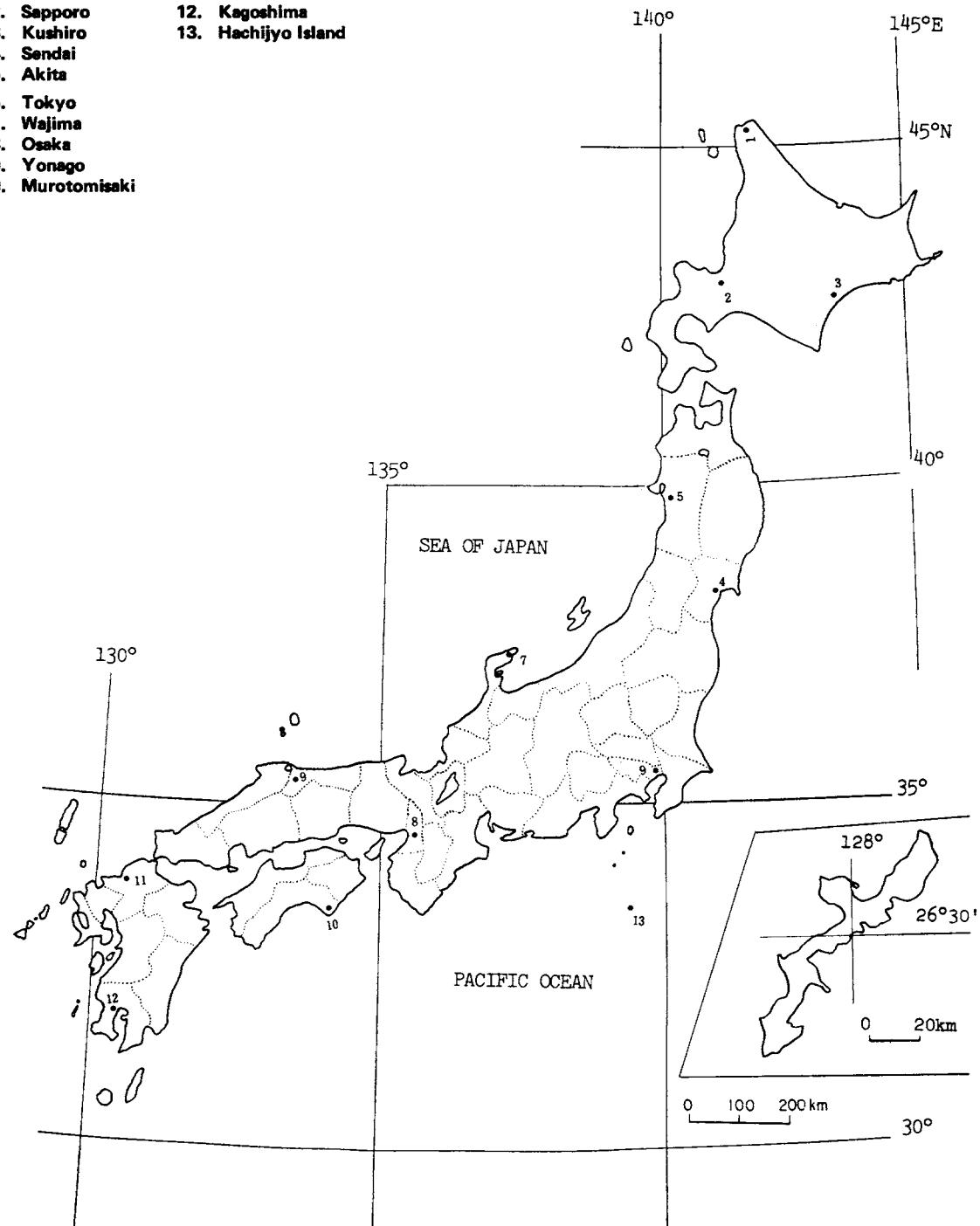
Station	Date	Nov.(1976)	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Sapporo, HOKKAIDO		D	ND						0.19 (-)	0.29 (-)
Aomori, AOMORI		ND			0.07 (0.20)		0.03 (0.09)	0.10 (0.51)	0.10 (0.07)	0.15
Akita, AKITA			0.03 (0.15)		0.06 (1.30)		0.05 (1.40)	0.03 (0.50)	0.03 (0.13)	0.02
Yamagata, YAMAGATA		0.04 (-)			0.05 (0.10)			0.02 (0.06)		
Sendai, MIYAGI				0.01 (0.01)						
Okuma, FUKUSHIMA						0.02 (0.15)				
Mito, IBARAKI		— (0.1)		ND	0.03 (0.10)	0.1 (-)	ND	ND		
Omiya, SAITAMA							— (0.69)			
Shinjuku, TOKYO		0.02 (0.40)			0.02 (0.27)					
Yokohama, KANAGAWA				0.06 (0.20)	0.06 (0.10)			0.20 (0.28)		
Niigata, NIIGATA			0.01 (0.10)		0.11 (0.26)	0.18 (0.70)	0.13 (0.28)	0.02 (0.18)	0.02 (0.69)	0.07
Kanazawa, ISHIKAWA		0.05 (0.85)	0.04 (0.90)		0.11 (5.50)		0.22 (2.10)	0.09 (4.4)	0.09 (0.40)	0.28
Fukui, FUKUI		0.03 (0.65)	0.09 (0.56)		0.15 (2.65)			0.07 (1.61)		

