RADIOACTIVITY SURVEY DATA in Japan

NUMBER 7

MAY 1965

National Institute of Radiological Sciences

Chiba, Japan

In April 1963, in compliance with directives set forth by the Japan Atomic Energy Commisson, the Division of Radioactivity Survey, National Institute of Radiological Sciences was directed to:

1. Collect, record and maintain information on radiation from National and International sources.
2. Analyze the information collected.
3. Establish a radiation survey information exchange center.

As a part of the assignment, data from the Nationwide Radioactivity Survey Network were assembled and compiled in this publication. Present plans are to issue this type of publication on a quarterly basis.

For further information on any subject reported in this issue, readers are referred to the contributors indicated in the table headings.

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Contents

DATA OF ROUTINE SURVEY

DATA OF THE SECOND NUCLEAR TEST BY PEOPLE'S REPUBLIC OF CHINA

National Institute of Radiological Sciences

DATA OF ROUTINE SURVEY

Meteorological Data

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

Part 1 *(Meteorological Research Institute, Tokyo)*

Since 1954, rain water 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 in Japan, have also been analyzed.

The results of observation during the period from January to July 1965 are shown in Table 1. Total cumulative deposits of strontium-90 and cesium-137 reached the levels of 65.9 and 176.4 mCi/km^2 respectively, at the end of July 1965. Figure 1 shows the monthly deposits of strontium-90.

Table 1. Monthly Deposits of ^{90}Sr and ^{137}Cs—Jan. to Jul. 1965—

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

Sapporo (Sapporo District Central Meteorological Observatory)
Location : 43°03′ N, 141°20′ E (16.9 m)
Receiver Collection Area : 0.5 m^2

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km^2)	0.67	0.47	0.66	0.36	0.14	0.29	0.15
Precipitation (mm)	105.2	177.1	95.4	56.6	38.8	46.1	

Akita (Akita District Meteorological Observatory)
Location : 39°43′ N, 140°06′ E (9.1m)
Receiver Collection Area : 0.5 m^2

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km^2)	1.86	1.70	2.19	0.99	0.33	0.74	0.29
Precipitation (mm)	212.8	88.5	108.2	79.5	95.3	112.9	

Sendai (Sendai District Central Meteorological Observatory)
Location : 38°16′ N, 140°54′ E (38.4 m)
Receiver Collection Area : 0.5 m^2

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km^2)	0.27	0.28	0.33	0.36	0.40	0.36	0.31
Precipitation (mm)	83.6	15.7	23.5	41.7	197.1	123.9	

Mito (Mito District Meteorological Observatory)
Location : 36°23′ N, 140°28′ E (29.2 m)
Receiver Collection Area : 0.5 m^2

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km^2)	0.25	0.10	0.31	0.53	0.67	0.53	0.23
Precipitation (mm)	74.2	15.2	27.4	81.3	335.7	225.9	

Tokyo (Meteorological Research Institute)
Location : 35°42′ N, 139°39′ E
Receiver Collection Area : 1 m²

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km²)	0.24	0.29	0.68	0.65	0.64	0.59	0.18
^{137}Cs (mCi/km²)	0.39	0.45	1.68	1.54	2.12	1.82	0.49
$^{137}Cs/^{90}Sr$	1.6	1.6	2.5	2.4	3.3	3.1	2.7
Precipitation (mm)	45.1	17.0	61.0	81.3	431.7	217.6	105.7

Tokyo (Tokyo District Central Meteorological Observatory)
Location : 35°41′ N, 139°46′ E (4.1m)
Receiver Collection Area : 0.5 m²

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km²)	0.35	0.14	0.42	0.53	0.44	0.56	0.18
Precipitation (mm)	48.0	10.5	44.5	87.0	400.0	219.5	

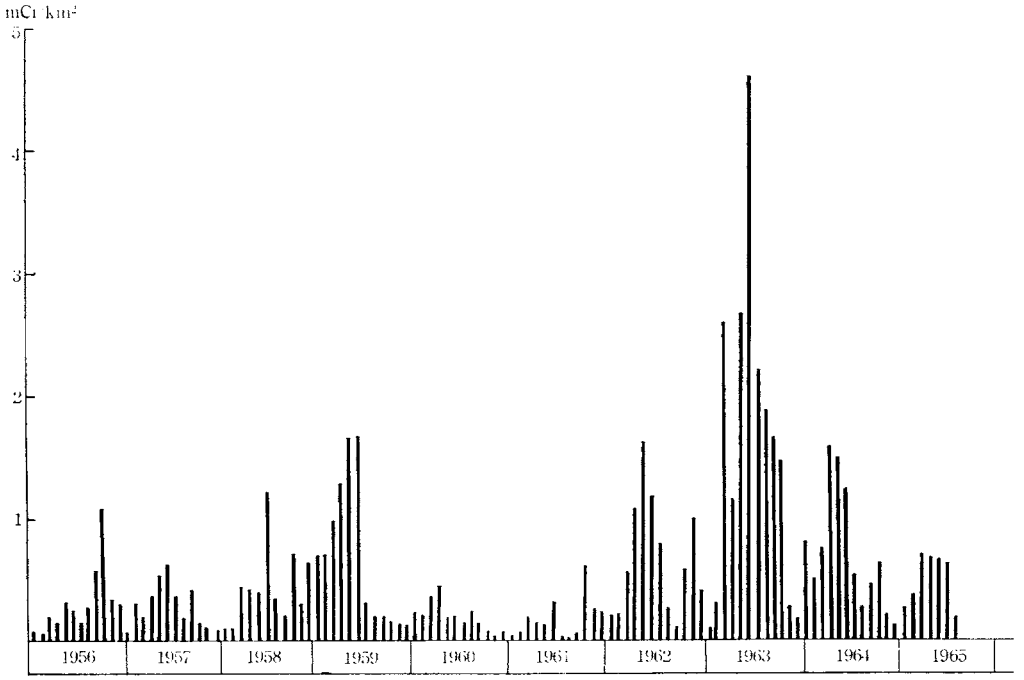
Osaka (Osaka District Central Meteorological Observatory)
Location : 34°39′ N, 135°32′ E (6.7 m)
Receiver Collection Area : 0.5 m²

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km²)	0.24	0.14	0.21	0.46	0.34	0.29	0.14
Precipitation (mm)	62.9	25.4	109.4	99.6	269.8	186.2	

Fukuoka (Fukuoka District Central Meteorological Observatory)
Location : 33°35′ N, 130°23′ E (2.1 m)
Receiver Collection Area : 0.5 m²

	1965 Jan	Feb	Mar	Apr	May	Jun	Jul
^{90}Sr (mCi/km²)	0.88	0.18	0.55	0.51	0.35	0.31	0.15
Precipitation (mm)	61.9	27.1	71.6	142.3	194.3	244.0	

Figure 1. Monthly Deposits of ^{90}Sr —Since 1956—
—Meteorological Research Institute, Tokyo—



Part 2. *(National Institute of Radiological Sciences)*

Since 1964, rain water and fallout dust have been collected monthly in a receiver placed on the roof of National Institute of Radiological Sciences, Chiba City, to determine the content of strontium-90 and cesium-137.

The results obtained are shown in Table 2.

Table 2 Monthly Deposits of ^{90}Sr and ^{137}Cs, Chiba City
—Jan. to Dec. 1964 –

By M. Saiki and T. Koyanagi
(National Institute of Radiological Sciences)

	1964 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
^{90}Sr (mCi/km^2)	0.78	0.52	1.34	1.06	1.54	1.17	0.47	0.28	0.68	0.62	0.25	0.17
^{137}Cs (mCi/km^2)	1.73	0.82	2.12	1.61	1.66	1.93	—	0.68	1.19	0.68	0.57	0.34
$^{137}Cs/^{90}Sr$	2.2	1.6	1.6	1.5	1.1	1.7	—	2.4	1.7	1.1	2.3	2.0

Part 3 *(Japan Analytical Chemistry Research Institute)*

Since May 1963, the Japan Analytical Chemistry Research Institute, on commission by the Sciences and Technology Agency, has measured strontium-90 and cesium-137 content monthly, of samples taken from various locations throughout Japan. Sampling and pre-treatment for concentration were carried out by 24 prefectural public health laboratories.

