RADIOACTIVITY SURVEY DATA in Japan

NUMBER 17
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National Institute of Radiological Sciences
Chiba, Japan

Radioactivity Survey Data in Japan

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National Institute of Radiological Sciences

DATA OF ROUTINE SURVEY

Meteorological Data

Monthly and Cumulative Deposits of Strontium-90 and Cesium-137

(Meteorological Research Institute, Tokyo)

Since 1954, rain and fallout dust have been collected monthly, in a receiver (collection area, 1 m^2), at the Meteorological Research Institute, Tokyo, to determine the content of Strontium-90 and Cesium-137. Other samples collected monthly (receiver collection area, 0.5 m^2) at six stations located throughout Japan, have also been analyzed.

Locations of the stations are shown in Figure 1.

The results of observation during the period from January 1966 to July, 1967 are shown in Table 1.

Total cumulative deposits of Strontium-90 and Cesium-137 in Tokyo reached the levels of 69.3 and 184.6 mCi/km^2 respectively, at the end of July, 1967.

The values from January, 1966 which appeared in Table 1, No. 14 of this publication are printed here again, because there were some misprints in the values obtained from Tokyo (Meteorological Research Institute).

Figure 1. Seven Stations collected Sample

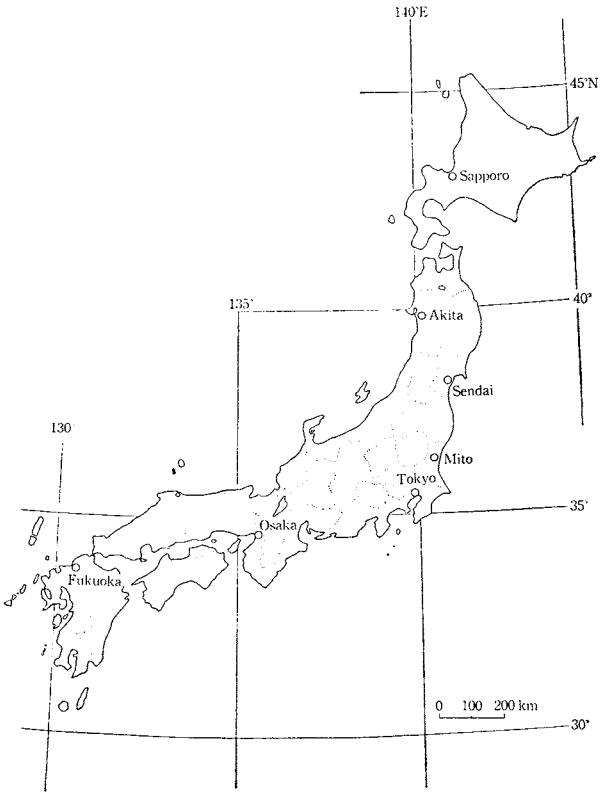


Table 1. Monthly Deposits of ^{90}Sr and ^{137}Cs —Jan. 1966 to Jul. 1967—

By Y. Miyake, K. Saruhashi, Y. Katsuragi and T. Kanazawa
(Meteorological Research Institute, Tokyo)

(Continued from Table 1, Issue No. 14 of this Publication)

Sapporo (Sapporo District Central Meteorological Observatory)
Location: 43°03′N, 141°20′E (16.9 m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km²)	0.49	0.37	0.25	0.39	0.14	0.17	0.15	0.05	0.07	0.06	0.13	0.04
Precipitation (mm)	181	74	143	76	43	96	58	119	103	169	85	180
	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km²)	0.04	0.10	0.09	0.24	0.13	0.11	0.06					
Precipitation (mm)	96	37	89	63	49	123	100					

Akita (Akita District Meteorological Observatory)
Location: 39°43′N, 140°06′E (9.1 m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km²)	1.05	0.83	0.53	0.25	0.23	0.31	0.27	0.14	0.10	0.09	0.29	0.14
Precipitation (mm)	170	118	144	96	104	153	381	140	144	238	263	186
	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km²)	0.40	0.28	0.17	0.35	0.30	0.02	0.06					
Precipitation (mm)	104	61	146	165	78	62	134					

Sendai (Sendai District Central Meteorological Observatory)
Location: 38°16′N, 140°54′E (38.4 m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km²)	0.08	0.18	0.17	0.31	0.24	0.38	0.14	0.10	0.07	0.06	0.03	0.03
Precipitation (mm)	31	79	141	119	114	253	132	50	311	86	16	30
	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km²)	0.04	0.04	0.06	0.18	0.12	0.16	0.06					
Precipitation (mm)	65	11	59	99	76	166	184					

Tokyo (Meteorological Research Institute)
Location : 35°42′N, 139°39′E

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.08	0.18	0.23	0.27	0.35	0.36	0.10	0.06	0.06	0.04	0.03	0.02
^{137}Cs (mCi/km^2)	0.20	0.54	0.59	0.59*	1.11*	1.10*	0.27*	0.19*	0.13*	0.09*	0.09*	0.05
$^{137}Cs/^{90}Sr$	2.5	3.0	2.6	2.2	3.2	3.1	2.7	3.2	2.2	2.3	3.0	2.5
Precipitation (mm)	47	141	111	138	211	552	166	100	195	98	28	10

	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.07	0.12	0.11	0.15	0.10	0.12	0.03					
^{137}Cs (mCi/km^2)	0.29	0.25	0.39	0.28	0.22	0.33	0.10					
$^{137}Cs/^{90}Sr$	4.1	2.1	3.5	1.9	2.2	2.8	3.3					
Precipitation (mm)	33	55	69	111	59	147	130					

* Values amended

Tokyo (Tokyo District Central Meteorological Observatory)
Location : 35°41′N, 139°46′E (4.1 m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.10	0.19	0.28	0.25	0.32	0.38	0.13	0.04	0.06	0.05	0.05	0.04
Precipitation (mm)	24	122	100	134	196	510	161	55	197	109	29	8

	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.01	0.09	0.18	0.18	0.10	0.04	0.03					
Precipitation (mm)	32	44	70	105	49	109	89					

Osaka (Osaka District Central Meteorological Obsevatory)
Location : 34°39′N, 135°32′E (6.7m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.19	0.19	0.20	0.27	0.40	0.03	0.12	0.10	0.04	0.05	0.04	0.05
Precipitation (mm)	55	97	145	107	171	187	274	132	217	67	54	24

	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.08	0.06	0.10	0.17	0.11	0.09	0.05					
Precipitation (mm)	67	41	170	239	59	110	298					

Fukuoka (Fukuoka District Central Meteorological Observatory)
Location : 35°35′N, 130°23′E (2.1 m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.15	0.18	0.30	0.22	0.25	0.28	0.10	0.08	0.04	0.09	0.06	0.11
Precipitation (mm)	34	53	133	107	101	215	120	53	342	110	124	49

	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.09	0.10	0.14	0.23	0.07	0.09	0.04					
Precipitation (mm)	111	51	118	215	59	68	367					

Mito (Mito District Meteorological Observatory)

Location : 36°23′N, 140°28′E (29.2 m)

	1966 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.03	0.23	0.43	0.34	0.24	0.46	0.11	0.07	0.04	0.07	0.06	0.04
Precipitation (mm)	27	138	139	123	178	310	104	26	168	96	43	11

	1967 Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
^{90}Sr (mCi/km^2)	0.07	0.11	0.15									
Precipitation (mm)	45	49	124									

The Concentration of Radionuclides in Air borne Dust

(National Institute of Radiological Sciences)

The air borne dust samples were collected from 1～1.5 m above the ground in the campus of National Institute of Radiological Sciences in Chiba City, using a improved dust collector that composed of a prefilter, a cottrell type dust collector and a spongy polyurethane filter. The prefilter is made of double synthesized resinous net, mesh size is about 0.85 mm (20 mesh) and dimensions are 35 cm in width and 20 cm in length. The cottrel type dust collector is formed by 7 lines of high voltage wire and electrode plates fixed at intervals of 5 mm, and 27 plates of duralmins, 31.5 cm in width and 8～10.5 cm in depth. The spongy polyurethane filter of 37 cm in width, of 47 cm in length and of 5 mm in thickness is supported with metalic net with large meshes.

The collector is designed to collect and deposit up to 99% of particles, size of 10 mμ, under flow rate of 10 m^3 per minute.

The samples were ignited in a muffle furnace at 450°C to destroy organic matters. Radioactivities of nuclides in ashed samples were measured by gamma-ray spectrometry using a NaI (Tl) detector coupled with multi-channel pulse height analyzer, while concentration of Strontium-90 and Cesium-137 in ashed samples were determined by the Na_2CO_3 fusion-radiochemical separation method.

The results obtained during the period from August, 1966 to August, 1967 are shown in Table 2.

Table 2. The Concentration of Radionuclides in Air borne Dust in Chiba City —Aug., 1966 to Aug., 1967—

By M. Saiki, H. Kamada, K. Kimura and E. Nakano

(National Institute of Radiological Sciences)

(Continued from Table 5. Issue No. 9-10 of this Publication)

Month collected	Duration (days)	Air inhaled (m^3)	Ash Weight (g)	^{90}Sr (10^{-3} pCi/m^3)	$^{106}Ru+^{103}Ru$ (10^{-3} pCi/m^3)	^{137}Cs (10^{-3} pCi/m^3)	$^{144}Ce+^{141}Ce$ (10^{-3} pCi/m^3)	$^{95}Zr+^{95}Nb$ (10^{-3} pCi/m^3)
1966								
Aug. 1～Aug. 15	15	216,000	12.5	0.4	13.4	0.6	1.8	1.2
〃 16～ 〃 31	16	230,400	10.0	0.2	13.1	0.2	0.8	0.7
Sept. 1～Sept. 15	15	216,000	6.9	0.1	5.8	0.2	0.5	0.3
〃 16～ 〃 30	15	216,000	5.6	0.2	7.3	0.2	0.5	0.5
Oct. 1～Oct. 15	15	216,000	6.1	0.2	8.0	0.2	0.5	0.3
〃 16～ 〃 31	16	230,400	8.8	0.1	4.1	0.6	2.3	0.4
Nov. 1～Nov. 15	15	216,000	9.0	0.5	217.0	1.1	120.8	50.0
〃 16～ 〃 30	15	216,000	15.0	0.3	47.8	1.1	21.3	9.4
Dec. 1～Dec. 15	15	216,000	15.7	0.2	16.0	0.8	4.3	1.8
〃 16～ 〃 31	16	230,400	12.0	0.7	699.0	1.0	663.3	112.0
1967								
Jan. 1～Jan. 15	15	216,000	12.0	0.5	203.1	0.9	80.8	25.8
〃 16～ 〃 31	16	230,400	18.5	0.5	143.4	1.5	61.4	18.1
Feb. 1～Feb. 15	15	216,000	10.5	0.6	96.7	1.4	43.4	14.6
〃 16～ 〃 28	13	187,200	33.0	0.9	103.5	1.8	51.7	19.7
Mar. 1～Mar. 15	15	216,000	26.2	1.7	83.6	2.6	37.4	16.4
〃 16～ 〃 31	16	230,400	19.5	0.8	40.2	1.6	16.4	6.8
Apr. 1～Apr. 16	16	230,400	11.5	0.9	34.8	1.6	9.7	7.8
〃 17～ 〃 30	14	201,600	12.0	0.4	8.7	1.2	2.0	1.4
May 1～May 15	15	216,000	22.0	0.5	32.1	1.1	4.0	4.7
〃 16～ 〃 31	15	216,000	17.8	0.8	13.3	1.7	0.6	1.4
Jun. 1～Jun. 15	10	144,000	16.4	0.6	1.0	1.7	0.5	1.6
〃 16～ 〃 30	15	216,000	12.0	2.2	13.3	2.0	0.6	0.9
Jul. 1～Jul. 16	16	203,000	10.0	0.3	5.1	0.3	0.8	0.4
〃 17～ 〃 31	15	216,000	33.0	0.2	14.7	0.6	1.6	2.2
Aug. 1～Aug. 15	15	216,000	17.9	0.3	4.5	0.7	0.1	1.1
〃 16～ 〃 31	16	203,400	30.5	0.1	25.5	1.0	25.1	7.9

Dietary Data

Strontium-90 and Cesium-137 in Milk

(Japan Analytical Chemistry Research Institute)

Since December 1961, milk samples from various parts of Japan have been collected by 24 prefectural public health laboratories and analyzed for Strontium-90 and Cesium-137 content at the Japan Analytical Chemistry Research Institute. Sampling locations are indicated in Figure 2.

Three liters of fresh milk were purchased at a representative farm in each prefecture and carbonized by the public health laboratories. The carbonized samples were sent to the Japan Analytical Chemistry Research Institute and ashed, then analyzed using the method recommended by the Science and Technology Agency.

Results obtained during the period from October 1966, to March, 1967 are shown in Table 3.