Station	Date	Nov.(1976)							
		17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Shizuoka, SHIZUOKA		0.07 (-)	0.01 (0.06)						
Nagoya, AICHI				(0.04) 0.27	(0.01) -	(0.02) -		(0.06) -	
Kyoto, KYOTO				(0.19) 0.14	(0.02) (-)		(0.08) -		
Osaka, OSAKA									
Kobe, HYOGO			- (0.04)	0.36 (0.22)				(0.30) -	
Wakayama, WAKAYAMA		0.04 (1.17)		0.19 (1.30)					
Tottori, TOTTORI			0.03 (0.16)	0.12 (1.60)	0.12 (1.00)			0.06 (0.39)	
Matsue, SHIMANE		0.01 (0.15)			0.02 (-)			0.08 (0.60)	
Okayama, OKAYAMA			- (0.03)						
Hiroshima, HIROSHIMA						0.47 (-)			
Yamaguchi, YAMAGUCHI		0.02 (0.91)				0.10 (0.22)			
Kochi, KOCHI		0.05 (6.87)		0.11 (0.24)					
Dazaifu, FUKUOKA					0.79 (-)			- (0.38)	
Saga, SAGA		0.01 (0.46)		0.50 (0.31)		0.19 (1.06)			
Nagasaki, NAGASAKI		- (0.06)		0.08 (0.26)			0.03 (0.04)		
Kagoshima, KAGOSHIMA		0.07 (0.71)		0.06 (0.06)		0.05 (0.28)			
Naha, OKINAWA					0.04 (0.59)	0.04 (0.16)			

Note : In the ordinary conditions, concentration and deposition of radioactivity nuclides in rain and dry fallout samples were the values less than 1 pCi/cm<sup>2</sup> and 2~3mCi/km<sup>3</sup>, respectively.