The collection tray used has an area of 5,000 cm^2, and is exposed to rain and dust throughout the month. The depth of water in the tray is kept at 10 mm to prevent dust from being blown away. At the end of each month, water in the tray and water used to wash the tray are combined with strontium and cesium carriers, and passed through a column filled with sodium type cation exchange resin (Dowex 50 W-X 8, 50~100 mesh). The column is then sent to the Japan Analytical Chemistry Research Institute for analysis.

After the fraction containing both strontium-90 and cesium-137 is eluted from the resin, radiochemical analysis is carried out using the method recommended by the Science and Technology Agency.

Results obtained during the period October 1964 to July 1965 are shown in Table 3.

Table 3. ^{90}Sr and ^{137}Cs in Rain and Dry Fallout -Oct. 1964 to Jul. 1965-

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

Station	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Oct 1964				
Sapporo, HOKKAIDO	32	99	0.97	7.41
Aomori, AOMORI	31	235	0.44	0.35
Sendai, MIYAGI	35		0.29	0.90
Akita, AKITA	30	150	0.93	1.29
Mito, IBARAGI	32	142	0.35	0.58

Station	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Oct 1964				
Konan, SAITAMA	32	107	0.38	0.56
Tokyo	31	131	0.40	0.46
Yokohama, KANAGAWA	35	143	0.47	0.51
Niigata, NIIGATA	31	179	0.88	1.20
Kanazawa, ISHIKAWA	〃	120	0.50	0.71
Fukui, FUKUI	33	107	0.40	0.50
Shizuoka, SHIZUOKA	31	107	0.47	0.67
Nagoya, AICHI	〃	136	0.32	0.26
Kyoto, KYOTO	〃	110	0.16	0.97
Osaka, OSAKA	30	94	0.24	0.33
Kobe, HYOGO	31	74	0.23	0.29
Wakayama, WAKAYAMA	〃	59	0.13	0.62
Tottori, TOTTORI	33	208	0.97	1.19
Okayama, OKAYAMA	31	108	0.24	0.28
Hiroshima, HIROSHIMA	〃	92	0.40	0.52
Kochi, KOCHI	〃	182	0.99	1.34
Fukuoka, FUKUOKA	〃	99	0.23	0.28
Nagasaki, NAGASAKI	〃	101	0.13	0.18
Kagoshima, KAGOSHIMA	32	168	0.21	0.28
Nov 1964				
Sapporo, HOKKAIDO	32	49	0.30	0.46
Aomori, AOMORI	30	149	1.22	1.62
Sendai, MIYAGI	28	62	0.46	0.43
Akita, AKITA	30	265	1.94	2.80
Mito, IBARAGI	29	49	0.15	0.19
Konan, SAITAMA	28	26	0.14	0.21
Tokyo	30	49	0.22	0.19
Yokohama, KANAGAWA	28	54	0.15	0.28
Niigata, NIIGATA	30	190	5.59	1.43
Kanazawa, ISHIKAWA	〃	273	0.85	1.12
Fukui, FUKUI	29	203	1.48	2.08
Shizuoka, SHIZUOKA	30	36	0.13	0.19
Nagoya, AICHI	〃	44	0.20	0.29
Kyoto, KYOTO	〃	60	0.27	0.33
Osaka, OSAKA	29	68	0.24	0.31
Kobe, HYOGO	31	73	0.29	0.36
Wakayama, WAKAYAMA	30	19	0.22	0.40
Tottori, TOTTORI	29	199	0.86	1.83
Okayama, OKAYAMA	30	50	0.06	0.16
Hiroshima, HIROSHIMA	〃	59	0.22	0.27
Kochi, KOCHI	〃	109	0.28	0.45
Fukuoka, FUKUOKA	〃	105	0.54	0.81
Nagasaki, NAGASAKI	〃	100	0.50	0.73
Kagoshima, KAGOSHIMA	31	62	0.24	0.35
Dec 1964				
Sapporo, HOKKAIDO	34	148	0.34	0.50
Aomori, AOMORI	31	52	0.24	0.37
Sendai, MIYAGI	39	35	0.34	0.82
Akita, AKITA	27	101	2.04	1.15
Mito, IBARAGI	35	52	0.10	0.29
Konan, SAITAMA	31	47	0.53	0.25
Tokyo	35	48	0.24	0.36
Yokohama, KANAGAWA	36	53	0.19	0.19
Niigata, NIIGATA	31	157	1.25	1.83
Kanazawa, ISHIKAWA	28	294	1.38	2.30
Fukui, FUKUI	〃	208	1.57	2.62
Shizuoka, SHIZUOKA	35	49	0.16	0.24
Nagoya, AICHI	〃	51	0.30	0.47
Kyoto, KYOTO	31	14	0.11	0.16
Osaka, OSAKA	24	26	0.07	0.08
Kobe, HYOGO	35	16	0.17	0.21
Wakayama, WAKAYAMA	31	20	0.13	0.53
Tottori, TOTTORI	35	224	1.19	2.56
Okayama, OKAYAMA	28	14	0.13	0.20
Hiroshima, HIROSHIMA	31	42	0.22	0.19

Station	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Kochi, KOCHI	36	29	0.35	0.48
Fukuoka, FUKUOKA	31	42	0.40	0.76
Nagasaki NAGASAKI	〃	37	0.95	0.43
Kagoshima, KAGOSHIMA	36	55	0.34	0.49
Jan 1965				
Sapporo, HOKKAIDO	28	107	0.19	0.33
Aomori, AOMORI	31	193	1.12	1.93
Sendai, MIYAGI	22	83	1.40	3.25
Akita, AKITA	31	206	1.82	2.71
Mito, IBARAGI	26	74	0.28	1.07
Konan, SAITAMA	〃	30	0.15	0.31
Tokyo	28	48	0.14	0.31
Yokohama, KANAGAWA	〃		0.26	0.47
Niigata, NIIGATA	31	249	1.46	2.10
Kanazawa, ISHIKAWA	33	332	2.06	2.90
Fukui, FUKUI	34	333	3.42	4.17
Shizuoka, SHIZUOKA	31	43	0.19	0.57
Nagoya, AICHI	27	34	0.20	0.32
Kyoto, KYOTO	31	61	0.14	0.45
Osaka, OSAKA	37	63	0.34	0.44
Kobe, HYOGO	27	51	0.25	0.36
Wakayama, WAKAYAMA	31		0.38	0.16
Tottori, TOTTORI	27	199	1.78	2.28
Okayama, OKAYAMA	34	39	0.09	0.29
Hiroshima, HIROSHIMA	31	68	0.38	0.58
Kochi, KOCHI	27	30	0.41	0.57
Fukuoka, FUKUOKA	31	59	0.82	1.34
Nagasaki, NAGASAKI	〃	71	0.25	1.44
Kagoshima, KAGOSHIMA	27	65	0.27	0.79
Feb 1965				
Sapporo, HOKKAIDO	28	189	0.61	0.84
Aomori, AOMORI	〃	296	2.23	0.62
Sendai, MIYAGI	〃	10	0.33	0.75
Akita, AKITA	〃	86	2.49	0.87
Mito, IBARAGI	〃	15	0.16	0.25
Konan, SAITAMA	〃	3	0.11	0.44
Tokyo	〃	11	0.07	0.52
Yokohama, KANAGAWA	〃		0.22	0.25
Niigata, NIIGATA	〃	115	1.06	1.37
Kanazawa, ISHIKAWA	〃	179	1.95	2.80
Fukui, FUKUI	〃	205	2.98	4.43
Shizuoka, SHIZUOKA	〃	36	0.25	0.76
Nagoya, AICHI	〃	58	0.39	0.57
Kyoto, KYOTO	〃	37	0.26	0.39
Osaka, OSAKA	〃	25	0.14	0.42
Kobe, HYOGO	〃	21	0.19	0.27
Wakayama, WAKAYAMA	〃		0.22	0.24
Tottori, TOTTORI	〃	176	2.43	3.57
Okayama, OKAYAMA	〃	22	0.18	0.23
Hiroshima, HIROSHIMA	〃	35	0.14	1.18
Kochi, KOCHI	〃	61	0.33	0.46
Fukuoka, FUKUOKA	〃	30	0.27	0.56
Nagasaki, NAGASAKI	〃	63	0.40	0.59
Kagoshima, KAGOSHIMA	〃	64	0.70	0.71
Mar 1965				
Sapporo, HOKKAIDO	31	94	0.54	0.80
Aomori, AOMORI	〃	121	1.58	2.74
Sendai, MIYAGI	31	24	0.41	1.13
Akita, AKITA	21	79	2.17	2.69
Mito, IBARAGI	31	27	0.41	0.95
Konan, SAITAMA	〃	27	0.35	1.07
Tokyo	〃	45	0.44	0.56
Yokahama, KANAGAWA	30		0.48	1.12
Niigata, NIIGATA	31	75	0.47	0.90
Kanazawa, ISHIKAWA	〃	107	1.56	2.28