Figure 2. Milk Sampling Locations

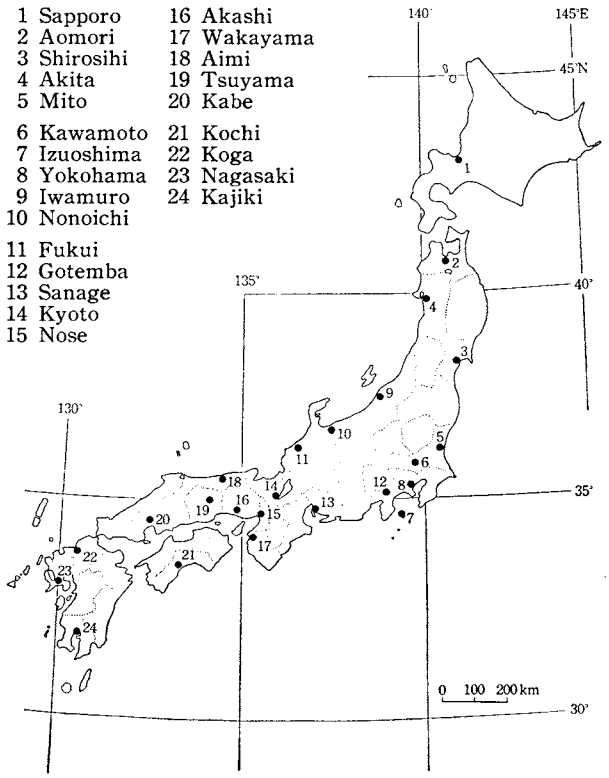


Table 3. ^{90}Sr and ^{137}Cs in Milk —Oct. 1966 to Mar. 1967—

By T. Asari, M. Chiba and M. Kuroda

(Japan Analytical Chemistry Research Institute)

(Continued from Table 14, Issue No. 15 of this Publication)

Location	Component			^{90}Sr		^{137}Cs	
	Ash (g/*l*)	Ca (g/*l*)	K (g/*l*)	(pCi/*l*)	(pCi/gCa)	(pCi/*l*)	(pCi/gK)
Oct. 1966							
Aomori, AOMORI	7.20	1.10	1.53	24.0	21.8	58.7	38.4
Iwamuro, NIIGATA	7.00	1.12	1.45	6.8	6.1	22.8	15.7
Nonoichi ISHIKAWA	6.80	1.03	1.44	7.1	6.9	21.4	14.9
Fukui, FUKUI	7.53	1.35	1.31	9.0	6.7	21.9	16.7
Sanage, AICHI	7.83	0.94	1.58	2.8	3.0	14.3	9.1
Tsuyama, OKAYAMA	7.20	1.26	1.50	8.5	6.7	17.7	11.8
Koga, FUKUOKA	7.47	1.12	1.50	6.5	5.8	19.5	13.0
Nagasaki, NAGASAKI	8.43	1.33	1.27	11.2	8.4	36.2	28.5

Location	Component			^{90}Sr		^{137}Cs	
	Ash (g/*l*)	Ca (g/*l*)	K (g/*l*)	(pCi/*l*)	(pCi/gCa)	(pCi/*l*)	(pCi/gK)
Nov. 66							
Sapporo, HOKKAIDO	7.43	1.24	1.53	8.9	7.2	28.7	18.8
Shiroishi, MIYAGI	8.37	1.24	1.76	8.1	6.5	22.7	12.9
Akita, AKITA	9.00	1.13	1.28	15.2	13.5	23.7	18.5
Kawamoto, SAITAMA	6.70	1.02	1.61	5.3	5.2	11.0	6.8
Izuoshima, TOKYO	7.38	1.12	1.55	11.8	10.5	65.1	42.0
Yokohama, KANAGAWA	7.41	1.16	1.66	4.2	3.6	19.3	11.6
Gotemba, SHIZUOKA	6.43	0.95	1.39	8.0	8.4	32.9	23.7
Kyoto, KYOTO	7.80	1.22	1.51	5.1	4.2	17.4	11.5
Nose, OSAKA	7.40	1.21	1.54	5.8	4.8	16.6	10.8
Akashi, HYOGO	7.70	1.11	1.71	3.4	3.1	18.6	10.9
Wakayama, WAKAYAMA	5.81	0.86	1.27	3.1	3.6	11.0	8.7
Aimi, TOTTORI	7.00	0.97	1.50	9.5	9.8	16.9	11.3
Kabe, HIROSHIMA	8.43	1.06	1.33	4.1	3.9	13.8	10.4
Kochi, KOCHI	8.11	1.20	1.26	4.4	3.7	16.7	13.3
Kajiki, KAGOSHIMA	7.07	1.14	1.49	8.9	7.8	28.8	19.3
Dec. 66							
Aomori AOMORI	5.40	0.79	1.11	10.3	13.0	28.0	25.2
Iwamuro NIIGATA	7.15	1.15	1.46	10.3	9.0	13.6	9.3
Nonoichi ISHIKAWA	5.37	0.84	1.19	6.3	7.5	17.6	14.8
Fukui, FUKUI	7.23	1.12	1.34	6.8	6.1	24.8	18.5
Sanage, AICHI	7.37	0.99	1.67	5.4	5.5	13.2	7.9
Tsuyama, OKAYAMA	7.33	1.16	1.56	4.6	4.0	13.8	8.8
Koga, FUKUOKA	7.63	1.15	1.62	4.7	4.1	13.9	8.6
Nagasaki, NAGASAKI	9.30	1.33	1.46	4.2	3.2	27.1	18.6
Jan. 1967							
Sapporo, HOKKAIDO	7.10	1.08	1.51	7.6	7.0	24.2	16.0
Shiroishi, MIYAGI	8.17	1.10	1.58	5.2	4.7	19.2	12.2
Akita, AKITA	7.00	1.13	1.47	11.8	10.4	19.7	13.4
Mito, IBARAGI	7.67	1.15	1.62	6.5	5.7	20.5	12.7
Mito, IBARAGI	8.00	1.12	1.49	4.3	3.8	17.4	11.5
Kawamoto, SAITAMA	6.93	1.02	1.57	3.6	3.5	9.1	5.8
Izuoshima, TOKYO	7.00	1.16	1.60	11.4	9.8	70.6	50.4
Yokohama, KANAGAWA	7.42	1.17	1.59	4.1	3.5	19.0	11.9
Gotemba, SHIZUOKA	7.30	1.16	1.45	6.8	5.9	14.4	9.9
Kyoto, KYOTO	8.03	1.12	1.64	4.7	4.2	13.6	8.3
Nose, OSAKA	7.27	1.10	1.54	5.1	4.6	14.2	9.2
Akashi, HYOGO	7.43	1.16	1.44	5.3	4.6	15.2	10.6
Wakayama, WAKAYAMA	5.89	0.90	1.20	4.5	5.0	9.5	7.9
Aimi, TOTTORI	7.37	1.10	1.78	8.3	7.5	29.7	16.7
Kabe, HIROSHIMA	8.73	1.10	1.45	4.6	4.2	18.2	12.6
Kochi, KOCHI	7.67	1.22	1.43	7.9	6.5	14.0	9.8
Kajiki, KAGOSHIMA	7.23	1.18	1.55	9.9	8.4	29.6	19.1
Feb. 67							
Aomori, AOMORI	7.30	1.10	1.57	13.9	12.6	39.7	25.3
Iwamuro, NIIGATA	6.83	1.06	1.31	6.6	6.2	17.2	13.1
Nonoichi, ISHIKAWA	6.50	0.97	1.41	2.6	2.7	10.3	7.3
Fukui, FUKUI	7.40	1.03	1.28	7.6	7.4	18.5	14.5
Sanage, AICHI	9.03	1.12	1.74	5.4	4.8	15.1	8.7
Tsuyama, OKAYAMA	7.43	1.15	1.71	6.9	6.0	16.9	9.9
Koga, FUKUOKA	7.33	1.14	1.50	5.7	5.0	13.1	8.7
Nagasaki, NAGASAKI	8.17	1.19	1.54	7.3	6.1	18.4	11.9
Mar. 67							
Sapporo, HOKKAIDO	7.63	1.13	1.60	6.9	6.1	28.4	17.8
Shiroishi. MIYAGI	8.20	1.06	1.61	6.6	6.2	20.3	12.6
Akita, AKITA	8.93	1.31	1.48	17.2	13.1	21.0	14.2
Mito, IBARAGI	8.37	1.16	1.81	4.1	3.5	16.9	9.3
Kawamoto, SAITAMA	6.90	1.08	1.45	5.3	4.9	9.7	6.7
Izuoshima, TOKYO	7.95	1.06	1.77	8.4	7.9	41.3	23.3
Yokohama, KANAGAWA	7.44	1.15	1.69	4.8	4.2	21.5	12.7
Gotemba, SHIZUOKA	6.50	0.87	1.33	7.8	9.0	35.5	26.7
Kyoto, KYOTO	7.93	1.13	1.64	4.9	4.3	13.4	8.2
Nose, OSAKA	9.13	1.22	1.89	6.1	5.0	27.9	14.8
Akashi, HYOGO	7.43	1.15	1.54	3.9	3.4	9.9	6.4
Wakayama, WAKAYAMA	5.93	0.82	1.16	3.6	4.4	8.5	7.3
Aimi, TOTTORI	7.73	1.07	1.76	7.0	6.5	29.4	16.7
Kabe, HIROSHIMA	7.13	0.93	1.65	4.7	5.1	16.0	9.7
Kochi, KOCHI	7.10	1.00	1.51	6.3	6.3	17.6	11.7
Kajiki, KAGOSHIMA	7.47	1.18	1.60	8.5	7.2	15.9	9.9

Strontium-90 and Cesium-137 in Total Diet

Part 1. *(National Institute of Radiological Sciences)*

Since June 1963, National Institute of Radiological Sciences has conducted analyses of total diet samples collected from 5 prefectures. Sampling locations are shown in Figure 3.

One city and one village in each prefecture were chosen as representative of urban and rural districts of these prefectures respectively. Seven families were chosen at random from each location, and each family presented a normal portion of the regular diet consumed in one day by an adult. Diets at special occasions were avoided. Composite samples from the 7 families were ashed together and analyzed.

Results obtained during March, 1966 to February, 1967 are shown in Table 4.

Figure 3. Sampling Locations of Total Diet

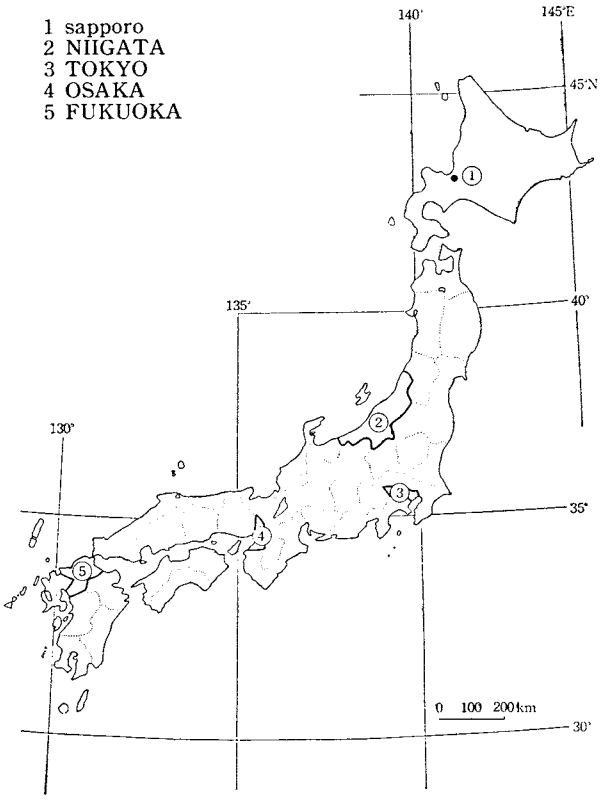


Table 4. ^{90}Sr and ^{137}Cs in Total Diet —Mar., 1966 to Feb., 1967—

By M. Saiki, T. Ueda, Y. Suzuki, and E. Kase
(National Institute of Radiological Sciences)

(Continued from Table 5. Issue No. 8 of this Publication)

Location	Daily Intake				^{90}Sr (pCi/gCa)	^{137}Cs (pCi/gK)
	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)		
Mar., 1966						
URBAN ADULT DIET						
Sapporo, HOKKAIDO	400.0	2123.7	20.3	74.6	50.8	35.1
Niigata, NIIGATA	487.2	2112.6	26.4	95.1	54.2	45.0
TOKYO	467.6	2205.4	14.0	43.3	29.9	19.6
Osaka, OSAKA	401.2	2134.0	15.0	38.7	37.4	18.1
Group Supply	587.4	2213.6	21.4	36.1	36.4	16.3
Fukuoka, FUKUOKA	553.6	2005.2	13.2	32.2	23.8	16.1
RURAL ADULT DIET						
Sapporo, HOKKAIDO	660.4	2671.4	23.4	94.7	35.5	35.4
Niigata, NIIGATA	528.0	2496.3	28.5	63.8	54.0	25.6
TOKYO	(263.2)*	(1051.7)*	(7.6)*	(21.8)*	28.9	20.7
Fukuoka, FUKUOKA	624.0	1981.5	14.7	31.7	23.6	16.0

*These low values, in parenthesis, were derived from extreme low amount of ash (9.7 g/day/person) and were excluded from total calculation. It seems that the sampling was operated under unsuitable condition.