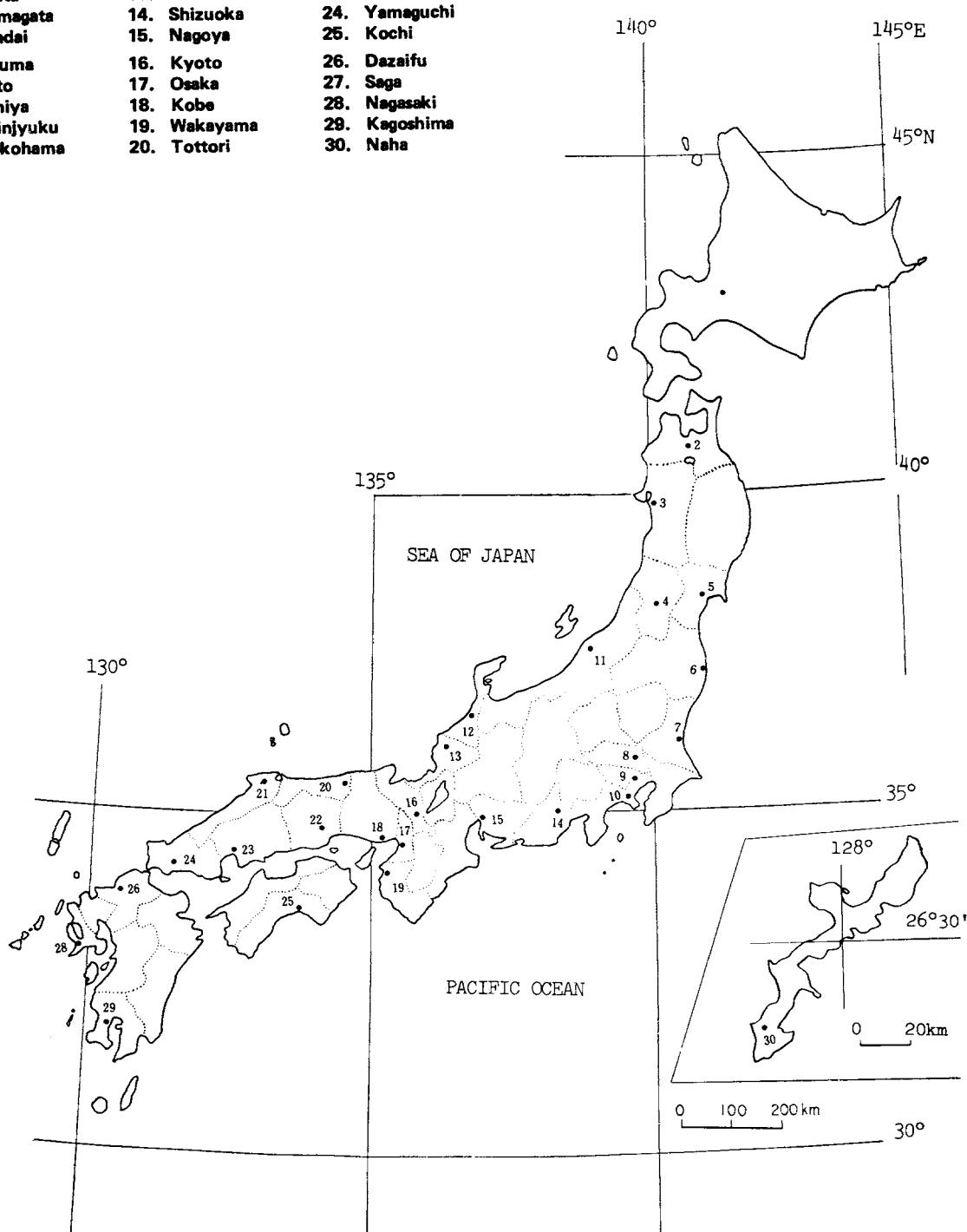
**Figure 8. Gross Beta-Radioactivity in Rain and Dry Fallout  
(Japan Meteorological Agency)**

- |                  |                     |
|------------------|---------------------|
| 1. Wakkanai      | 11. Fukuoka         |
| 2. Sapporo       | 12. Kagoshima       |
| 3. Kushiro       | 13. Hachijyo Island |
| 4. Sendai        |                     |
| 5. Akita         |                     |
| 6. Tokyo         |                     |
| 7. Wajima        |                     |
| 8. Osaka         |                     |
| 9. Yonago        |                     |
| 10. Murotomisaki |                     |



**Figure 9. Gross Beta-Radioactivity in Rain and Dry Fallout  
(Prefectural Institutes and Laboratories)**

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



#### (4) Gross Beta-Radioactivity in Air-Borne Dust.

*(Japan Meteorological Agency)  
(Prefectural Public Health Laboratories and  
Institutes)  
(National Institute of Radiological Sciences)*

Gross beta-radioactivity in dust samples was measured by Japan Meteorological Agency(5 locations), 13 prefectural public health laboratories and institutes, and National Institute of Radiological Sciences. A relatively high radioactivity was detected in Hiroshima. However, the radioactivity of the samples collected

from other districts showed the range of normal levels.