Station	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Fukui, FUKUI	31	108	1.51	2.26
Shizuoka, SHIZUOKA	〃	51	0.64	0.74
Nagoya, AICHI	〃	33	0.39	0.57
Kyoto, KYOTO	〃	85	0.51	0.68
Osaka, OSAKA	〃	109	0.39	0.69
Kobe, HYOGO	〃	114	0.49	0.73
Wakayama, WAKAYAMA	29	634	0.25	0.55
Tottori, TOTTORI	30	159	2.00	2.97
Okayama, OKAYAMA	31	94	0.67	0.97
Hiroshima, HIROSHIMA	〃	37	0.51	0.71
Kochi, KOCHI	26	40	0.30	0.41
Fukuoka, FUKUOKA	31	77	0.73	1.01
Nagasaki, NAGASAKI	〃	53	2.62	4.01
Kagoshima, KAGOSHIMA	〃	60	0.44	1.18
Apr 1965				
Sapporo, HOKKAIDO	30	59	0.29	0.41
Aomori, AOMORI	〃	80	0.37	0.57
Sendai, MIYAGI	〃	41	0.33	0.99
Akita, AKITA	〃	74	0.30	0.63
Mito, IBARAGI	29	79	0.50	0.45
Konan, SAITAMA	30	46	0.50	0.53
Tokyo	31	87	0.68	0.79
Yokohama, KANAGAWA	30	79	0.60	1.21
Niigata, NIIGATA	〃	59	0.69	1.04
Kanazawa, ISHIKAWA	〃	122	0.53	1.07
Fukui, FUKUI	〃	20	0.91	1.75
Shizuoka, SHIZUOKA	〃	114	1.36	1.86
Nagoya, AICHI	31	126	0.78	1.29
Kyoto, KYOTO	30	103	0.73	0.81
Osaka, OSAKA	32	100	0.70	1.62
Kobe, HYOGO	31	80	0.42	0.75
Wakayama, WAKAYAMA	32	177	0.60	1.00
Tottori, TOTTORI	31	151	0.68	1.26
Okayama, OKAYAMA	30	84	0.50	0.35
Hiroshima, HIROSHIMA	〃	123	0.67	0.92
Kochi, KOCHI	36	249	0.80	1.88
Fukuoka, FUKUOKA	30	140	0.34	0.96
Nagasaki, NAGASAKI	〃	172	0.95	1.33
Kagoshima, KAGOSHIMA	29	227	0.82	1.09
May 1965				
Sapporo, HOKKAIDO	31	36	0.55	0.71
Aomori, AOMORI	〃	31	0.46	0.74
Sendai, MIYAGI	〃	193	1.30	1.81
Akita, AKITA	〃	95	0.39	0.98
Mito, IBARAGI	〃	336	0.75	1.84
Konan, SAITAMA	32	345	1.45	1.99
Tokyo	31	400	1.34	1.63
Yokohama, KANAGAWA	32	398	1.20	1.89
Niigata, NIIGATA	30	128	0.97	1.28
Kanazawa, ISHIKAWA	31	209	0.52	0.95
Fukui, FUKUI	〃	212	0.69	1.70
Shizuoka, SHIZUOKA	〃	431	1.42	2.18
Nagoya, AICHI	〃	264	0.98	1.01
Kyoto, KYOTO	〃	293	0.84	2.19
Osaka, OSAKA	27	270	0.54	0.96
Kobe, HYOGO	31	277	0.57	0.77
Wakayama, WAKAYAMA	〃	271	0.99	1.04
Tottori, TOTTORI	〃	169	0.53	0.83
Okayama, OKAYAMA	〃	233	0.73	1.66
Hiroshima, HIROSHIMA	〃	236	0.82	1.04
Kochi, KOCHI	〃	302	0.91	1.27
Fukuoka, FUKUOKA	〃	249	0.47	1.01
Nagasaki, NAGASAKI	〃	212	0.21	0.64
Kagoshima, KAGOSHIMA	32	277	0.46	0.66

Station	Duration (days)	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
Jun 1965				
Sapporo, HOKKAIDO	31	38	0.48	0.81
Aomori, AOMORI	30		0.41	0.95
Sendai, MIYAGI	〃	124	0.87	1.41
Akita, AKITA	〃	117	0.50	0.82
Mito, IBARAGI	〃	216	0.78	0.68
Konan, SAITAMA	〃	190	0.97	1.63
Tokyo	〃	220	0.62	0.89
Yokohama, KANAGAWA	31	246	0.71	0.48
Niigata, NIIGATA	30	160	0.62	0.72
Kanazawa, ISHIKAWA	〃	203	0.73	1.00
Fukui, FUKUI	31	187	0.60	1.49
Shizuoka, SHIZUOKA	30	251	0.45	0.68
Nagoya, AICHI	31	224	0.64	0.98
Kyoto, KYOTO	30	238	0.58	0.78
Osaka, OSAKA	31	186	0.36	0.67
Kobe, HYOGO	〃	124	0.35	0.78
Wakayama, WAKAYAMA	30	298	0.57	0.71
Tottori, TOTTORI	31	147	0.62	0.84
Okayama, OKAYAMA	30	201	0.34	0.58
Hiroshima, HIROSHIMA	31	505	0.31	0.46
Kochi, KOCHI	30	348	0.63	1.31
Fukuoka, FUKUOKA	〃		0.47	0.76
Nagasaki, NAGASAKI	〃	440	0.65	0.95
Kagoshima, KAGOSHIMA	31	342	0.49	1.94
Jul 1965				
Sapporo, HOKKAIDO	30	56	0.27	0.40
Aomori, AOMORI	31	219	0.52	0.78
Sendai, MIYAGI	〃	216	0.59	0.10
Akita, AKITA	〃	340	0.65	0.10
Mito, IBARAGI	32	161	0.36	0.87
Konan, SAITAMA	〃	106	0.51	0.71
Tokyo	31	97	0.35	0.50
Yokohama, KANAGAWA	33		0.40	0.58
Niigata, NIIGATA	31	307	0.66	0.85
Kanazawa, ISHIKAWA	〃	54	0.44	1.43
Fukui, FUKUI	〃	549	0.66	0.82
Shizuoka, SHIZUOKA	〃	230	0.27	0.65
Nagoya, AICHI	〃	52	0.37	0.52
Kyoto, KYOTO	〃	399	0.53	0.82
Osaka, OSAKA	32		0.31	0.42
Kobe, HYOGO	31	242	0.41	1.29
Wakayama, WAKAYAMA	〃	132	0.23	0.14
Tottori, TOTTORI	32	466	0.68	0.66
Okayama, OKAYAMA	31	323	0.31	0.53
Hiroshima, HIROSHIMA	〃	557	0.45	0.51
Kochi, KOCHI	32	220	0.20	0.43
Fukuoka, FUKUOKA	31	238	0.19	0.30
Nagasaki, NAGASAKI	〃	503	0.42	0.88
Kagoshima, KAGOSHIMA	〃	286	0.20	0.28

Table 4 shows the monthly mean values of strontium-90 and cesium-137 collected by the 24 stations during the period October 1964 to July 1965.