Location	Daily Intake				^{90}Sr (pCi/gCa)	^{137}Cs (pCi/gK)
	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)		
Jun.~Aug., 1966						
URBAN ADULT DIET						
Sapporo, HOKKAIDO	338.2	1831.4	12.2	33.6	36.1	18.3
Niigata, NIIGATA	400.5	1846.8	16.5	53.9	41.2	29.2
TOKYO	420.2	2011.3	11.6	44.5	27.6	22.1
Osaka, OSAKA	412.8	1901.4	6.7	26.2	16.2	13.8
Fukuoka, FUKUOKA	578.5	2200.8	11.0	36.8	19.0	16.7
RURAL ADULT DIET						
Sapporo, HOKKAIDO	306.4	1801.6	8.7	27.8	25.7	15.4
Niigata, NIIGATA	586.0	2703.6	24.5	80.9	41.8	29.9
TOKYO	513.4	2102.6	9.9	43.2	19.3	20.6
Osaka, OSAKA	323.8	1963.4	9.8	26.5	30.3	20.0
Fukuoka, FUKUOKA	630.1	2389.5	11.5	34.4	18.3	14.4
Sept.~Dec., 1966						
URBAN ADULT DIET						
Sapporo, HOKKAIDO	360.8	1940.2	13.7	41.9	38.0	21.6
Niigata, NIIGATA	503.1	1842.4	20.8	41.0	41.3	22.3
TOKYO	325.2	1336.4	6.4	21.2	19.7	15.9
Osaka, OSAKA	427.5	1842.8	9.7	30.1	22.7	16.3
Fukuoka, FUKUOKA	406.5	2664.8	9.4	20.4	23.1	7.7
RURAL ADULT DIET						
Sapporo, HOKKAIDO	514.2	2223.3	19.8	60.0	38.5	26.9
Niigata, NIIGATA	572.8	2380.7	24.2	31.5	42.2	13.2
TOKYO	396.4	1845.0	6.9	32.5	17.4	17.6
Osaka, OSAKA	396.7	1072.5	7.7	20.0	19.4	18.6
Fukuoka, FUKUOKA	398.2	1494.0	8.3	19.8	20.8	13.3
Feb., 1967						
URBAN ADULT DIET						
Sapporo, HOKKAIDO	432.3	1688.8	23.2	31.8	53.7	18.8
Niigata, NIIGATA	542.5	1816.8	13.5	28.2	24.9	15.5
TOKYO						
Osaka, OSAKA	400.0	1438.5	8.2	18.9	20.5	13.1
Fukuoka, FUKUOKA	959.7	2079.0	8.4	20.6	8.8	9.9
RURAL ADULT DIET						
Sapporo, HOKKAIDO	551.6	2213.3	22.7	35.0	41.2	15.8
Niigata, NIIGATA	731.0	2525.0	25.1	33.5	34.3	13.3
TOKYO						
Osaka, OSAKA	497.1	1946.7	11.3	20.6	22.7	10.6
Fukuoka, FUKUOKA	1216.2	1654.4	7.0	13.0	5.5	7.9

Part 2. *(Japan Analytical Chemistry Research Institute)*

Since June 1963, the Japan Analytical Chemistry Research Institute has conducted analyses of total diet samples from the 19 prefectures shown in Figure 4.

One city and one village in each prefecture was chosen as representative of urban and rural districts of these prefectures, respectively. Ten families from each location were chosen at random, and each family presented a normal portion of the regular diet consumed in one day by an adult or a child. Diet at special occasions was avoided.

Composite samples from the 10 families were ashed together and analyzed using the method recommended by the Science and Technology Agency.

Results obtained during the period from November to December, 1966 are shown in Table 5.

Figure 5 shows the all Japan mean values of total diet.

Figure 4. Total Diet Sampling Locations

1 AOMORI
2 MIYAGI
3 AKITA
4 IBARAGI
5 SAITAMA
6 KANAGAWA
7 ISHIKAWA
8 FUKUI
9 SHIZUOKA
10 AICHI
11 KYOTO
12 HYOGO
13 WAKAYAMA
14 TOTTORI
15 OKAYAMA
16 HIROSHIMA
17 KOCHI
18 NAGASAKI
19 KAGOSHIMA

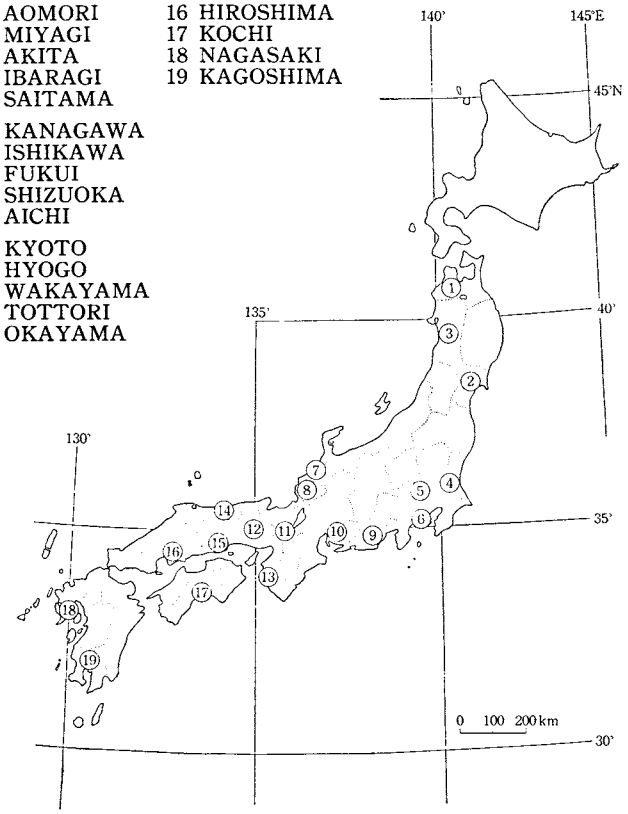


Table 5. ^{90}Sr and ^{137}Cs in Total Diet —Nov. to Dec., 1966—

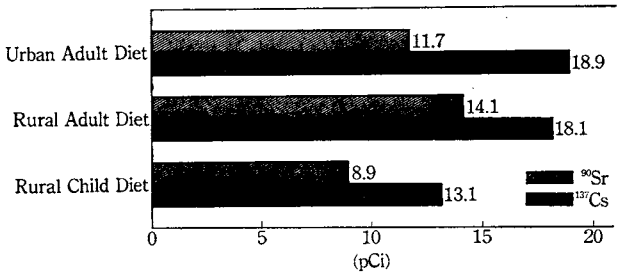
By T. Asari, M. Chiba and M. Kuroda
(Japan Analytical Chemistry Research Institute)

(Continued from Table 15, Issue No. 15 of this Publication)

Location	Month		Daily Intake						
			Ash (g)	Ca (mg)	K (g)	^{90}Sr (pCi)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	^{137}Cs (pCi/gK)
(URBAN ADULT DIET)									
Aomori, AOMORI	Nov.	1966	16.6	581	1.35	12.2	21.0	22.3	16.5
Sendai, MIYAGI	〃	〃	22.5	524	1.82	9.1	17.4	16.8	9.2
Akita, AKITA	〃	〃	15.8	558	1.27	15.4	27.6	26.7	21.0
Mito, IBARAGI	〃	〃	20.5	521	1.95	10.0	19.2	21.7	11.1
Omiya, SAITAMA	〃	〃	20.6	315	1.16	8.0	25.4	16.6	14.3
Odawara, KANAGAWA	〃	〃	21.3	669	1.96	10.6	15.8	24.7	12.6
Kanazawa, ISHIKAWA	〃	〃	23.0	771	1.70	27.8	36.1	24.1	14.2
Fukui, FUKUI	〃	〃	10.8	498	0.89	13.8	27.7	8.9	10.0
Atami, SHIZUOKA	〃	〃	9.5	316	1.09	9.2	29.1	12.9	11.8
Kariya, AICHI	〃	〃	21.4	509	1.77	10.8	21.2	16.3	9.2
Kyoto, KYOTO	〃	〃	19.9	511	1.64	13.9	27.0	21.5	13.1
Kakogawa, HYOGO	〃	〃	18.2	633	1.45	12.5	19.7	21.2	14.6
Wakayama, WAKAYAMA	Dec.	〃	19.7	926	1.49	8.5	9.2	14.3	9.6
Tottori, TOTTORI	Nov.	〃	10.9	348	0.99	8.1	23.3	14.7	14.8
Okayama, OKAYAMA	〃	〃	16.0	368	1.34	9.8	26.6	15.8	11.8
Hiroshima, HIROSHIMA	〃	〃	18.1	463	1.38	7.5	16.2	16.5	12.0
Kochi, KOCHI	〃	〃	12.6	343	0.93	7.7	22.4	12.2	13.1
Nagasaki, NAGASAKI	Dec.	〃	22.4	553	1.52	11.4	20.6	21.5	14.1
Kagoshima, KAGOSHIMA	〃	〃	17.7	600	1.73	16.9	28.2	29.9	17.3
(RURAL ADULT DIET)									
Aomori, AOMORI	Nov.	1966	7.9	282	0.74	9.2	32.6	14.1	19.1
Natori, MIYAGI	〃	〃	19.8	915	1.86	12.0	11.1	19.5	10.5
Yuwa, AKITA	〃	〃	12.1	424	0.92	14.4	34.0	10.7	11.6
Tokai, IBARAGI	〃	〃	19.8	509	1.96	8.1	15.9	21.6	11.0
Niiza, SAITAMA	〃	〃	18.4	664	1.48	10.4	15.7	18.6	12.6

Location	Month		Daily Intake						
			Ash (g)	Ca (mg)	K (g)	^{90}Sr (pCi)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	^{137}Cs (pCi/gK)
Sagamihara, KANAGAWA	Nov.	1966	21.1	629	1.65	11.2	17.8	20.1	12.2
Matsuto, ISHIKAWA	〃	〃	16.1	507	1.14	14.6	28.8	23.4	20.5
Sakai, FUKUI	Dec.	〃	18.7	886	1.63	24.9	28.1	13.3	8.2
Gotemba, SHIZUOKA	Nov.	〃	14.8	392	1.46	15.9	40.6	24.0	16.4
Nishio, AICHI	〃	〃	13.0	432	1.22	7.7	17.8	13.4	11.0
Keihoku, KYOTO	〃	〃	23.9	989	1.76	19.3	19.5	16.5	9.4
Kakogawa, HYOGO	〃	〃	19.6	925	1.23	11.4	12.3	17.0	13.8
Hirokawa, WAKAYAMA	Dec.	〃	14.0	599	1.47	12.6	21.0	9.9	6.7
Fukube, TOTTORI	Nov.	〃	24.3	902	2.13	26.8	29.7	31.5	14.8
Tsudaka, OKAYAMA	〃	〃	14.7	539	1.28	8.6	16.0	16.0	13.0
Shiwa, HIROSHIMA	〃	〃	18.3	829	1.84	14.8	17.9	17.5	9.5
Haruno, KOCHI	〃	〃	20.9	560	2.04	21.3	28.0	15.8	7.7
Tokitsu, NAGASAKI	Dec.	〃	22.2	773	1.67	13.2	17.1	22.6	13.5
Iriki, KAGOSHIMA	〃	〃	14.6	645	1.05	12.4	19.2	19.0	18.1
(RURAL CHILD DIET)									
Aomori, AOMORI	Nov.	1966	8.3	325	0.83	8.9	27.4	9.9	11.9
Natori, MIYAGI	〃	〃	15.2	635	1.40	6.7	10.6	8.3	5.9
Yuwa, AKITA	〃	〃	7.9	165	0.83	12.0	72.7	13.7	16.5
Tokai, IBARAGI	〃	〃	12.3	428	1.24	6.6	15.4	12.5	10.1
Niiza, SAITAMA	〃	〃	14.1	479	1.32	7.8	16.3	15.0	11.4
Sagamihara, KANAGAWA	〃	〃	13.2	433	1.19	8.0	18.5	15.4	12.9
Matsuto, ISHIKAWA	〃	〃	8.4	296	0.65	6.5	22.0	12.4	19.1
Sakai, FUKUI	Dec.	〃	14.1	406	1.42	15.1	37.2	15.9	11.2
Gotemba, SHIZUOKA	Nov.	〃	6.7	253	0.68	9.4	37.2	11.9	17.5
Nishio, AICHI	〃	〃	10.8	276	0.91	5.4	19.6	13.1	14.4
Keihoku, KYOTO	〃	〃	14.8	593	1.40	13.7	23.1	15.9	11.4
Kakogawa, HYOGO	〃	〃	13.3	492	1.22	8.6	17.5	13.8	11.3
Hirokawa, WAKAYAMA	Dec.	〃	9.4	281	0.78	7.2	25.6	5.1	6.5
Fukube, TOTTORI	Nov.	〃	13.0	398	1.20	10.3	25.9	15.8	13.2
Tsudaka, OKAYAMA	〃	〃	8.8	284	0.86	6.3	22.2	8.2	9.5
Shiwa, HIROSHIMA	〃	〃	14.2	501	1.72	9.1	18.2	21.2	12.3
Haruno, KOCHI	〃	〃	11.7	488	1.42	11.8	24.2	14.4	10.1
Tokitsu NAGASAKI	Dec.	〃	11.6	376	0.95	6.7	17.8	11.4	12.0
Iriki, KAGOSHIMA	〃	〃	10.0	361	0.90	9.9	27.4	15.7	17.4

Figure 5. ^{90}Sr and ^{137}Cs in Total Diet
—All Japan Mean Values—
—Nov. to Dec., 1966—



Strontium-90 and Cesium-137 in Standard Diet

(National Institute of Radiological Sciences)

Since May 1966, National Institute of Radiological Sciences has conducted analyses of individual foodstuff samples from four prefectures (Hokkaido, Niigata, Tokyo and Kagoshima). The sampling locations are shown in Figure 6.