Tables 11, 12, and 13 show the results obtained by Japan Meteorological Agency, 13 prefectural public health laboratories and institutes, and National Institute of Radiological Sciences, respectively. And, Figures 10, 11, show the sampling locations in Japan.

**Table 11. Gross Beta-Radioactivity in Airborne Dust**  
*(Japan Meteorological Agency)*

Station	Date	(pCi/m)						
		Nov.(1976)	19th	20th	21st	22nd	23th	24th
Sapporo		0.2	0.3	0.3	0.1	0.2	0.1	0.2
Sendai		0.3	0.7	0.2	0.2	0.5	0.1	0.5
Tokyo		0.1	0.1	0.1	0.3	0.3	0.2	0.3
Osaka		0.3	1.3	0.1	0.6	1.4	0.6	0.8
Fukuoka		0.7	0.5	0.1	0.3	0.1	0.1	0.5

Note : The figures were obtained 20 hours after the completion of collecting operation, which is from 09:00 to 14:00 (about 5 hours) every day.

**Table 12. Gross Beta-Radioactivity in Airborne Dust  
(Prefectural Institutes and Laboratories)**

(pCi/m<sup>3</sup>)

Station	Date	Nov.(1976)					
		18-19	19-20	20-21	21-22	22-23	23-24
Niigata, NIIGATA		0.32	2.22	0.75	1.53		0.19
Okuma, FUKUSHIMA		0.20					0.41
Mito, IBARAKI		0.20	0.23	0.13	0.10	0.30	0.30
Shizuoka, SHIZUOKA		0.20	0.09	0.20	0.20	0.17	0.12
Yokohama, KANAGAWA					0.20		0.31
Nagoya, AICHI		0.66		1.36	2.44	2.40	2.74
Osaka, OSAKA			0.62	2.53	0.42	1.17	0.61
Fukui, FUKUI		0.88	1.54	0.47	0.72	0.50	
Hiroshima, HIROSHIMA			3.50	1.85	4.18	2.10	0.11
Dazaifu, FUKUOKA		4.3		1.38	1.55	1.62	1.39
Saga, SAGA			0.85				
Nagasaki, NAGASAKI		0.31	1.62	0.67	0.32		0.10
Naha, OKINAWA		0.16	0.16	0.07		0.02	0.19

**Table 13. Gross Beta-Radioactivity in Airborne Dust  
(National Institute of Radiological Sciences)**

(pCi/m)