Table 5 and Figure 2 shows the total amount of strontium-90 and cesium-137 deposits during the period October 1964 to July 1965.

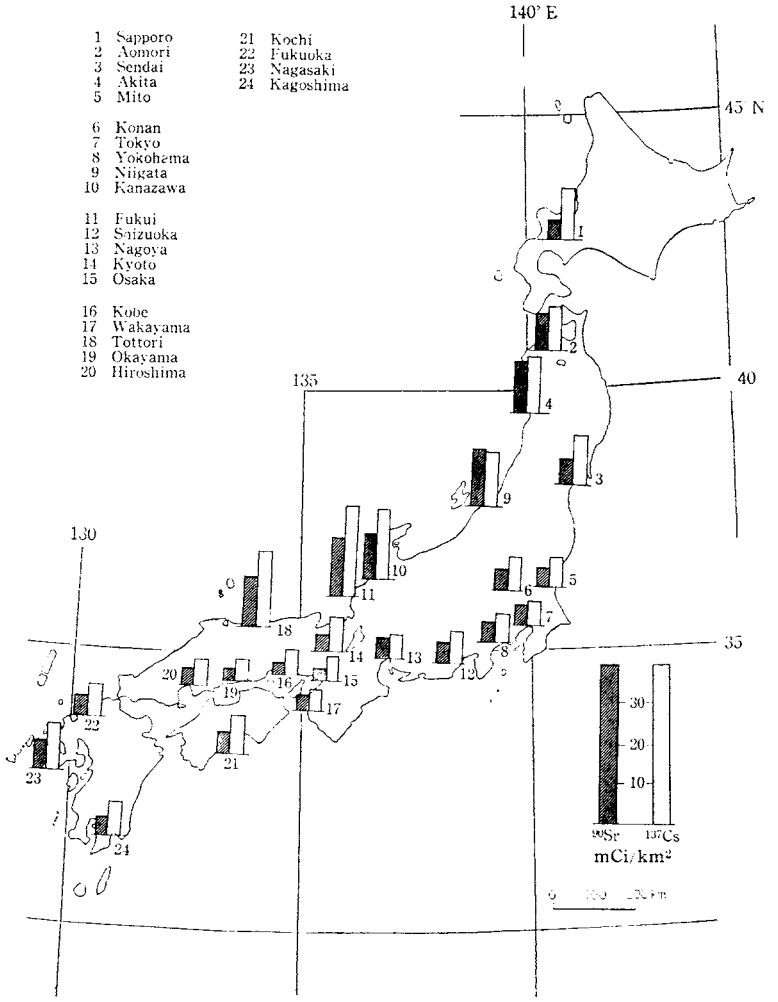
Table 4. Monthly Mean Values of the 24 Collection Stations
-Oct. 1964 to Jul. 1965-

Month	Precipitation (mm)	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)	$^{137}Cs/^{90}Sr$
Oct 64	122	0.44	0.90	2.05
Nov 〃	98	0.68	0.72	1.06
Dec 〃	75	0.53	0.72	1.36
Jan 65	106	0.74	1.21	1.64
Feb 〃	78	0.75	0.96	1.28
Mar 〃	93	0.82	1.32	1.61
Apr 〃	108	0.62	1.02	1.65
May 〃	244	0.75	1.28	1.71
Jun 〃	208	0.57	0.93	1.63
Jul 〃	239	0.41	0.58	1.41

Table 5. Total Deposits of ^{90}Sr and ^{137}Cs
-Oct. 1964 to Jul. 1965-

Station	^{90}Sr (mCi/km^2)	^{137}Cs (mCi/km^2)
1 Sapporo	4.54	12.67
2 Aomori	8.59	10.67
3 Sendai	6.32	11.59
4 Akita	13.23	14.05
5 Mito	3.84	7.17
6 Konan	5.09	7.70
7 Tokyo	4.50	6.21
8 Yokohama	4.68	6.98
9 Niigata	13.65	12.72
10 Kanazawa	10.52	16.56
11 Fukui	14.22	21.82
12 Shizuoka	5.33	8.54
13 Nagoya	4.57	6.28
14 Kyoto	4.13	7.58
15 Osaka	3.33	5.84
16 Kobe	3.37	5.81
17 Wakayama	3.72	5.39
18 Tottori	11.74	17.99
19 Okayama	3.25	5.25
20 Hiroshima	4.12	6.37
21 Kochi	5.20	8.60
22 Fukuoka	4.46	7.79
23 Nagasaki	7.08	11.18
24 Kagoshima	4.17	7.77

Figure 2. Total Deposits of ^{90}Sr and ^{137}Cs
—Oct. 1964 to Jul. 1965—



Strontium-90, Cesium-137 and Cerium-144 in Air

(Japan Analytical Chemistry Research Institute)

The Japan Analytical Chemistry Research Institute started the analyses of strontium-90, cesium-137 and cerium-144 content in air, on commission by the Science and Technology Agency, in April 1964.

Samples are collected by 7 prefectural public health laboratories, using a cottrel type dust collector (1,200 liters per hour).

Results obtained during the period April to July 1965 are shown in Table 6.

Table 6. ^{90}Sr, ^{137}Cs and ^{144}Ce in Air —Apr. to Jul. 1965—

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

(Japan Analytical Chemistry Research Institute)

Location	Duration (days)	Air inhaled (m^3)	Efficiency of cottrel (%)	^{90}Sr (pCi/m^3) $\times 10^3$	^{137}Cs (pCi/m^3) $\times 10^3$	^{144}Ce (pCi/m^3) $\times 10^3$
April 1965						
Mito, IBARAGI	29	9450	70	6.4	9.1	14.2
Niigata, NIIGATA	26	2376	95	13.0	22.8	29.2
Fukui, FUKUI	28	5054	96	1.5	2.7	5.0
Shizuoka, SHIZUOKA	30	6480	90	3.8	7.2	12.1
Nagoya, AICHI	18	4140	95	5.7	13.9	14.7
Hiroshima, HIROSHIMA	10	2720	80	25.4	41.6	47.2
Nagasaki, NAGASAKI	28	1350	90	26.8	42.6	64.0
May 1965						
Mito, IBARAGI	31	8640	70	11.5	20.9	29.2
Niigata, NIIGATA	26	7128	95	18.5	19.8	57.7
Fukui, FUKUI	23	5776	96	5.5	3.6	4.1
Shizuoka, SHIZUOKA	31	10800	90	5.6	2.1	28.4
Nagoya, AICHI	10	3420	95	3.5	15.1	35.6
Hiroshima, HIROSHIMA	22	4400	80	21.9	35.2	41.8
Nagasaki, NAGASAKI	22	3100	90	27.4	41.2	46.8
June 1965						
Mito, IBARAGI	29	9360	70	4.0	7.7	13.7
Niigata, NIIGATA	29	2592	95	6.3	8.6	42.0
Fukui, FUKUI	24	1200	96	3.6	8.6	86.6
Shizuoka, SHIZUOKA	30	10800	90	2.8	5.0	25.0
Nagoya, AICHI	16	2160	95	3.9	9.0	23.7
Hiroshima, HIROSHIMA	22	1200	90			
Nagasaki, NAGASAKI	14	8686	70	2.3	7.7	429.0
July 1965						
Mito, IBARAGI	29	8686	70	3.2	6.2	82.6
Niigata, NIIGATA						
Fukui, FUKUI	29	1200	96	1.1	2.9	19.1
Shizuoka, SHIZUOKA	31	10800	90	0.9	1.7	4.9
Nagoya, AICHI	14	2160	95			
Hiroshima, HIROSHIMA	26	6000	80			
Nagasaki, NAGASAKI	5	1500	90	2.7	7.6	50.0

External Dose Data

External Doses of Radiation from Fallout

(Institute of Physical and Chemical Research, St. Paul's University, National Institute of Radiological Sciences)

External dosages of radiation from fallout materials have been observed in Tokyo since 1958, in Chiba since 1962 and in Yokosuka since 1963.*

Direct dose measurements are made by spherical ionization chambers** and a scintillation counter with a specially designed shield around the NaI (Tl) crystal.*** Scintillation survey meter are used for gamma-ray dosimetry.