Individual foodstuffs produced in each prefecture were collected separately according to nine categories; ceareals, beans, potatos, milk, eggs, meat, fish and shellfish, leafy vegetables and root vegetables. The standard diet, taken in this study, was based on the following diet components, indicated by Resource Council, Science and Technology Agency, in 1964; cereals: 422 g, beans: 35 g, potatos: 85 g, milk: 180 g, eggs: 30 g, meat: 30 g, fish and shellfish: 75 g, leafy vegetables: 144 g, root vegetables: 96 g.

Collected foodstuffs were ashed and analyzed separately.

Results obtained during 1966 are shown in table 6.

Figure 6. Sampling Locations of Standard Diet

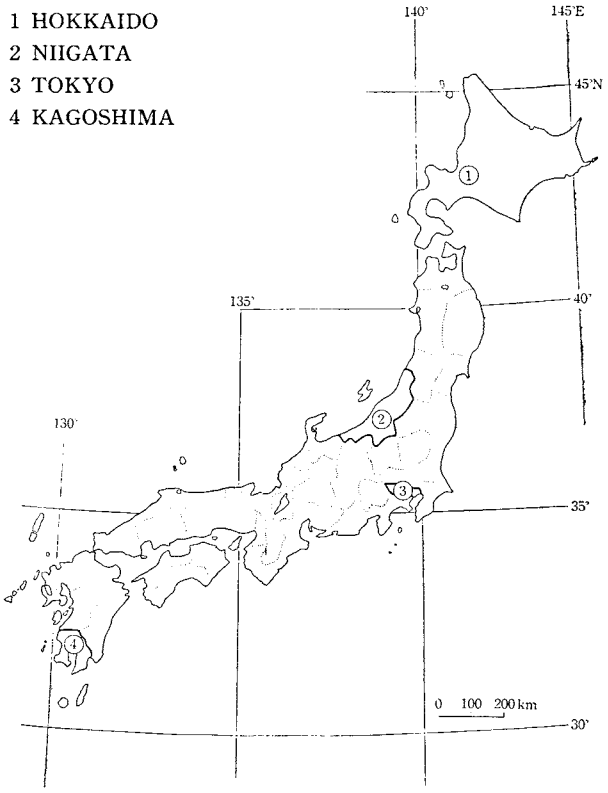


Table 6. ^{90}Sr, ^{137}Cs in Standard Diet —May, 1966 to Dec., 1966—

By M. Saiki, T. Ueda, Y. Suzuki and E. Kase

(National Institute of Radiological Sciences)

Foodstuff Samples	Daily Intake/person					
	^{90}Sr (pCi)	Ca (mg)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	K (mg)	^{137}Cs (pCi/gK)
HOKKAIDO —Jul., 1966—						
Cereals	1.7	67	25.5	14.2	335	42.3
Beans	0.8	51	15.8	4.0	158	25.4
Potatos	0.6	7	85.7	1.0	189	5.3
Milk	2.8	230	12.2	15.9	298	53.4
Eggs	0.2	11	17.1	0.2	28	7.1
Meat	0.2	8	26.0	1.6	58	27.8
Fish and shellfish	1.7	66	25.9	1.4	295	4.7
Leafy vegetables	3.7	69	53.9	0.7	376	1.9
Root vegetables	0.7	21	33.7	5.8	85	68.3
Total	12.4	530	—	44.8	1822	—
S. U. of Total Diet	—	—	23.4	—	—	—
C. U. of Total Diet	—	—	—	—	—	24.6

Foodstuff Samples	Daily Intake/person					
	^{90}Sr (pCi)	Ca (mg)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	K (mg)	^{137}Cs (pCi/gK)
HOKKAIDO —Dec., 1966—						
Cereals	1.5	36	41.7	12.6	245	51.4
Beans	0.4	22	18.2	1.7	44	38.6
Potatos	1.5	65	23.1	4.2	120	35.0
Milk	2.1	172	12.2	7.5	238	31.5
Eggs	0.02*	11	1.8	0.2	23	8.7
Meat	0.04**	2	20.0	1.8	38	47.4
Fish and shellfish	0.1	22	4.5	2.3	156	14.7
Leafy vegetables	0.7	34	20.6	1.4	293	4.8
Root vegetables	0.3	26	11.5	1.2	222	5.4
Total	6.7	390	—	23.9	1379	—
S. U. of Total Diet	—	—	17.2	—	—	—
C. U. of Total Diet	—	—	—	—	—	23.9
* 0.02±0.01						
** 0.04±0.01						
NIIGATA —May, 1966—						
Cereals	1.3	126	10.3	21.1	310	68.0
Beans	2.5	29	70.5	2.0	420	4.8
Potatos	0.7	27	26.2	1.6	197	8.1
Milk	3.2	184	17.4	15.2	426	35.7
Eggs	0.1	13	6.2	0.4	28	14.2
Meat	0.8	6	145.5	7.3	129	56.8
Fish and shellfish	0.6	17	36.1	0.9	128	7.1
Leafy vegetables	12.2	49	251.0	3.3	267	12.3
Root vegetables	0.2	27	7.5	4.1	199	20.6
Total	21.6	478	—	55.9	2104	—
S. U. of Total Diet	—	—	45.2	—	—	—
C. U. of Total Diet	—	—	—	—	—	26.6
NIIGATA —Dec., 1966—						
Cereals	2.3	50	46.0	13.3	224	59.4
Beans	0.2	23	8.7	1.5	28	53.6
Potatos	0.8	7	114.3	1.5	273	5.5
Milk	1.6	190	8.4	6.6	465	14.2
Eggs	0.06*	15	4.0	0.2	32	6.3
Meat	0.06*	2	30.0	2.4	58	41.4
Fish and shellfish	0.06*	27	2.2	0.7	113	6.2
Leafy vegetables	5.9	84	70.2	1.5	388	3.9
Root vegetables	2.1	14	150.0	0.7	150	4.7
Total	13.1	412	—	28.4	1731	—
S. U. of Total Diet	—	—	31.8	—	—	—
C. U. of Total Diet	—	—	—	—	—	16.4
* 0.06±0.01						
TOKYO —Jun., 1966—						
Cereals	1.4	167	5.5	10.6	355	29.7
Beans	0.5	37	12.2	4.3	291	14.8
Potatos	0.8	30	27.6	2.5	226	11.1
Milk	2.7	98	27.4	9.9	275	36.0
Eggs	0.1	22	4.2	0.8	47	17.2
Meat	0.3	6	46.6	3.3	70	47.0
Fish and shellfish	1.0	61	16.6	1.4	187	7.5
Leafy vegetables	3.3	76	43.6	2.3	225	10.2
Root vegetables	4.0	18	229.0	1.6	148	10.8
Total	14.1	515	—	36.7	1824	—
S. U. of Total Diet	—	—	27.4	—	—	—
C. U. of Total Diet	—	—	—	—	—	20.1
TOKYO —Dec., 1966—						
Cereals	1.9	40	47.5	11.0	285	38.6
Beans	0.7	32	21.9	2.1	50	42.0
Potatos	1.3	11	118.2	3.2	820	3.9
Milk	1.0	145	6.9	6.6	268	24.7
Eggs	0.05*	9	5.6	0.1	24	4.2

Foodstuff Samples	Daily Intake/person					
	^{90}Sr (pCi)	Ca (mg)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	K (mg)	^{137}Cs (pCi/gK)
Meat	0.05*	2	25.0	2.1	71	29.6
Fish and shellfish	0.2	43	4.7	1.7	194	8.8
Leafy vegetables	2.7	63	42.9	1.0	307	3.3
Root vegetables	1.2	16	75.0	0.6	258	2.3
Total	9.1	361	—	28.4	2277	—
S. U. of Total Diet	—	—	25.2	—	—	—
C. U. of Total Diet	—	—	—	—	—	12.5
* 0.05±0.01						
KAGOSHIMA —May, 1966—						
Cereals	1.4	165	8.5	35.7	257	138.7
Beans	0.8	75	10.7	2.6	170	15.3
Potatos	0.7	20	34.8	10.4	133	78.1
Milk	1.6	71	22.6	9.8	272	36.0
Eggs	0.2	8	24.7	0.2	43	4.6
Meat	0.2	4	46.5	3.7	50	74.7
Fish and shellfish	0.9	72	12.4	2.6	271	9.6
Leafy vegetables	6.2	22	280.5	5.0	164	30.4
Root vegetables	7.7	19	403.1	4.5	154	29.2
Total	19.7	456	—	74.5	1514	—
S. U. of Total Diet	—	—	43.2	—	—	—
C. U. of Total Diet	—	—	—	—	—	49.2
KAGOSHIMA —Dec., 1966—						
Cereals	1.7	44	38.6	19.6	401	48.9
Beans	0.6	45	13.3	1.6	139	11.5
Potatos	0.2	13	15.4	3.7	266	13.9
Milk	1.1	149	7.4	4.6	227	20.3
Eggs	0.1	13	7.7	1.2	27	44.4
Meat	0.1	3	33.3	2.6	49	53.1
Fish and shellfish	0.2	21	9.5	1.5	181	82.9
Leafy vegetables	2.4	48	50.0	1.9	189	10.1
Root vegetables	2.4	26	92.3	2.6	169	15.4
Total	8.8	362	—	39.3	1648	—
S. U. of Total Diet	—	—	24.3	—	—	—
C. U. of Total Dief	—	—	—	—	—	23.8

Strontium-90 and Cesium-137 in Vegetables

(Japan Analytical Chemistry Research Institute)

The Japan Analytical Chemistry Research Institute has analyzed the Strontium-90 and Cesium-137 content in vegetables obtained from 10 prefectures. Sampling locations are shown in Figure 7. Samples were taken twice at the same location during the harvest period. At the prefectural public health laboratories, several kgs of the fresh vegetable samples were washed with water, and the inedible parts removed, then only the edible parts ashed at 450°. These samples were then sent to the Japan Analytical Chemistry Research Institute and analyzed for Strontium-90 and Cesium-137 content, using the method recommended by the Science and Technology Agency.

Results obtained during the period from April, 1966 to March, 1967 are shown in Table 7.

Figure 8 shows the all Japan mean values of vegetables.

Figure 7. Vegetable Sampling Locations

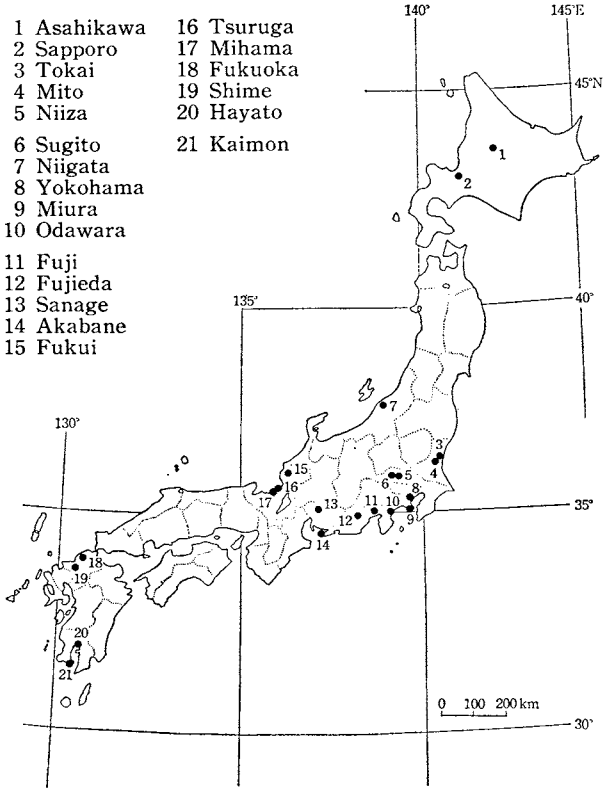


Table 7. ^{90}Sr and ^{137}Cs in Vegetables —Apr., 1966 to Mar., 1967—

By T. Asari, M. Chiba and M. Kuroda
(Japan Analytical Chemistry Research Institute)

(Continued form Table 1. Issue No. 13 of this Publication)