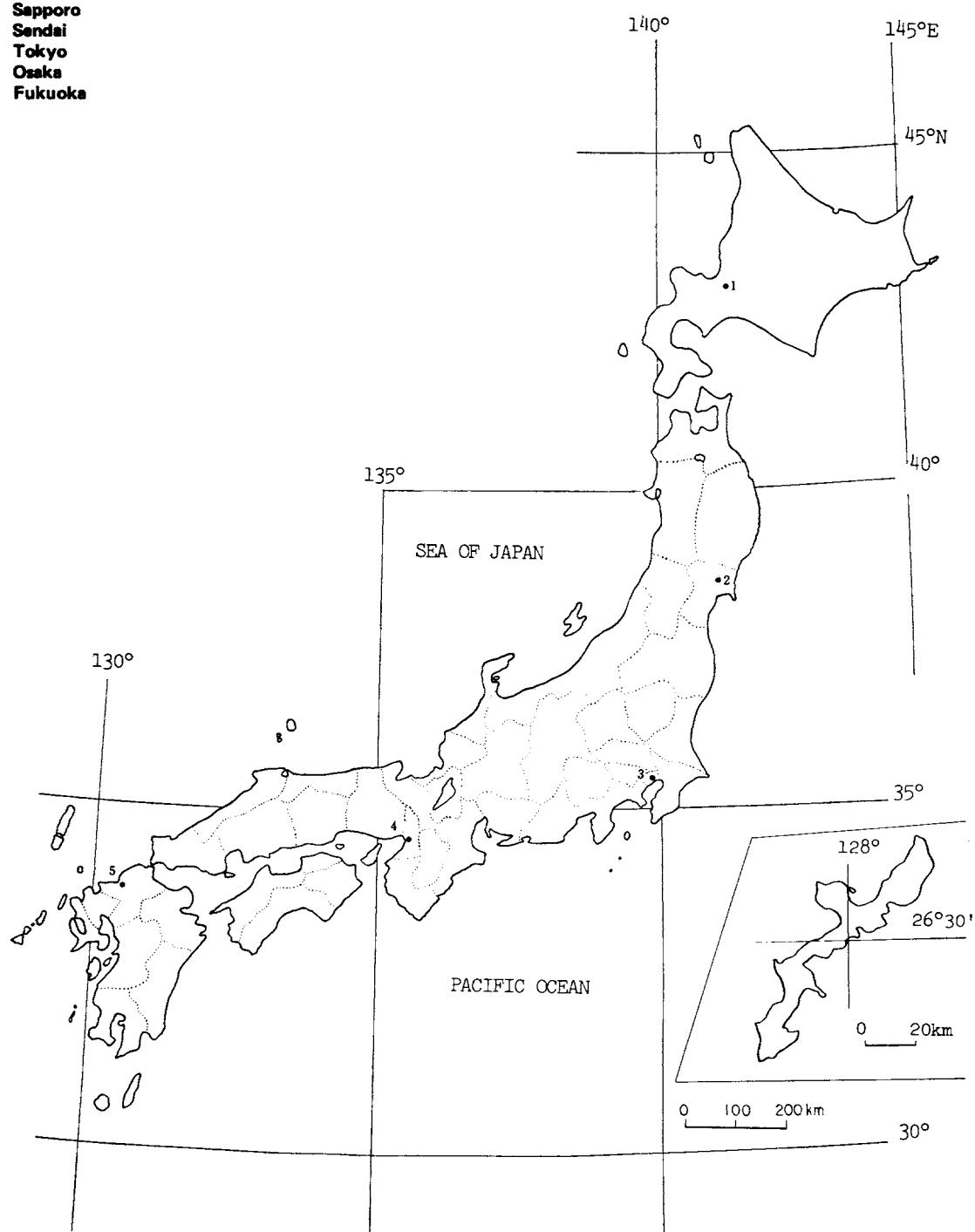
Time after Dust sampling	Date	Nov.(1976)					
		18-19	19-20	20-21	21-22	22-23	23-24
80 min.		1.71	3.35	4.90	3.25	4.76	2.69
24 hr.		0.26	0.54	0.61	0.33	0.46	0.42
48 hr.		0.05	0.32	0.24	0.11	0.25	0.16
							0.17

Notes : 1) Normal value    80 min. (1 ~10)  
                                 24 hr. (0.1~ 3)  
                                 48 hr. (0.1~ 1)

2) The value were obtained 20 hours after the completion of collecting operation, which is from 10:00 to next 10:00 (about 24 hours) every day.