In Tokyo, continuous measurements are made using an ordinary scintillation counter. An ionization chamber and the specially designed scintillation counter are used for comparison. In Chiba, a scintillation survey meter with an NaI (Tl) crystal is used and sometimes a plastic scintillation counter**** and an ionization chamber are used for comparison. In Yokosuka, the specially designed scintillation counter is used for continuous measurements.

Measurements in Chiba are made in an open field at one meter above grassy ground and above sandy ground in Yokosuka. Measurements in Tokyo are made on the roof of the building of Institute of Physical and Chemical Research.

Dose values at the level of one meter above the paved ground is obtained by correcting the results measured.*

Monthly external doses from fallout materials observed at these three locations during the period 1961 to 1965 are shown in Table 7.

* F. Yamasaki, M. Okano, T. Nagahara, and H. Watanabe:
External Doses of Radiation from Fallout in Tokyo and its Vicinity, Journal of Radiation Research Vol. 5, No. 2 (1964) pp. 113-115.

** T. Doke, H. Takahashi, T. Higashimura, M. Takeuchi, Y. Nagahara, H. Watanabe, H. Otsuka, M. Okano, and F. Yamasaki:
External Gamma Dose Rates from Natural Radionuclides in Japan, Science Papers Institute of Physical and Chemical Research, Vol. 56, No. 1 (1962) pp. 40-46.

*** M. Okano:
Low Level Gamma Ray Dosimetry with Scintillation Counter, Reports Institute of Physical and Chemical Research, 37: 355 (1961)

**** T. Doke, Y. Takami, A. Takamoto, and A. Sasaki:
Measurements of Radiation Dose due to Background Gamma Rays by Plastic Scintillators, Journal of Radiation Research, Vol. 1 (1960) pp. 46-53.

Table 7. Monthly External Doses due to Fallout in Tokyo, Chiba and Yokosuka
(Institute of Physical and Chemical Research, St. Paul's University, National Institute of Radiological Sciences)

Tokyo

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Monthly	1961									0.3	2.1	3.3	2.5
External	62	2.7	2.5	2.7	3.1	2.6	2.7	2.1	1.8	2.0	2.8	3.1	3.2
Doses	63	2.7	2.2	2.5	2.7	3.0	2.8	2.1	1.5	0.9	0.8	0.5	0.4
(mr)	64	0.4	0.3	0.5	0.5	0.4	0.3	0.3	0.4	0.3	0.8	0.7	0.6
	65	0.5	0.5	0.5	0.5	0.7	0.8						

Chiba

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Monthly	1961											7.6	3.5
External	62	2.7	1.7	2.7	3.5	2.5	4.2	3.9	2.7	2.6	4.2	5.0	3.9
Doses	63	3.3	3.0	3.0	3.8	4.1	5.2	5.4	4.1	2.1	3.1	2.5	1.8
(mr)	64	1.3	1.2	1.3	1.2	1.5	1.6	1.3	1.0	0.9	1.4	0.6	0.7
	65	0.4	0.6	1.1	0.5	1.0	1.1						

Yokosuka

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Monthly	1961												
External	62												
Doses	63	2.3	2.1	2.4	2.8	3.2	3.3	2.9	2.2	1.6	1.6	1.0	0.5
(mr)	64	0.6	0.5	0.7	—	0.5	0.6	—	—	—	—	—	0.3
	65	0.2	0.2	0.3	0.2	0.5	0.6						

Dietary Data

Strontium-90 and Cesium-137 in Milk

Part 1 *(National Institute of Animal Industry)*

The observation of the monthly variation of strontium-90 and cesium-137 content in milk was made at the National Institute of Animal Industry.

Samples were collected once a month from a cow at the farm of this institute and from four other prefectural agricultural experimental stations, and analyzed by the method recommended by the Science and Technology Agency.

Sampling stations are shown by open circles in Figure 3.

Results obtained during the period January to July, 1965 are shown in Table 8.

Table 8. ^{90}Sr and ^{137}Cs in Milk —Jan. to Jul. 1965—

By H. Danbara and T. Mitsuhashi
(National Institute of Animal Industry)

*Location	Component		Strontium-90		Cesium-137	
	Ca (g/l)	K (g/l)	(pCi/l)	(pCi/gCa)	(pCi/l)	(pCi/gK)
(Jan 65)						
Shintoku, HOKKAIDO	1.3	1.4	59.7	45.8	674	481
Iwate, IWATE	1.2	1.3	37.6	31.3	196	151
Kaminikawa, TOYAMA	1.1	1.4	18.7	17.0	259	180
Chiba, CHIBA	1.0	1.4	15.2	15.2	82	58
Mii, FUKUOKA	1.0	1.5	24.5	24.5	53	36
(Feb 65)						
Shintoku, HOKKAIDO	—	—	—	—	—	—
Iwate, IWATE	1.1	1.4	63.2	57.4	243	174
Kaminikawa, TOYAMA	—	—	—	—	—	—
Chiba, CHIBA	1.0	1.3	7.0	7.0	54	41
Mii, FUKUOKA	—	—	—	—	—	—
(Mar 65)						
Shintoku, HOKKAIDO	1.2	1.5	7.1	5.9	667	445
Iwate, IWATE	1.2	1.4	10.7	8.9	248	177
Kaminikawa, TOYAMA	1.0	1.6	4.3	4.3	362	226
Chiba, CHIBA	1.1	1.4	1.3	1.2	72	51
Mii, FUKUOKA	1.0	1.7	2.7	2.7	48	28
(Apr 65)						
Shintoku, HOKKAIDO	1.1	1.5	89.1	81.0	975	650
Iwate, IWATE	1.0	1.4	47.9	47.9	370	265
Kaminikawa, TOYAMA	0.9	1.6	37.8	42.0	296	185
Gotemba, SHIZUOKA	0.9	1.5	15.8	17.6	117	78
Mii, FUKUOKA	0.9	1.6	20.9	23.2	80	50
(May 65)						
Shintoku, HOKKAIDO	1.0	1.5	69.6	69.6	436	291
Kaminikawa, TOYAMA	1.0	1.7	52.0	52.0	124	73
Chiba, CHIBA	0.9	1.4	5.7	6.3	36	26
Gotemba, SHIZUOKA	1.0	1.6	16.2	16.2	44	28
Mii, FUKUOKA	1.0	1.7	14.5	14.5	62	37
(Jun 65)						
Shintoku, HOKKAIDO	1.0	1.5	28.1	28.1	550	367
Iwate, IWATE	1.1	1.4	14.7	13.4	127	91
Kaminikawa, TOYAMA	1.0	1.6	10.1	10.1	94	59
Chiba, CHIBA	0.9	1.5	10.8	12.0	125	83
Mii, FUKUOKA	1.0	1.6	6.6	6.6	54	34

*Location	Component		Strontium 90		Cesium 137	
	Ca (g/*l*)	K (g/*l*)	(pCi/*l*)	(pCi/gCa)	(pCi/*l*)	(pCi/gK)
(Jul 65)						
Shintoku, HOKKAIDO	1.1	1.5	17.0	15.5	581	388
Iwate, IWATE	1.0	1.5	13.0	13.0	245	163
Kaminikawa, TOYAMA	1.0	1.6	6.8	6.8	92	57
Chiba, CHIBA	1.0	1.4	4.9	4.9	53	38
Mii, FUKUOKA	1.0	1.6	7.6	7.6	65	41

Note: * Sampling stations have been partially changed to be able to analyze both milk and feed of the cow providing milk samples at the same time.