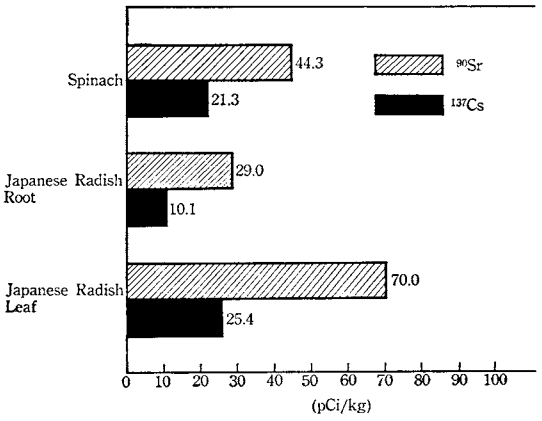
Location	Month Harvested	Component (% by Weight)			^{90}Sr		^{137}Cs	
		Ash (%)	Ca (%)	K (%)	(pCi/kg)	(pCi/gCa)	(pCi/kg)	(pCi/gK)
(Spinach)								
Sapporo, HOKKAIDO	May. 66	1.96	0.197	0.628	67.0	35.5	11.9	1.9
Asahikawa, HOKKAIDO	Jul. 66	1.50	0.053	0.490	32.6	61.5	18.7	3.8
〃 〃	Sept. 66	0.54	0.032	0.162	12.8	40.0	5.2	3.2
Tokai, IBARAGI	Apr. 66	1.99	0.080	0.600	27.3	34.1	27.3	4.5
Mito, IBARAGI	〃	1.37	0.133	0.378	36.7	27.6	24.1	6.4
Tokai, IBARAGI	Nov. 66	1.66	0.075	0.588	22.7	30.3	17.4	3.0
Mito, IBARAGI	〃	1.81	0.085	0.651	32.0	37.6	15.0	2.3
Niiza, SAITAMA	Dec. 66	2.02	0.131	0.686	53.0	40.5	18.8	2.7
Sugito, SAITAMA	〃	1.70	0.119	0.443	32.4	27.2	23.1	5.2
Niiza, SAITAMA	Mar. 67	1.82	0.103	0.616	32.8	31.8	21.9	3.6
Sugito, SAITAMA	〃	1.70	0.116	0.564	28.6	24.7	16.2	2.9
Odawara, KANAGAWA	Jun. 67	1.78	0.094	0.587	32.3	34.4	40.1	6.8
Yokohama, KANAGAWA	〃	1.86	0.133	0.565	31.1	23.4	34.2	6.1
Odawara, KANAGAWA	Feb. 66	1.14	0.076	0.365	26.6	35.0	15.1	4.1
Yokohama, KANAGAWA	Mar. 66	1.16	0.081	0.329	21.3	26.3	18.7	5.7
Niigata, NIIGATA	May 66	1.26	0.098	0.370	82.2	83.9	25.1	6.8
〃 〃	〃	1.75	0.138	0.534	124.9	90.5	25.9	4.8
Fukui, FUKUI	Apr. 66	1.23	0.089	0.365	77.0	86.5	16.3	4.5
Tsuruga, FUKUI	May 66	0.96	0.097	0.307	92.4	95.2	11.3	3.7
〃 〃	Nov. 66	1.56	0.091	0.529	24.5	26.9	12.2	2.3
Fukui, FUKUI	〃	1.19	0.079	0.323	65.9	83.4	24.6	7.6
Fuji, SHIZUOKA	〃	2.02	0.110	0.597	29.0	26.4	65.9	11.0
Fujieda, SHIZUOKA	〃	3.08	0.096	1.018	44.0	45.8	36.9	3.6
Fuji, SHIZUOKA	Jan. 67	2.05	0.169	0.497	57.9	34.3	48.1	9.7
Fujieda, SHIZUOKA	〃	1.71	0.111	0.308	31.8	28.6	31.2	6.9

Location	Month Harvested	Component (% by Weight)			^{90}Sr		^{137}Cs	
		Ash (%)	Ca (%)	K (%)	(pCi/kg)	(pCi/gCa)	(pCi/kg)	(pCi/gK)
Sanage, AICHI	Apr. 66	1.35	0.063	0.444	47.3	75.1	10.6	2.4
Akabane, AICHI	May 66	1.52	0.116	0.489	76.5	56.9	27.2	5.6
Sanage, AICHI	Oct. 66	1.11	0.056	0.375	11.1	19.8	5.8	1.5
Akabane, AICHI	Nov. 66	1.69	0.079	0.609	51.7	65.4	8.8	1.4
Shime, FUKUOKA	May 66	1.29	0.108	0.385	72.9	67.5	28.5	7.6
〃 〃	〃	1.45	0.091	0.461	25.7	28.2	12.6	2.7
Fukuoka, FUKUOKA	Nov. 66	1.36	0.045	0.495	27.4	60.9	6.6	1.3
〃 〃	〃	1.46	0.071	0.529	30.3	42.7	8.9	1.7
(Japanese Radish Root)								
Asahikawa, HOKKAIDO	Jul. 66	0.85	0.027	0.331	16.8	62.1	15.8	4.8
Sapporo, HOKKAIDO	Aug. 66	0.87	0.021	0.332	15.6	34.9	7.1	2.1
Asahikawa, HOKKAIDO	Sept. 66	0.53	0.031	0.206	13.4	43.7	19.2	9.3
Sapporo, HOKKAIDO	Oct. 66	0.68	0.025	0.252	19.7	77.5	5.0	2.0
Sugito, SAITAMA	Jul. 66	0.96	0.030	0.363	12.4	41.3	10.9	3.0
Niiza, SAITAMA	〃	0.47	0.024	0.183	7.5	31.1	4.0	2.2
〃 〃	Dec, 66	0.57	0.028	0.205	15.9	56.8	5.7	2.8
Sugito, SAITAMA	〃	0.43	0.040	0.113	16.2	40.5	5.4	4.8
Miura, KANAGAWA	Jun. 66	0.91	0.032	0.361	11.7	36.5	9.5	2.6
Yokohama, KANAGAWA	〃	0.85	0.033	0.311	23.7	71.7	14.2	4.6
〃 〃	Nov. 66	0.51	0.038	0.141	26.4	69.5	15.3	10.9
Miura, KANAGAWA	〃	0.53	0.029	0.139	15.3	52.8	4.8	3.5
Niigata, NIIGATA	Aug. 66	0.73	0.029	0.270	20.7	72.0	10.2	3.8
〃 〃	Nov. 66	0.56	0.028	0.184	78.5	290.7	10.6	5.8
Mihama, FUKUI	〃	0.90	0.036	0.353	84.2	233.9	15.3	4.2
〃 〃	〃	0.83	0.045	0.287	82.7	183.8	10.2	3.6
Tsuruga, FUKUI	Dec. 66	0.74	0.042	0.199	159.8	380.5	21.5	10.8
〃 〃	〃	0.60	0.040	0.128	124.0	310.0	11.3	8.8
Fuji, SHIZUOKA	Nov. 66	0.53	0.032	0.186	36.0	112.5	5.2	2.8
〃 〃	Jan. 67	0.36	0.024	0.130	24.7	102.9	4.0	3.1
Sanage, AICHI	Apr. 66	0.76	0.026	0.290	18.0	69.2	3.3	1.1
Akabane, AICHI	May 66	0.98	0.048	0.389	67.6	140.9	10.8	2.8
Sanage, AICHI	Oct. 66	0.52	0.028	0.170	27.7	98.9	6.7	3.9
Akabane, AICHI	Nov. 66	0.83	0.027	0.303	18.8	69.6	4.4	1.5
Shime, FUKUOKA	Dec. 66	0.47	0.031	0.125	7.1	22.9	10.1	8.1
〃 〃	〃	0.46	0.034	0.144	6.0	17.6	4.9	3.4
Fukuoka, FUKUOKA	〃	0.63	0.019	0.235	29.9	157.4	2.9	1.2
〃 〃	〃	0.41	0.017	0.148	24.7	145.3	2.0	1.4
Kaimon, KAGOSHIMA	Jul. 66	0.97	0.036	0.341	19.7	54.8	13.4	3.9
Hayato, KAGOSHIMA	〃	0.78	0.031	0.308	51.5	166.1	35.0	11.4
〃 〃	Feb. 67	0.46	0.032	0.154	38.9	121.6	9.4	6.1
Kaimon, KAGOSHIMA	〃	0.67	0.035	0.193	13.5	38.6	15.6	8.1
(Japanese Radish Leaf)								
Miura, KANAGAWA	Jun. 66	1.64	0.249	0.567	68.8	27.6	30.4	5.4
Yokohama, KANAGAWA	〃	1.63	0.237	0.515	127.6	53.8	67.2	13.0
〃 〃	Nov. 66	1.11	0.191	0.148	110.9	58.1	50.3	34.0
Miura, KANAGAWA	〃	1.02	0.114	0.200	38.7	33.9	9.3	4.7
Fujieda, SHIZUOKA	〃	0.54	0.018	0.202	28.0	155.6	3.9	1.9
〃 〃	Jan. 67	0.44	0.023	0.156	33.0	143.5	4.6	2.9
Sanage, AICHI	Apr. 66	1.22	0.165	0.324	39.1	23.7	9.4	2.9
Akabane, AICHI	May 66	1.35	0.204	0.387	149.1	73.1	26.3	6.8
Sanage, AICHI	Oct. 66	1.00	0.124	0.240	11.3	91.3	14.3	6.0
Akabane, AICHI	Nov. 66	1.30	0.138	0.357	63.1	45.7	7.9	2.2
Shime, FUKUOKA	Dec. 66	1.13	0.177	0.143	36.7	20.7	22.1	15.5
〃 〃	〃	1.39	0.212	0.233	30.1	14.2	14.0	6.0
Fukuoka, FUKUOKA	〃	1.27	0.207	0.235	98.7	47.7	13.0	5.5
〃 〃	〃	0.71	0.047	0.203	41.2	87.7	6.5	3.2
Kaimon, KAGOSHIMA	Jul. 66	1.90	0.305	0.620	76.6	25.1	32.2	5.2
Hayato, KAGOSHIMA	〃	1.16	0.154	0.360	150.8	97.9	75.5	2.1
〃 〃	Feb. 67	1.06	0.154	0.247	107.8	70.0	35.7	14.5
Kaimon, KAGOSHIMA	〃	1.84	0.264	0.294	48.1	18.2	34.5	11.7

Figure 8. ^{90}Sr and ^{137}Cs in Vegetables

—All Japan Mean Values—

—Apr., 1966 to Mar., 1967—



Human Data

The Concentration of Cesium-137 in Human Organs

(National Institute of Radiological Sciences)

The determination of Cesium-137 in human organs has been carried out to know the accumulated amount and the distribution of the radionuclides which originated from the environmental contamination by radioactive fallout in Japan.

The samples of lung, liver, spleen, small intestine were obtained from the Hospital of National Institute of Radiological Sciences in Chiba, during the period from July, 1966 to February, 1967.

The amount of Cesium-137 in these organs was determined by the same method mentioned in page 11, Issue No. 15 of this publication.

The subjects that gave the samples and the results of analyses are summarized in Table 8.

Table 8. The Concentration of ^{137}Cs in Human Organs —Jul., 1966 to Feb., 1967—

by G. Tanaka and H. Kawamura

(National Institute of Radiological Sciences)

(Continued from Table 11. Issue No. 15 of this Publication)

Date of Death	Age	Sex	Organs	^{137}Cs		
				(pCi/kg·Wet Weight)	(pCi/g·Ash)	(pCi/g·Potassium)
Sept. 19, 1966	55	Female	Lung	14.98	1.37	2.38
〃 〃	〃	〃	Liver	30.01	2.52	1.43
〃 〃	〃	〃	Spleen	26.96	1.42	7.32
Oct. 17, 1966	62	Female	S. intestine	7.88	2.66	15.3
Jan. 15, 1967	38	Female	Lung	5.09	0.59	3.72
Jul. 1966			S. intestine	18.97	3.13	13.9
Jul. 22, 1966	64	Male	Liver	22.64	2.26	9.08
〃 〃	〃	〃	S. intestine	50.92	10.58	61.5
Jul. 28, 1966	24	Male	Liver	13.62	1.43	6.85
〃 〃	〃	〃	Spleen	44.49	3.61	15.1
Oct. 2, 1966	34	Male	Liver	131.55	11.20	7.32
〃 〃	〃	〃	S. intestine	33.73	9.58	49.4
Nov. 7. 1966	81	Male	Liver	48.34	10.98	55.4
〃 〃	〃	〃	S. intestine	4.87	1.87	15.5
Oct. 10, 1966	13	Male	Liver	34.33	4.02	23.2
〃 〃	〃	〃	S. intestine	20.77	4.02	19.4
Dec. 1, 1966	56	Male	Liver	114.18	11.17	15.4
〃 〃	〃	〃	S. intestine	25.01	6.49	33.8
Jan. 9, 1967	46	Male	Liver	37.47	3.42	16.7
〃 〃	〃	〃	S. intestine	8.58	1.22	6.89
Feb. 5, 1967	60	Male	Lung	57.87	5.81	48.6
〃 〃	〃	〃	Liver	95.56	10.1	47.1
〃 〃	〃	〃	S. intestine	38.68	6.62	36.0
Feb. 14, 1967	79	Male	Liver	21.44	2.68	49.7
〃 〃	〃	〃	S. intestine	8.49	2.44	15.2

Strontium-90 in Human Bone

(National Institute of Radiological Sciences)

Since 1959, human bones collected from various parts of Japan have been analyzed at the National Institute of Radiological Sciences.