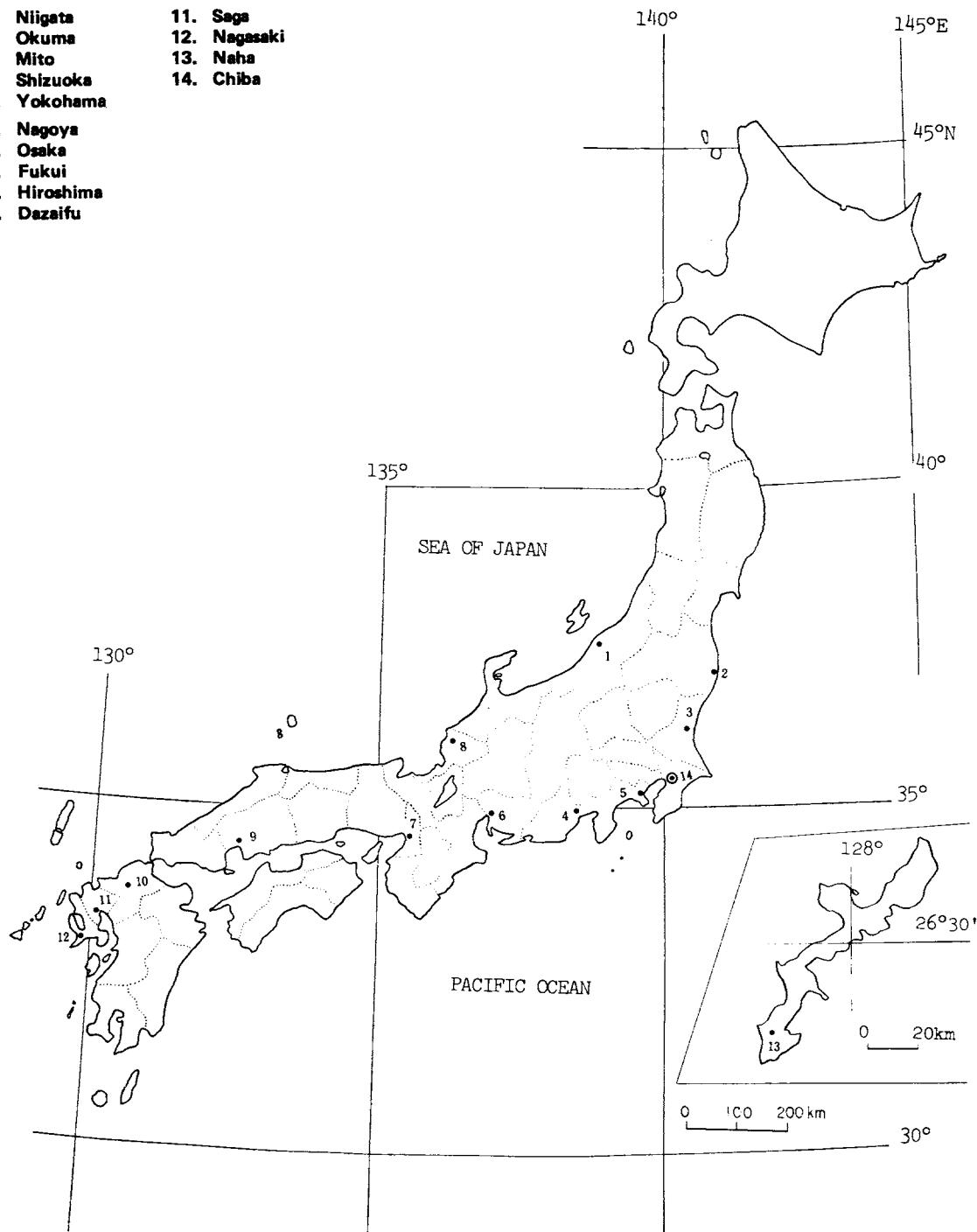
**Figure 10. Gross Beta-Radioactivity in Airborne Dust  
(Japan Meteorological Agency)**

1. Sapporo
2. Sendai
3. Tokyo
4. Osaka
5. Fukuoka



**Figure 11. Gross Beta-Radioactivity in Airborne Dust**  
 • (Prefectural Institutes and Laboratories)  
 ○ (National Institute of Radiological Sciences)

- |              |              |
|--------------|--------------|
| 1. Niigata   | 11. Saga     |
| 2. Okuma     | 12. Nagasaki |
| 3. Mito      | 13. Naha     |
| 4. Shizuoka  | 14. Chiba    |
| 5. Yokohama  |              |
| 6. Nagoya    |              |
| 7. Osaka     |              |
| 8. Fukui     |              |
| 9. Hiroshima |              |
| 10. Dazaifu  |              |



## (5) Gross Beta-Radioactivity in Dry Fallout.

*(National Institute of Radiological Sciences)  
(Japan Atomic Energy Research Institute)*

Gross beta- radioactivity in dry fallout was measured by the National Institute of Radiological Sciences, and Japan Atomic Energy Research Institute. However,

the radioactivity measured showed the same level as normal.

Results obtained are shown in Table 14. And Figure 12 shows the sampling locations.