Part 2 *(Japan Analytical Chemistry Research Institute)*

Since December 1961, milk samples from various part of Japan have been collected by 10 prefectural public health laboratories then analyzed for strontium-90 and cesium-137 content at the Japan Analytical Chemistry Research Institute. Sampling stations are shown by solid circles in Figure 3.

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 then sent to the Japan Analytical Chemistry Research Institute, ashed then analyzed using the method recommended by the Science and Technology Agency.

Results obtained during the period October 1964 to July 1965 are shown in Table 9.

Figure 3. Milk Sampling Station

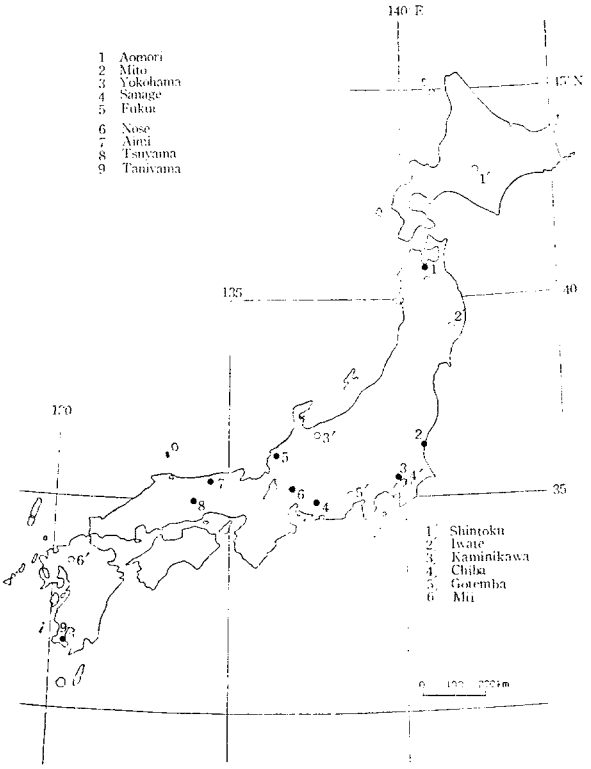


Table 9. ^{90}Sr and ^{137}Cs in Milk —Oct. 1964 to Jul. 1965—

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

Location	Date	Component (g/*l*)			Strontium-90		Cesium-137	
		Ash	Ca	K	(pCi/*l*)	(pCi/gCa)	(pCi/*l*)	(pCi/gK)
(Oct 64)								
Aomori, AOMORI	15 Oct	7.28	1.05	1.46	39.0	37.1	203	139
Mito, IBARAGI	8 〃	5.99	0.85	0.99	6.8	8.0	54	54
Fukui, FUKUI	22 〃	6.25	0.92	1.36	8.8	9.6	30	22
Sanage, AICHI	5 〃	8.11	1.20	1.94	10.7	8.9	40	21
Tsuyama, OKAYAMA	14 〃	7.58	1.15	1.57	11.0	9.6	36	23

Location	Date	Component (g/l)			Strontium 90		Cesium 137	
		Ash	Ca	K	(pCi/l)	(pCi/gCa)	(pCi/l)	(pCi/gK)
(Nov 64)								
Sapporo, HOKKAIDO	6 Nov	7.36	1.14	1.47	21.9	19.2	136	93
Yokohama, KANAGAWA	27 〃	7.50	1.18	1.65	10.0	8.5	45	27
Nose, OSAKA	12 〃	7.28	1.06	1.64	10.0	9.4	58	35
Aimi, TOTTORI	2 〃	7.25	1.07	1.43	21.0	19.6	95	66
Taniyama, KAGOSHIMA	13 〃	7.69	1.32	1.61	26.9	20.4	43	27
(Dec 64)								
Aomori, AOMORI	15 Dec	7.28	1.03	1.61	12.7	12.3	105	65
Mito, IBARAGI	3 〃	6.75	1.07	1.39	9.0	8.4	48	35
Fukui, FUKUI	9 〃	6.33	0.96	1.19	7.8	8.1	44	37
Sanage, AICHI	10 〃	7.78	1.13	1.71	8.9	7.9	24	14
Tsuyama, OKAYAMA	11 〃	7.36	1.08	1.73	21.4	19.8	70	40
(Jan 65)								
Sapporo, HOKKAIDO	11 Jan	7.56	1.03	1.70	11.6	11.2	61	36
Yokohama, KANAGAWA	10 〃	7.16	0.95	1.81	8.7	9.2	46	25
Nose, OSAKA	12 〃	7.56	1.06	2.06	9.9	9.3	51	25
Aimi, TOTTORI	30 〃	7.56	1.15	1.85	10.4	9.0	63	34
Taniyama, OKAYAMA	12 〃	7.61	1.24	1.81	16.5	13.3	51	28
(Feb 65)								
Aomori, AOMORI	26 Feb	5.74	0.82	1.34	27.9	34.0	116	87
Mito, IBARAGI	9 〃	7.18	1.17	1.62	11.1	9.5	25	15
Fukui, FUKUI	3 〃	7.25	1.06	1.86	12.7	12.0	46	25
Sanage, AICHI	12 〃	7.28	1.09	1.65	7.9	7.3	30	18
Tsuyama, OKAYAMA	10 〃	6.19	0.90	1.43	6.8	7.6	44	31
(Mar 65)								
Sapporo, HOKKAIDO								
Yokohama, KANAGAWA	5 Mar	7.21	0.95	1.86	15.0	15.8	78	42
Nose, OSAKA	5 〃	7.01	0.99	1.68	8.5	8.6	51	30
Aimi TOTTORI	30 〃	7.61	1.10	1.67	19.6	17.8	99	59
Taniyama, KAGOSHIMA	18 〃	7.49	1.28	1.60	18.5	14.5	62	39
(Apr 65)								
Aomori, AOMORI	21 Apr	7.80	1.03	1.40	22.9	22.2	86	61
Mito, IBARAGI	22 〃	8.38	1.06	1.25	5.2	4.9	28	23
Fukui, FUKUI	27 〃	7.70	1.15	1.42	10.9	9.5	65	46
Sanage, AICHI	30 〃	6.74	1.12	1.18	8.6	7.7	34	29
Tsuyama, OKAYAMA	23 〃	7.20	1.05	1.37	9.6	9.2	34	25
(May 65)								
Sapporo, HOKKAIDO	14 May	7.17	1.13	1.47	26.5	23.5	119	81
Yokohama, KANAGAWA	12 〃	7.54	1.06	1.35	8.2	7.7	55	40
Nose, OSAKA	22 〃	7.25	1.02	1.52	11.9	11.8	41	27
Aimi, TOTTORI	24 〃	6.43	0.90	1.19	17.1	18.9	55	46
Taniyama, KAGOSHIMA	6 〃	6.57	1.00	1.28	26.3	26.3	38	30
(Jun 65)								
Aomori, AOMORI	8 Jun	6.75	0.90	1.42	26.3	29.3	130	92
Mito, IBARAGI	3 〃	7.66	0.92	1.16	8.7	9.5	51	44
Fukui, FUKUI	5 〃	5.84	0.88	0.98	12.9	14.6	44	45
Sanage, AICHI	11 〃	6.81	1.04	1.03	8.6	8.3	46	44
Tsuyama, OKAYMA	10 〃	6.98	1.02	1.28	8.4	8.4	37	29
(Jul 65)								
Sapporo, HOKKAIDO	8 Jul	7.42	1.15	1.18	16.8	14.6	109	92
Yokohama, KANAGAWA	9 〃	7.27	1.01	1.29	7.3	7.2	42	33
Nose, OSAKA	10 〃	7.36	0.98	1.24	11.5	11.7	43	34
Aimi, TOTTORI	28 〃	7.28						
Taniyama, KAGOSHIMA	27 〃	7.36						

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 from 5 prefecture. Sampling locations are shown by open circles in Figure 4.