The bone samples were collected from Hokkaido, Miyagi, Akita, Niigata and Tokyo. Sampling locations are shown in Figure 9.

The values of Strontium-90 in bone samples were determined by the same method mentioned in the explanation of page 25, Issue No. 3 of this publication.

Results derived from human bone samples from subjects that deceased during the period from January 1965 to December 1966 are shown in Table 9.

The S.U. (^{90}Sr pCi/g Ca) values obtained up to December 1966, for four different age groups, are summarized in Table 10.

Natural Strontium content was analyzed by atomic absorption spectrophotometry.

Figure 10. shows the S.U. values in Japanese human bone arranged according to age in 1965.

Figure 9. Sampling Locations of Human Bone

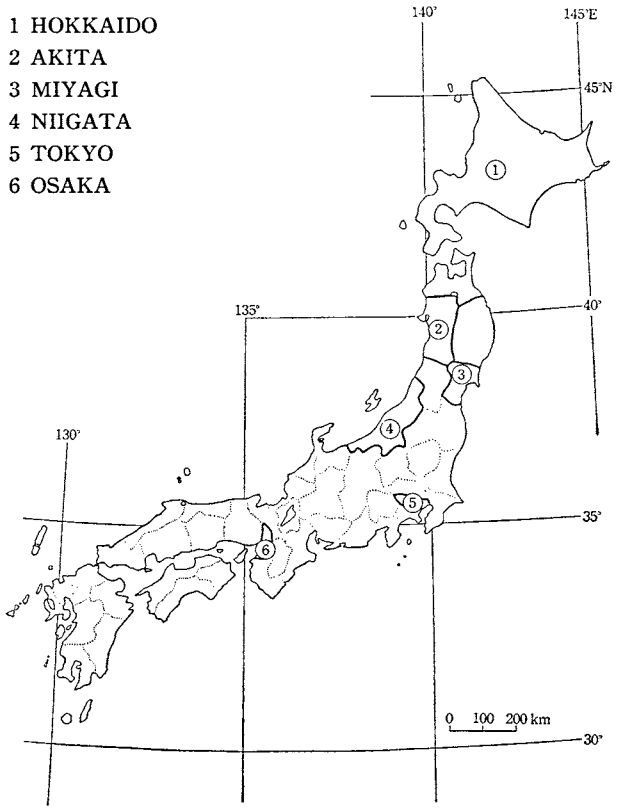


Table 9. ^{90}Sr in Human Bone —1965 to 1966—

By G. Tanaka, S. Ohno and A. Tomikawa, in 1965

By G. Tanaka, H. Kawamura, M. Izyuin and H. Ohno, in 1966

(National Institute of Radiological Sciences)

(Continued from Table 12. Issue No. 7 of this Publication) —during **1965**—

Location	Age	Sex	Month of Death	Number	Name of Bone	Natural Sr (mg/gCa)	^{90}Sr (pCi/gCa)
1965							
Tokyo	Fetus	—	Apr	1	Whole Skeleton	0.321	2.19
〃	〃	—	Oct	〃	〃	0.233	2.89
〃	〃	—	〃	〃	〃	0.242	1.68
〃	〃	—	〃	〃	〃	0.240	1.61
〃	〃	—	〃	〃	〃	0.242	2.02
〃	〃	—	〃	〃	〃	0.186	2.19
〃	〃	—	〃	〃	〃	0.254	1.35
〃	〃	—	Nov	〃	〃	0.220	2.58
〃	〃	—	〃	〃	〃	0.216	3.49
〃	〃	—	〃	〃	〃	0.230	2.20
〃	〃	—	〃	〃	〃	0.220	1.99
〃	〃	—	Dec	〃	〃	0.291	1.67
〃	0 (1 Mo.)	—	May	〃	〃	0.272	2.56
〃	0 (7 〃)	—	Oct	〃	〃	0.352	4.91
〃	0 (8 〃)	—	Dec	〃	〃	0.242	4.99
〃	0 (10 〃)	—	Oct	〃	〃	0.306	2.50
〃	0 (〃 〃)	—	〃	〃	〃	0.314	2.06
〃	0 (〃 〃)	—	Dec	〃	〃	0.262	2.21
〃	0 (〃 〃)	—	Nov	〃	〃	0.358	3.91
〃	0 (〃 〃)	—	Oct	〃	〃	0.292	5.63

Location	Age	Sex	Month of Death	Number	Name of Bone	Natural Sr (mg/gCa)	^{90}Sr (pCi/gGa)
Tokyo	1	M	Oct	1	Whole Skeleton	0.362	10.90
〃	〃	〃	〃	〃	〃	0.314	6.09
〃	2	〃	May	〃	Rib,Femur	0.388	11.08
〃	3	F	Oct	〃	〃	0.329	6.01
〃	4	M	Jan	〃	〃	0.318	3.56
〃	5	F	May	〃	Rib, Femur	0.306	3.96
〃	6	M	〃	〃	〃	0.342	1.50
〃	〃	〃	—	〃	Rib, Vertebrae, Femur	0.320	1.96
〃	7	〃	Oct		Rib	0.298	2.70
〃	〃	〃	〃	〃	〃	0.425	2.18
〃	〃	〃	〃	〃	〃	0.322	3.92
〃	8	F	May	〃	〃	0.305	3.06
〃	〃	M	Feb	〃	〃	0.325	3.47
〃	〃	〃	Jul	〃	〃	0.347	2.38
〃	11	〃	Oct	〃	〃	0.405	1.72
〃	〃	〃	〃	〃	〃	0.446	1.95
〃	14	〃	Jan	〃	〃	0.430	2.10
〃	〃	F	Mar	〃	〃	0.431	2.27
〃	15	〃	Nov	〃	〃	0.490	3.05
〃	〃	M	Jan	〃	〃	0.432	2.24
〃	16	F	Mar	〃	〃	0.456	1.40
Akita	〃	M	〃	〃	〃	0.512	1.81
〃	〃	〃	Apr	〃	〃	0.425	3.80
Tokyo	〃	〃	Jan	〃	〃	0.620	2.06
〃	〃	F	Feb	〃	〃	0.520	2.94
〃	17	M	Oct	〃	〃	0.459	2.10
〃	〃	〃	Mar	〃	〃	0.551	1.92
〃	〃	〃	Feb	〃	〃	0.522	2.12
〃	18	〃	Oct	〃	〃	0.532	2.14
〃	〃	〃	〃	〃	〃	0.522	2.11
〃	〃	〃	Jul	〃	〃	0.608	4.01
〃	〃	F	Jan	〃	〃	0.501	2.06
〃	20	M	〃	〃	〃	0.490	2.02
〃	〃	〃	〃	〃	〃	0.532	1.69
Osaka	〃	F	Jun	〃	〃	0.555	1.07
Tokyo	〃	M	〃	〃	〃	0.524	1.95
Osaka	23	F	Feb	〃	〃	0.471	0.77
Tokyo	〃	M	〃	〃	〃	0.620	1.34
〃	26	M	Jan	〃	〃	0.526	1.31
Akita	30	〃	〃	〃	〃	0.452	2.12
〃	31—34	〃	〃	2	〃	0.490	1.61
〃	30—34	F	Apr—Jul	3	〃	0.632	0.46
Tokyo	32—35	M	Mar—Jul	〃	〃	0.602	0.57
〃	36—39	F	〃	〃	〃	0.515	0.36
Miyagi	35—40	M	Apr—Jul	2	〃	0.352	0.40
〃	41—44	〃	〃	5	〃	0.532	0.31
Hokkaido	42—45	F	〃	4	〃	0.425	0.28
Niigata	40—48	M	Jan—Jun	3	〃	0.430	0.34
Hokkaido	51—59	〃	Apr—Aug	〃	〃	0.530	0.28
〃	53—59	〃	Feb—Mar	4	〃	0.512	0.32
Osaka	60—67	〃	Feb—Apr	3	〃	0.505	0.25
〃	70—79	〃	〃	2	〃	0.542	0.27

—during 1966—

Location	Age	Sex	Month of Death	Number	Name of Bone	Natural Sr (mg/gCa)	^{90}Sr (pCi/gCa)
1966							
Tokyo	Fetus	—	Jul	3	Whole Skeleton	0.233	1.84
Miyagi	〃	—	Aug	1	〃	0.302	1.60
Tokyo	〃	—	〃	〃	〃	0.318	2.16
〃	〃	—	Sept	2	〃	0.292	1.45
〃	〃	—	Oct	1	〃		2.20
Hokkaido	0 (4 Mo.)	M	Apr	〃	〃		2.61
Tokyo	0 (4 〃)	〃	Aug	2	〃		2.20
〃	0 (2 〃)	〃	〃	1	〃		1.45
〃	0 (—)	〃	〃	〃	〃	0.294	2.40
〃	0 (—)	〃	〃	〃	〃	0.215	2.51
〃	0 (—)	〃	Jan	〃	〃		1.11
〃	0 (—)	F	〃	〃	〃		2.34
〃	0 (—)	M	〃	〃	〃		3.24
〃	0 (—)	〃	May	〃	〃		2.59
〃	0 (—)	F	〃	6	〃		2.36
Hokkaido	0 (—)	〃	Apr	1	〃		0.91
Tokyo	1	〃	Mar	〃	〃	0.258	6.11
〃	〃	M	Apr	〃	〃	0.264	3.14
〃	〃	F	May	〃	〃	0.302	8.72
〃	〃	〃	Aug	〃	〃	0.242	3.44
〃	〃	M	〃	〃	〃	0.201	1.69
〃	〃	〃	〃	〃	〃	0.262	4.01
〃	〃	F	〃	〃	〃		4.79
〃	2	M	Jan	〃	〃	0.192	5.95
Miyagi	〃	〃	Aug	〃	Femur	0.232	2.62
Tokyo	〃	M	Apr	〃	Rib, Femur		3.16
〃	〃	〃	〃	〃	Whole Skeleton		3.45
〃	3	〃	〃	〃	〃		2.64
〃	〃	〃	〃	〃	〃		2.37
〃	〃	〃	Jan	〃	Rib, Femur	0.268	6.35
〃	4	F	Apr	〃	Rib		2.51
〃	〃	M	Nov	〃	〃		2.22
〃	5	F	Apr	〃	〃		2.71
〃	〃	M	Aug	〃	〃		1.61
〃	6	〃	Jan	〃	〃		2.52
〃	7	F	Aug	〃	〃	0.298	2.24
〃	8	M	Apr	〃	Rib, Vertebrae		2.81
〃	〃	〃	〃	〃	Femur	0.381	1.27
〃	9	〃	〃	〃	Rib, Vertebrae, Femur	0.412	1.44
〃	〃	〃	〃	〃	〃		1.05
〃	〃	F	Aug	〃	〃	0.351	1.49
〃	10	M	Apr	〃	〃	0.308	1.91
〃	〃	〃	〃	〃	Femur		2.20
〃	〃	〃	〃	〃	Vertebrae		2.47
〃	〃	F	〃	〃	Rib, Femur		2.06
〃	〃	M	〃	〃	〃		2.22
〃	11	〃	Aug	〃	〃	0.263	1.89
〃	14	〃	Apr	〃	Vertebrae	0.298	1.93
〃	〃	〃	〃	〃	〃	0.255	2.06
〃	〃	〃	〃	〃	Rib, Vertebrae. Femur	0.422	2.88
〃	〃	〃	〃	〃	〃	0.265	1.74
〃	17	〃	〃	〃	Vertebrae	0.321	2.17
〃	〃	〃	〃	〃	Rib	0.402	2.04
〃	〃	〃	〃	〃	Femur		1.04
〃	〃	〃	〃	〃	Rib	0.339	1.89
Hokkaido	17	F	Sept	〃	Rib, Femur		3.89
〃	〃	〃	〃	〃	Rib		1.18
Tokyo	18	〃	Aug	〃	〃	0.392	2.42
Akita	25	M	Sept	〃	〃		1.52
Tokyo	28	F	Mar	2	〃	0.452	1.24
Niigata	25—29	M	Feb	6	〃		0.55
Tokyo	30—39	F	Apr	4	〃		0.42
〃	40—49	M	Jun	5	〃	0.368	0.35
〃	50—59	〃	Oct	〃	〃	0.421	0.42