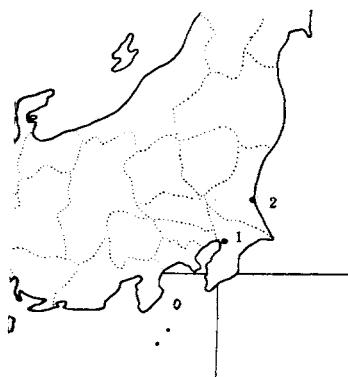
**Table 14. Gross Beta-Radioactivity in Dry Fallout**

**Upper row (National Institute of Radiological Sciences)  
Lower row (Japan Atomic Energy Research Institute)**

Date	(mCi/km <sup>2</sup> )							
	Nov.(1976)	18-19	19-20	20-21	21-22	22-23	23-24	24-25
Deposition	0.01	0.05	0.16	0.10	0.07	0.03	0.03	
			0.10	0.03	0.02	0.02	0.02	

**Figure 12. Gross Beta-Radioactivity in Dry Fallout**

1. National Institute of Radiological Sciences
2. Japan Atomic Energy Research Institute



**(6) Iodine-131 Concentrations in Raw Milk.**

*(National Institute of Animal Industry)*

*(National Agricultural Experiment Stations)*

*(Prefectural Public Health Laboratories and Institutes)*

*(National Institute of Radiological Sciences)*

*(Japan Atomic Energy Research Institutes)*

**Concentration of iodine-131 in raw milk was determined by the following institutes : National Institute of Animal Industry (Chiba), Hokkaido Agricultural Experiment Station (Sapporo), and Kyushu Agricultural Experiment Station (Kumamoto) during the period from November 19 to November 24; National Institute of Radiological Sciences (Chiba) and Japan**

**Atomic Energy Research Institute (Tokaimura) during the period from November 19 to November 25. However, a high radioactivity more than the detectable limit was not measured from these milk samples.**

**The radioactivity level in other samples collected from 7 prefectures, namely Akita, Saitama, Shizuoka, Shimane, Okayama, Fukuoka, and Saga Prefectures, was also less than the detectable limits.**

## APPENDIX

1 : \* : Method of Radiochemical Analysis for Strontium-90 and Cesium-137 recommended by Science and Technology Agency.

### (1) Strontium-90

Sample solution pretreated neutralizes with sodium hydroxide, and strontium, calcium, 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 dissolution of these carbonate precipitations with hydrochloric acid, strontium element is separated in precipitation as strontium oxalate. This precipitation dissolves again with nitric acid, and then the strontium element is separated as strontium nitrate in precipitation by treatment with burning nitric acid.

Precipitation of strontium nitrate is dissolved with water, and added a unit volume of  $\text{Ba}^{2+}$ . 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 its 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 presence 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 removes by adding iron(III) chloride ( $\text{Fe}^{3+}$ ) and boiling.

After it is allowed to stand for cooling the pH of sample solution adjusts 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 rubidium 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.

## **2. Measurement of Radioactivity in Samples.**

Radioactivity in samples is determined by the measurement using the low background  $\beta$ -counter. As a rule, the radioactivity of prepared samples is alternatively measured with background radioactivity level in 60 minutes.

The difference between both counts, i.e., the

counts for each sample and background level, are calculated, and corrected with counting efficiency and chemical recovery rate which adjusted for the weight of precipitation obtained. And it is determined the content of strontium-90 and cesium-137, and is calculated the concentration radioactivity in the original materials.

## **3. Method for Determination of Strontium, Potassium, and calcium content in Stable Form.**

A unit volume of soil and sedimentary mud samples are degraded by treatment with sodium hydroxide solution and hydrochloric acid.

After it was asked the foodstuff samples, a unit volume of ask samples degrades with hydrochloric acid and nitric acid, or degrades by the treatment with hydrofluoric acid. These sample solutions are

diluted to a unit concentration of acidic solution with hydrochloric acid. Then, contents of strontium, and potassium, are measured by atomic spectrochemical analysis, and flame spectrochemical analysis, respectively. Also, content of calcium is determined by permanganate titration analysis or atomic spectrochemical analysis following the separation as precipitation of calcium oxalate.

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