One City and on village in cach prefecture were chosen as representative of urban and rural districts of these prefectures respectively. Ten families in 1964 and 7 families in 1965 were respectively chosen from each location 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 families were ashed together and analyzed. Results obtained during the period July, 1964 to June, 1965 are shown in Table 10.

Table 10. ^{90}Sr and ^{137}Cs in Total Diet --Jul., 1964 to Jul., 1965--

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

Location	Daily Intake				^{90}Sr	^{137}Cs
	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)	(pCi/gCa)	(pCi/gK)
URBAN ADULT DIET (Jul to Aug 1964)						
Sapporo, HOKKAIDO	524.2	2846.0	17.4	129.5	33.2	45.5
Niigata, NIIGATA	417.6	2873.6	24.8	124.6	59.4	43.3
Tokyo, TOKYO	457.3	2658.4	17.6	128.0	38.5	48.1
Osaka, OSAKA	255.3	2287.9	3.9	58.8	15.3	25.7
sold diet	330.9	2384.7	7.7	64.3	23.3	27.0
Group Supply	447.4	2516.4	9.0	74.5	20.1	29.6
Fukuoka, FUKUOKA	568.9	2235.6	11.5	65.8	20.2	29.4
RURAL ADULT DIET (Jul to Aug 1964)						
Sapporo, HOKKAIDO	673.7	2473.1	24.6	102.5	36.5	41.4
Niigata, NIIGATA	372.5	3247.8	21.1	152.6	56.6	47.0
Tokyo, TOKYO	427.6	2323.7	13.7	91.6	32.0	39.4
Fukuoka, FUKUOKA	527.9	2467.3	8.9	65.9	16.9	26.7
RURAL CHILD DIET (Jul to Aug 1964)						
Sapporo, HOKKAIDO	487.2	1801.4	13.5	69.6	27.7	38.6
Niigata, NIIGATA	460.9	2831.2	18.9	101.6	41.0	35.9
Tokyo, TOKYO	325.0	2216.3	6.3	112.4	19.4	50.7
Fukuoka, FUKUOKA	318.0	2049.5	7.9	30.0	24.8	14.6
URBAN ADULT DIET (Nov to Dec 1964)						
Sapporo, HOKKAIDO	532.8	2903.7	20.9	142.4	39.2	49.0
Niigata, NIIGATA	400.3	2769.5	17.0	115.5	42.4	41.7
Tokyo, TOKYO	673.1	2578.2	19.2	115.2	28.5	44.7
Osaka, OSAKA	387.9	2302.7	15.1	61.6	38.9	26.8
sold diet	453.7	2404.1	13.9	86.0	30.6	35.7
Group Supply	400.6	2465.8	12.0	71.4	30.0	29.0
Fukuoka, FUKUOKA	571.4	2294.3	13.4	85.5	23.4	37.3
RURAL ADULT DIET (Nov to Dec 1964)						
Sapporo, HOKKAIDO	664.2	2612.8	25.6	135.5	38.5	51.9
Niigata, NIIGATA	352.9	2964.6	25.2	134.4	71.4	45.3
Tokyo, TOKYO	448.6	2340.1	22.9	130.2	51.0	55.6
Fukuoka, FUKUOKA	547.3	2512.7	14.6	72.0	26.6	28.7
RURAL CHILD DIET (Nov to Dec 1964)						
Sapporo, HOKKAIDO	450.1	1876.4	8.5	79.2	18.9	42.2
Niigata, NIIGATA	473.5	2731.3	19.0	96.6	40.1	35.4
Tokyo, TOKYO	380.7	2207.4	11.6	88.4	30.4	40.0
Fukuoka, FUKUOKA	432.5	2088.9	12.5	67.2	28.9	32.2

Location	Daily Intake				^{90}Sr	^{137}Cs
	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)	(pCi/gCa)	(pCi/gK)
URBAN ADULT DIET (Jun to Jul 1965)						
Sapporo, HOKKAIDO	540.4	1989.2	20.5	84.7	38.0	42.6
Niigato, NIIGATA	461.5	2315.9	15.3	72.6	33.2	31.3
Tokyo, TOKYO	668.2	2536.1	21.1	71.4	31.6	28.2
Osaka, OSAKA	471.8	2105.3	14.0	64.0	29.7	30.4
Group Supply	447.6	2267.4	12.8	40.0	28.6	17.6
Fukuoka, FUKUOKA	453 4	1894.6	11.1	48.7	24.5	25.7
RURAL ADULT DIET (Jun to Jul 1965)						
Sapporo, HOKKAIDO	648.7	2700.4	29.3	87.0	45.2	32.2
Niigata, NIIGATA	529.6	2378.8	23.6	55.4	44.5	23.3
Tokyo, TOKYO	—	—	—	—	36.9	31.1
Fukuoka, FUKUOKA	487.3	2019.5	10.0	54.8	20.5	27.1

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 18 prefectures indicated by solid circles 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 May to August 1965 are shown in Table 11.

Figure 4. Total Diet Sampling Locations

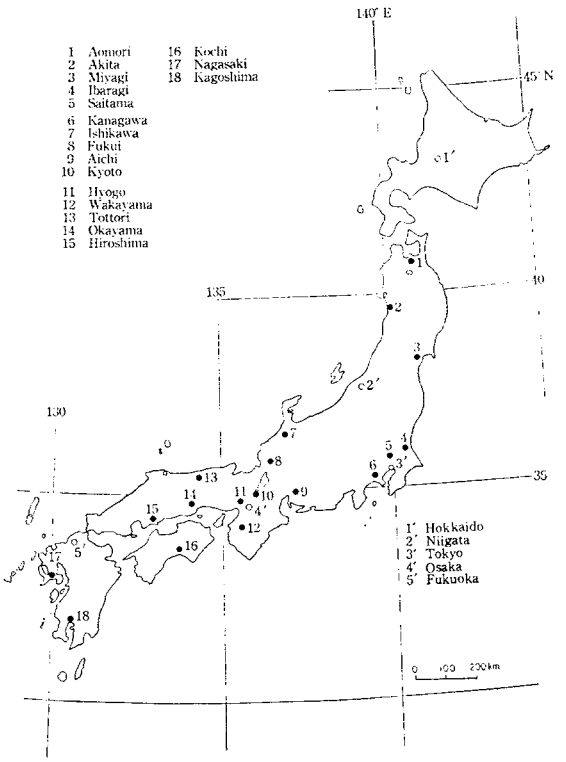


Table 11. ^{90}Sr and ^{137}Cs in Total Diet —May to Aug. 1965—

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

(Japan Analytical Chemistry Research Institute)