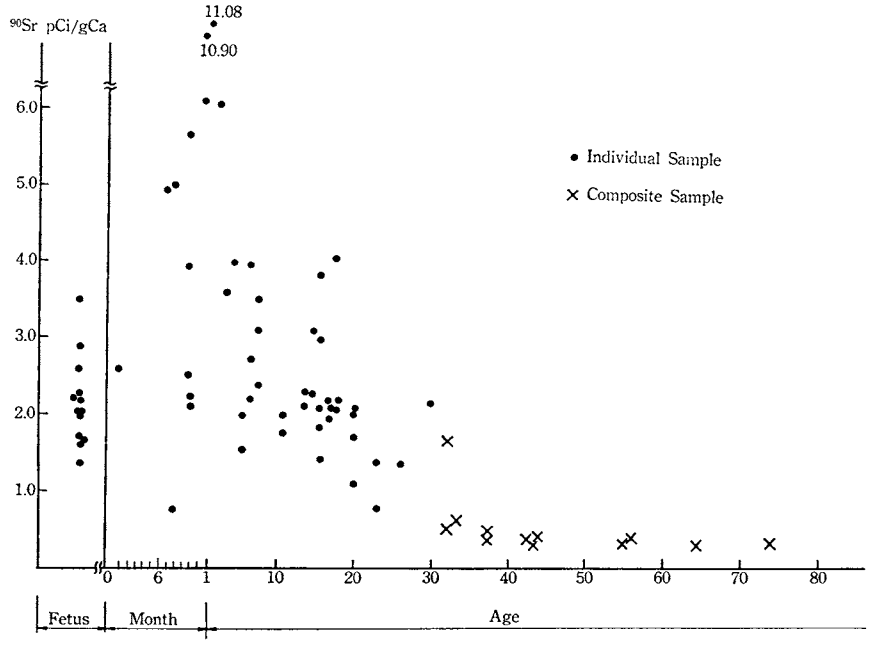
Table 10. Summary of ^{90}Sr (pCi/gCa) in Human Bone —1965 to 1966—

By G. Tanaka, S. Ohno, H. Kawamura, A. Tomikawa and M. Izyuin.
(National Institute of Radiological Sciences)

(Continued from Table 13. Issue No. 7 of this Publication)

		Age group			
		Fetus	0—4	5—19	20
1965	Number of Samples	12	13	27	20
	Mean	2.16	5.11	2.48	0.98
	Standard deviation	0.55	2.85	0.75	0.66
	Minimum～Maximum	1.35～3.49	2.06～11.08	1.40～4.01	0.25～2.12
1966	Number of Samples	8	35	27	23
	Mean	1.85	3.25	2.07	0.75
	Standard deviation	0.29	0.79	0.62	0.46
	Minimum～Maximum	1.45～2.20	0.91～8.72	1.04～3.89	0.35～1.52

Figure 10. S. U. in Japanese Human Bone Arranged According to Age in 1965



DATA OF THE SIXTH NUCLEAR TEST OF THE PEOPLE'S REPUBLIC OF CHINA

Meteorological Data

Gross Beta-radioactivity and Radioactivity of Iodine in Rain and Dry Fallout

Part 1. *(Meteorological Agency)*

Survey of gross beta-activity in precipitation and air-borne dusts has been conducted with the network of 13 stations shown in the Figure 11. Processes of sampling and counting are the same with that in the explanation on page 2, Issue No. 5 of this publication series.

The results obtained during the period from the 14th June to the 11th July, 1967 are shown in Table 11 and 12. Both air-borne dust radioactivity concentrations and radioactive depositions were generally normal in these period with an exception of slightly high from the 21st June onward.

The sixth nuclear detonation of the People's Republic of China (the first hydrogen bomb) was conducted on the 17th June 1967, according to the news reporting. Later examination of microbarograph records obtained at the Japan Meteorological Agency network results in the finding that its explosion time and magnitude were assumed respectively to be roughly 00^h 30^m (GMT) of the 17th June and low megaton equivalant to TNT provided the explosion site (90°E 40°N) would be the same as ever*.

Transit of the radioactive cloud over Japan can be understood by meteorological trajectory drawn in Figure 12, which showed the starting time and consecutive locations of air parcel at the time indicated by GMT for respectively two levels. Lateral spread was drawn to estimate the horizontal diffusion of radioactive cloud and shows 2 standard deviation with the Fickian diffusion coefficient $K=5\times10^8 cm^2. sec^{-1}$.

The first arrival of the fallout was not detected in the ground level of the mainland Japan, but the Japan Meteorological Agency ocean weather vessel (134°E, 29°N) detected it on the 19th to 20th June, corresponding to the 300mb trajectory*. Overall increase of the fallout in Japan was not so high as to be expected, but the very slight increase was observed on the 21st to the 25th June and the successive days as shown in Figure 13. The appearance corresponds to the 500mb trajectory. Also the ground observation of atomospheric electricity near Tokyo suggested passage of the nuclear cloud at the high altitude on the 20th to 21st June*. The above mentioned and further investigation support the fact that the large part of nuclear cloud was injected into the stratosphere*.

* N. Murayama and H. Fujimoto (1967) Meteorological Analysis of Radioactive Fallouts from the Four Nuclear Explosions of 1966-1967. in press in Jour. Meteor. Resear. Tokyo.

Figure 11. Fallout Observation Network of Meteorological Agency

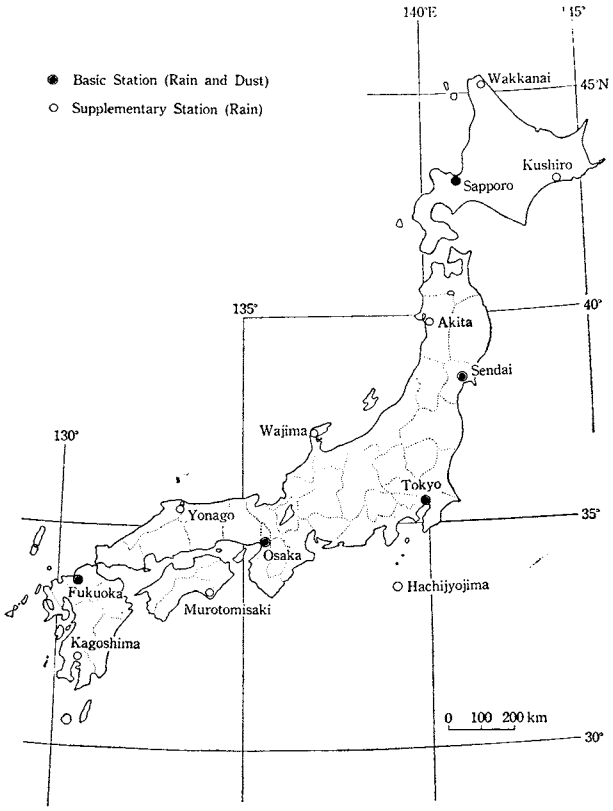


Table 11. Gross β-activity in Rain —Jun. 14 to Jul., 11. 1967—

Compiled by N. Murayama, H. Fujimoto H. Ueno. H. Shimura and S. Maeshima

(Meteorological Agency)

Upper Rank: Concentration (pCi/cc)

Lower Rank: Deposition (mCi/km²)

Station \ Date	Jun. 1967 14	15	16	17	18	19	20	21	22	23	24	25	26	27
Wakkanai											0.0			
//											0.0			
Sapporo	0.0		0.0		0.0			0.0						
//	0.0		0.0		0.0			0.0						
Kushiro			0.0											
//			0.0											
Sendai	0.1					0.1	0.0						0.0	0.0
//	0.8					0.3	0.0						0.0	0.0
Akita													0.0	
//													0.0	
Tokyo			0.0						0.0	0.0			0.1	
//			0.0						0.0	0.0			0.5	
Wajima													0.0	
//													0.0	
Hachijojima														
//														
Osaka										0.0			0.1	
//										0.0			1.9	
Yonago									0.0			0.2	0.0	
//									0.0			0.6	0.0	

Station \ Date	Jun. 1967 14	15	16	17	18	19	20	21	22	23	24	25	26	27
Murotomisaki								0.2	0.2	0.1				
//								0.5	1.9	5.5				
Fukuoka										0.0			0.2	
//										0.0			1.0	
Kagoshima						0.1		0.1	0.1	0.0		0.0		
//						0.2		2.9	0.2	0.0		0.0		

Station \ Date	Jun. 1967 28	29	30	Jul. 1967 1	2	3	4	5	6	7	8	9	10	11
Wakkanai	0.1	0.0	0.0	0.4			0.0							
//	1.3	0.0	0.0	2.1			0.0							
Sapporo		0.0		0.0		0.0	0.1	0.0		0.0	0.0			
//		0.0		0.0		0.0	0.7	0.0		0.0	0.0			
Kushiro	0.0	0.0	0.0					0.0		0.0				
//	0.0	0.0	0.0					0.0		0.0				
Sendai		0.0				0.0		0.0		0.0			0.0	0.1
//		0.0				0.0		0.0		0.0			0.0	0.3
Akita		0.0				0.1	0.0						0.0	
//		0.0				4.2	0.0						0.0	
Tokyo		0.0				0.0				0.0		0.0	0.0	
//		0.0				0.0				0.0		0.0	0.0	
Wajima		0.0				0.0	0.0	0.0	0.0	0.0		0.0	0.0	
//		0.0				0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Hachijojima														
//														
Osaka	0.0	0.0			0.0	0.0	0.1		0.1	0.1	0.0	0.0	0.0	
//	0.0	0.0			0.0	0.0	1.7		0.5	0.4	0.0	0.0	0.0	
Yonago	0.0	0.0			0.0	0.0	0.0		0.0			0.0	0.0	
//	0.0	0.0			0.0	0.0	0.0		0.0			0.0	0.0	
Murotomisaki	0.1					0.1								
//	2.1					2.3								
Fukuoka	0.1	0.0		0.0	0.1	0.0		0.0	0.1	0.0	0.1	0.1	0.0	
//	1.5	0.0		0.0	2.7	0.0		0.0	0.5	0.0	3.4	7.0	0.0	
Kagoshima	0.0	0.0	0.1	0.0		0.0		0.0	0.0	0.0	0.0		0.0	
//	0.0	0.0	0.1	0.0		0.0		0.0	0.0	0.0	0.0		0.0	

Table 12. Gross β-activity in Dust —Jun. 12 to Jul. 11, 1967—

Compiled by N. Murayama, H. Fujimoto, H. Ueno, H, Shimura and S. Maeshima *(Meteorological Agency)*

(pCi/m^3)

Station	Jun. 1967 12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Sapporo	0.0		0.2				0.0	0.2	0.0	0.2	0.2	0.0	0.2	0.2	0.2
Sendai	0.2		0.2		0.2			0.2	0.0	0.2	0.2	0.2	0.2	0.2	0.2
Tokyo	0.2		0.4		0.6			0.7	0.2	0.2	0.3	0.2	0.3	0.3	0.2
Osaka	1.0		1.0		0.7			0.5	0.5	1.2	0.7	0.7	1.0	1.0	0.2
Fukuoka	0.5		0.7		0.7		0.5	0.7	0.7	1.2	1.2	0.5	1.0	0.5	0.2

Station	Jul. 1967 27	28	29	30	1	2	3	4	5	6	7	8	9	10	11
Sapporo		0.0		0.0			0.0		0.2		0.0			0.0	
Sendai		0.2		0.2			0.0		0.2		0.2			0.0	
Tokyo		0.2		0.2			0.2		0.6		0.2			0.4	
Osaka		0.5		0.5			0.5		0.7		0.7			0.5	
Fukuoka		0.2		0.5			0.2		0.5		0.2			0.2	

Figure 12. The Meteorological Trajectory at The Time when The 6th Nuclear Test was carried out by the People's Republic of China

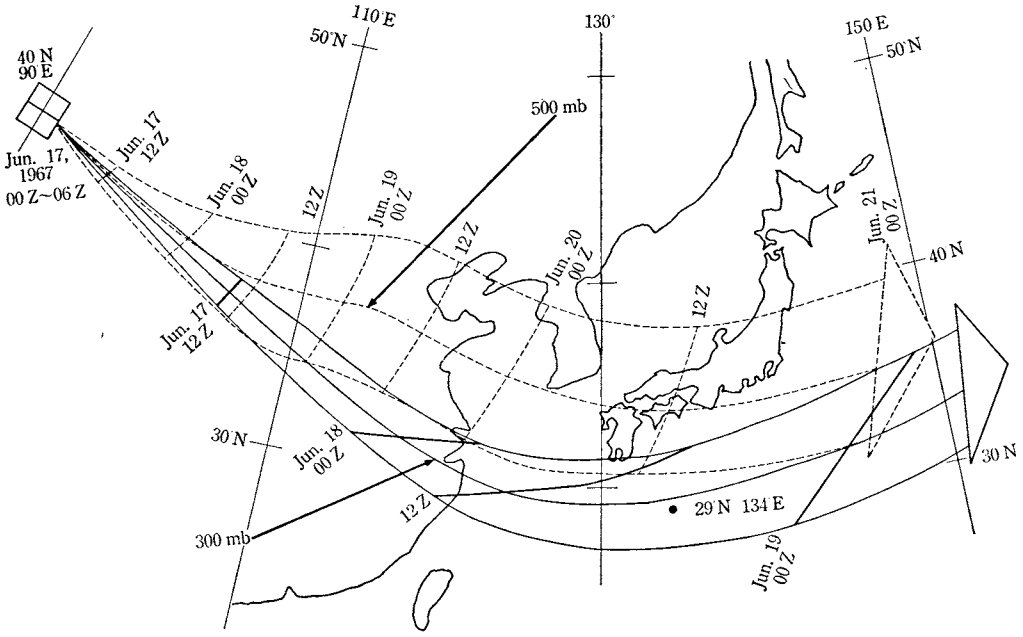
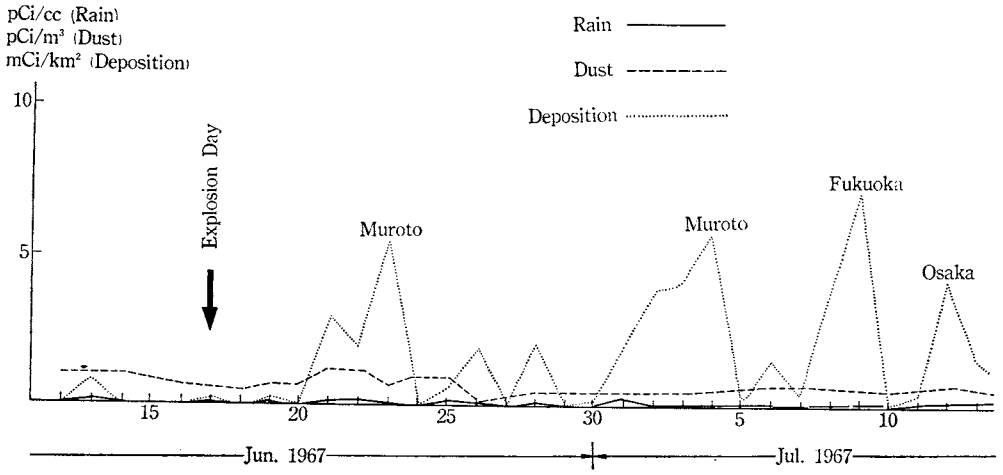


Figure 13. Temporal Variation of Gross β-activity in Rain and Dust near the Ground (Maximum Value: in Japan)



Part 2. *(Meteorological Research Institute, Tokyo)*

The Meteorological Research Institute, Tokyo, measured beta-radioactivity in rain and dry fallout collected in a tray at the institute.

Results of measurements obtained during the period from the 17th of June, 1967 to the 1st of July, 1967 when the effect of the 6th nuclear test by the People's Republic of China was noticed, are shown in Table 13.

Table 13. Deposits of Radioactive Fallout —Jun. 17, 1967 to Jul. 1, 1967—

By Y. Miyake, K. Saruhashi, Y. Katsuragi and T. Kanazawa

(Meteorological Research Institute, Tokyo)

Date of Sampling	Duration of Collection (hr)	Total β-activity (mCi/km²)	Remarks
Jun. 1967			
9.00 a. m., 17th to 9.00 a. m., 18th	24	0.02	Dry follout
〃 18〃 〃 〃 19〃	〃	0.19	〃
〃 19〃 〃 〃 20〃	〃	0.49	Rain (0.6 mm)
〃 20〃 〃 〃 21st	〃	0.04	Dry fallout
〃 21st 〃 〃 22th	〃	0.64	Rain (4.6 mm)
〃 22th 〃 〃 23〃	〃	0.39	〃 (13.9 mm)
〃 23〃 〃 〃 24〃	〃	0.03	Dry fallout
〃 24〃 〃 〃 25〃	〃	0.24	〃
〃 25〃 〃 〃 26〃	〃	0.03	〃
〃 26〃 〃 〃 27〃	〃	0.02	〃
〃 27〃 〃 〃 28〃	〃	0.75	Rain (25.0 mm)
〃 28〃 〃 〃 29〃	〃	0.03	Dry fallout
〃 29〃 〃 〃 30〃	〃	0.02	〃
Jul. 1967			
Jun. Jul.			
9.00 a. m., 30th to 9.00 a. m., 1st	24	0.03	Dry fallout

Part 3. *(National Institute of Radiological Sciences)*

Daily rain and dry fallout samples were continously (from 9 a.m. to the next 9 a.m.) collected on the roof of the building of National Institute of Radiological Sciences in Chiba City, to determine the gross beta-activity and radioactivity of Iodine.

Gross beta-activity was measured with a Geiger-Müller counter using the standard of Uranium Oxide (U_3O_8).

After the addition of an Iodine carrier to the fallout samples, the Iodine was separated chemically for radioactivity determination, with a beta-ray low back ground counter using an Indine-131 standard.

The radioactivities of both samples were measured 6 hours after sample collection.

Results obtained during June 18, 1967 to July 4, 1967 are shown in Table 14.

In the sample of the 18th~19th June, 1967, Neptunium-239 was detected by gamma-ray spectroscopic method. And beta-ray energy spectrum determined with low back ground beta-ray spectrometer are shown in Figure 14. The spectrum indicated the same tendency as that of the 5th nuclear explosion test by the People's Republic of China.

Table 14. Gross β-activity and Radioactivity of Iodine in Rain and Dry Fallout in Chiba City

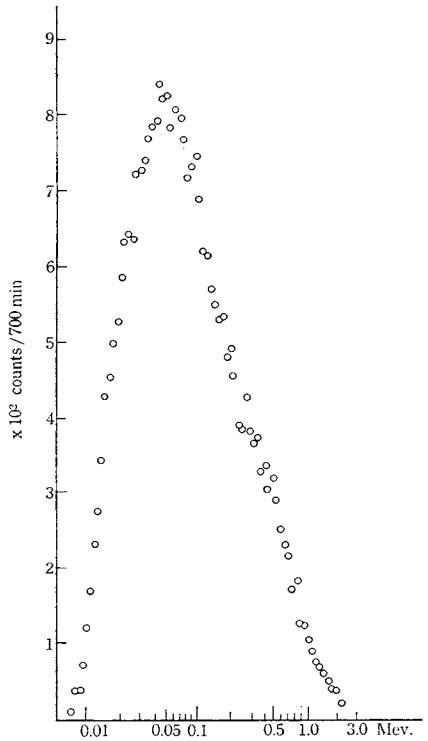
By M. Saiki, H. Kamada, Y. Ohmomo, E. Nakano, and H. Yamaguchi

(National Institute of Radiological Sciences)

Date of Sampling	Date of Determination	Gross β-activity (mCi/km²)	Radioactivity of Iodine (mCi/km²)	Remarks
18~19 Jun., 1967	19 Jun., 1967	1.38	0.098	
19~20 〃 〃	20 〃 〃	0.87	0.062	
20~21 〃 〃	21 〃 〃	0.07	0.000	
21~22 〃 〃	22 〃 〃	0.03	0.008	
22~23 〃 〃	23 〃 〃	0.04	0.070	Rain (9 mm)

Date of Sampling	Date of Determination	Gross β-activity (mCi/km^2)	Radioactivity of Iodine (mCi/km^2)	Remarks
23~24 Jun., 1967	24 Jun., 1967	0.08	0.026	
24~25 〃 〃	25 〃 〃	0.07		Rain (2 mm)
25~26 〃 〃	26 〃 〃	0.32		
26~27 〃 〃	27 〃 〃	0.07		
27~28 〃 〃	28 〃 〃	0.08		
28~29 〃 〃	29 〃 〃	0.62		Rain (20 mm)
29~30 〃 〃	30 〃 〃	0.07		
30~ 1 Jul., 〃	1 Jul., 〃	0.04		Rain (10 mm)
1~ 3 〃 〃	3 〃 〃	0.53		Rain (2 mm)
3~ 4 〃 〃	4 〃 〃	0.18		

Figure 14. Beta Ray Energy Spectrum of Fallout sample collected on the 18th to the 19th, Jun, 1967
By M. Saiki and H. Kamada
(National Institute of Radiological Sciences)



Chemical Composition of Dry Fallout

(Meteorological Research Institute, Tokyo)

The Meteorological Research Institute, Tokyo carried out radiochemical analysis of rain water collected from the 19th to the 22nd of June, 1967 when the effect of the 6th nuclear test by the People's Republic of China was detected.

Results obtained are indicated in Table 15.

Table 16 shows the contents and the ratio of Uranium-237 and Neptunium-239 in fallout particles originated from the six nuclear tests by the People's Republic of China.

Table 15. Radiochemical Analysis of Rain Water
Date of sampling : Jun. 19~22, 1967 (5.2mm)
(The value reduced on the 3rd of July, 1967)
By Y. Miyake, K. Saruhashi, Y. Katsuragi, T. Kanazawa and Y. Sugimura
(Meteorological Research Institute, Tokyo)

Nuclides	(Percentage in Activity) Fission and induced product
^{237}U	30.9%
^{239}Np	18.9
^{99}Mo, ^{132}Te, ^{103}Ru, ^{106}Ru, ^{106}Rh	12.3
^{95}Zr, ^{95}Nb	3.9
^{89}Sr, ^{90}Sr, ^{140}Ba	6.9
^{131}I	2.7
Rare Earths	24.5

Table 16. Contents and The Ratio of ^{237}U and ^{239}Np in bomb debris originated from nuclear tests by the People's Republic of China.
By T. Miyake, K. Saruhashi, Y. Katsuragi, T. Kanazawa, and Y. Sugimura
(Meteorological Research Institute, Tokyo)
(7 days after test)

Date of test	^{237}U (%)	^{239}Np (%)	$^{237}U/^{239}Np$
Oct. 16, 1964 (The 1st Test)	3.5	57.3	0.06
May 14, 1965 (The 2nd Test)	1.0	31.2	0.03
May 9, 1966 (The 3rd Test)	0.8	2.5	0.32
Oct. 27, 1966 (The 4th Test)	0.9	21.4	0.04
Dec. 28, 1966 (The 5th Test)	4.8	26.8	0.18
Jun. 17, 1967 (The 6th Test)	16.4	56.5	0.29

Gross Beta-Radioactivity in Upper Air

(Research and Development H. Q., Japan Defense Agency)

Since 1960, Research and Development H. Q., Japan Defense Agency has measured the beta-activity of dust in the lower layer of the stratosphere and and tropopause using aircraft as collectors.

The samples were taken over three areas of Japan using both dust samplers attached under the aircraft wings and gummed papers attached in front of them.

The sampling flight with gummed papers was made using two aircraft at the same time, one of which made a normal sampling flight and the other only upward and downward flight. The difference between the amounts of radioactivity of the samples collected by the two aircraft is taken as the value at the flight altitude.

Figure 15 shows three sampling areas of Japan.

As to the sixth nuclear test, aircraft detected little amount of radioactivity over three sampling areas of Japan, except the South area of Kyusyu on the day following the nuclear test. So it is assumed that the radioactive cloud passed fast over the South of Japan.

Results obtained is shown in Table 17.

Figure 15. Three Sampling Areas of Japan

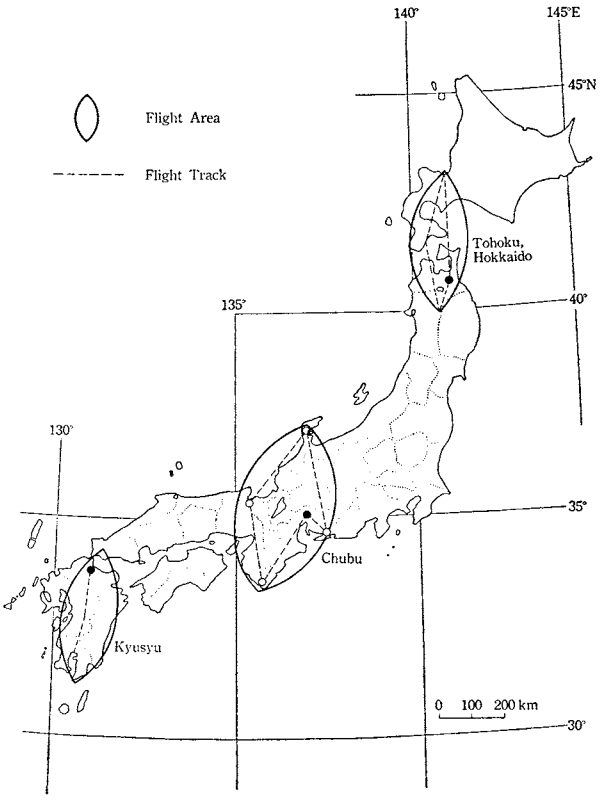


Table 17. Gross β-activity in Upper Air — Jun. 18 to Jun. 24, 1967—

By S. Igarashi

(Research and Development H. Q., Japan Defense Agency)

(pCi/m³)

Date \ Sky Area		Tohoku, Hokkaido		Chubu		Kyushu		
		12,000 m	6,000 m	12,000 m	6,000 m	12,000 m	10,000 m	6,000 m
Jun. 18, 1967	1.00 p. m.					79.5		
	4.15 p. m.						580.4	
	4.30 p. m.					53.7		
Jun. 19, 1967	10.15 a. m.			3.2				
	2.30 p. m.						1.2	
Jun. 20, 1967	9.15 a. m.						1.4	
	9.30 a. m.		0.6					
	3.00 p. m.							0.5
	〃					1.9		
	6.00 p. m.				3.9			
	〃		0.1					
	9.00 p. m.							1.4
Jun. 21, 1967	9.00 a. m.		0.2		0.9			0.5
	3.00 p. m.							0.1
	6.00 p. m.				1.0			
	〃		0.4					
	9.00 p. m.							0.2
Jun. 22, 1967	9.00 a. m.				0.9			2.2
	3.00 p. m.							
Jun. 23, 1967	9.00 a. m.				0.8			
	3.00 p. m.							0.2
	6.00 p. m.				0.2			
	9.00 p. m.							0.3
Jun. 24, 1967	9.00 a. m.				0.2			