Location	Month	Daily Intake						
		Ash (g)	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi/gK)
(URBAN ADULT DIET)								
Aomori, AOMORI	Jun	15.8	498	1559	16.4	53.8	32.9	34.5
Akita, AKITA	〃	16.5	388	1389	18.6	36.0	47.9	25.9
Sendai, MIYAGI	〃	22.1	765	1753	13.0	67.3	17.0	38.4
Mito, IBARAGI	May	20.0	556	1814	12.7	47.7	22.8	26.2
Omiya, SAITAMA	〃	17.7	853	1092	14.9	16.8	17.4	15.3
Kamakura, KANAGAWA	Jul	20.6	783	1817	12.2	50.7	15.5	27.9
Kanazawa, ISHIKAWA	May	19.0	1066	1454	14.6	34.0	13.6	23.3
Fukui, FUKUI	Jun	17.4	492	1535	15.1	26.7	30.6	17.3
Kariya, AICHI	〃	16.3	623	1549	8.2	37.4	13.1	24.1
Kyoto, KYOTO	〃	18.6	543	1693	10.0	25.6	20.2	15.1
Kakogawa, HYOGO	Aug	21.4	454	1654	9.1	35.4	20.0	21.4
Wakayama, WAKAYAMA	Jun	14.2	550	1113	7.6	22.2	13.8	19.9
Tottori, TOTTORI	〃	19.7	536	2019	18.0	28.2	33.5	13.9
Okayama, OKAYAMA	May	14.8	494	922	10.4	12.4	21.0	13.4
Hiroshima, HIROSHIMA	Jun	9.3	267	806	4.6	21.4	17.2	26.5
Kochi, KOCHI	〃	15.7	391	1700	6.3	38.3	16.1	22.5
Nagasaki, NAGASAKI	〃	15.3	317	985	9.0	19.5	28.4	19.7
Kagoshima, KAGOSHIMA	〃	17.0	315	2570	12.4	32.0	39.4	12.4
(RURAL ADULT DIET)								
Aomori, AOMORI	Jun	21.7	679	1688	27.1	46.3	39.8	27.4
Yuwa, AKITA	〃	22.1	606	1987	23.6	53.8	38.9	27.0
Natori, MIYAGI	〃	21.4	443	1793	28.5	72.8	64.3	40.5
Tokai, IBARAGI	May	22.1	568	2137	16.3	52.0	28.7	24.3
Niiza, SAITAMA	〃	21.0	386	1499	12.8	40.1	33.1	26.7
Shiroyama, KANAGAWA	Jun	12.9	308	1316	6.3	33.5	20.4	25.4
Matsuto, ISHIKAWA	May	16.7	309	1297	20.5	27.3	66.3	21.0
Miyama, FUKUI	Jun	22.8	367	1265	45.6	42.3	124.2	33.4
Nishio, AICHI	〃	17.4	345	1757	11.2	35.4	32.5	20.1
Yagi, KYOTO	〃	23.4	534	1622	16.4	25.6	30.7	15.7
Kakogawa, HYOGO	Aug	16.4	444	1301	7.9	22.1	17.7	16.9
Shimotsu, WAKAYAMA	Jun	14.3	375	1293	8.9	27.2	23.7	21.0
Fukube, TOTTORI	〃	19.5	540	2016	12.8	36.7	23.6	18.2
Tsudaka, OKAYAMA	May	20.4	396	1750	12.5	28.9	31.5	16.5
Shiwa, HIROSHIMA	Jun	16.7	593	1892	5.6	32.6	9.4	17.2
Haruno, KOCHI	〃	17.9	516	1779	13.6	24.7	26.3	13.8
Tokitsu, NAGASAKI	〃	25.8	619	2121	16.1	36.6	26.0	17.2
Miyanojo, KAGOSHIMA	〃	16.6	299	1497	17.1	32.0	57.2	21.3
(RURAL CHILD DIET)								
Aomori, AOMORI	Jun	17.4	562	1328	19.0	25.5	33.8	19.2
Yuwa, AKITA	〃	9.0	263	884	12.0	11.5	45.6	13.0
Natori, MIYAGI	〃	11.1	260	1016	11.0	33.5	42.3	32.9
Tokai, IBARAGI	May	15.7	140	1440	10.6	45.0	75.8	31.2
Niiza, SAITAMA	〃	11.3	458	967	7.1	27.5	15.5	28.4
Shiroyama, KANAGAWA	Jun	8.6	241	617	2.0	14.4	8.3	23.3
Matsuto, ISHIKAWA	May	11.7	357	901	12.0	23.7	33.6	26.3
Miyama, FUKUI	Jun	10.3	444	988	21.9	29.9	49.3	30.2
Nishio, AICHI	〃	10.3	340	925	5.2	23.2	15.2	25.0
Yagi, KYOTO	〃	13.2	294	1144	8.4	15.3	28.5	13.3
Kakogawa, HYOGO	Aug	14.3	486	1304	7.4	24.9	15.2	19.0
Shimotsu, WAKAYAMA	Jun	9.2	374	869	4.6	28.4	12.3	32.6
Fukube, TOTTORI	〃	9.6	391	1106	5.9	23.4	15.1	21.1
Tsudaka, OKAYAMA	May	8.5	348	820	4.6	13.3	13.2	16.2
Shiwa, HIROSHIMA	Jun	12.9	461	1458	6.9	21.4	14.9	14.6
Haruno, KOCHI	〃	12.2	675	1764	9.2	55.3	13.6	31.3
Tokitsu, NAGASAKI	〃	13.8	462	1536	11.7	29.9	25.3	19.4
Miyanojo, KAGOSHIMA	〃	9.2	334	807	6.2	21.2	18.5	26.2

Human Data

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, Kyoto and Tokyo. The value of ^{90}Sr 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 who died during the period January to December 1964 are shown in Table 12.

The S.U. (^{90}Sr pCi/g.Ca) values obtained up to December 1964, for four different age groups, are summarized in Table 13.

A considerable increase of strontium-90 concentration was found in bones of young age groups. In particular, the concentration found in the 0-4 year age group has increased 2.5 times higher than that of 1963.

Natural strontium content was analyzed by atomic absorption spectro-photometry.

Figure 5 shows strontium-90 in Japanese human bone arranged according to age in 1963.

Table 12. ^{90}Sr in Human Bone —During 1964—

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

Location	Age	Sex	Month of Death	Number	Name of Bone	Natural Sr mg/gCa	^{90}Sr (pCi/gCa)
Tokyo	Fetus	—	Feb	1	Whole Skeleton		1.96
〃	〃	—	〃	〃	〃		2.14
〃	〃	—	〃	〃	〃	0.284	2.69
〃	〃	—	May	〃	〃	0.223	2.26
〃	〃	—	〃	〃	〃	0.213	2.61
〃	〃	—	〃	〃	〃	0.279	2.67
〃	〃	—	Feb	〃	〃	0.204	1.71
〃	〃	—	〃	〃	〃		2.12
〃	〃	—	〃	〃	〃	0.136	1.14
〃	〃	—	May	〃	〃		2.73
〃	〃	—	Feb	〃	〃	0.273	1.60
〃	〃	—	May	〃	〃	0.239	2.10
〃	〃	—	〃	〃	〃	0.263	2.20
〃	〃	—	〃	〃	〃	0.216	2.05
〃	〃	—	〃	〃	〃	0.263	1.85
〃	〃	—	〃	4	〃		1.98
〃	〃	—	Feb	1	〃		1.30
〃	〃	—	〃	〃	〃	0.267	2.16
〃	〃	—	May	〃	〃	0.222	1.63
〃	〃	—	〃	〃	〃		2.55
〃	〃	—	〃	〃	〃	0.249	1.78
〃	〃	—	〃	〃	〃		1.85
〃	〃	—	〃	〃	〃		1.83
〃	〃	—	Feb	〃	〃	0.217	1.28
〃	〃	—	〃	〃	〃	0.274	1.94
〃	〃	—	〃	〃	〃	0.274	1.97
〃	〃	—	May	〃	〃	0.291	1.93
〃	〃	—	〃	〃	〃		1.92
〃	〃	—	〃	5	〃		1.86
〃	New Born	—	Feb	1	〃	0.346	2.06
〃	1	M	Jan	〃	Rib, Femur	0.380	4.07
Hokkaido	〃	〃	Nov	〃	Rib	0.253	12.88
Tokyo	2	F	Apr	〃	Rib, Femur	0.249	2.44
〃	〃	M	July	〃	〃	0.298	4.92
〃	〃	〃	〃	2	Rib, Femur	0.237	7.34

Table 12. ^{90}Sr in Human Bone —During 1964— *(continued)*

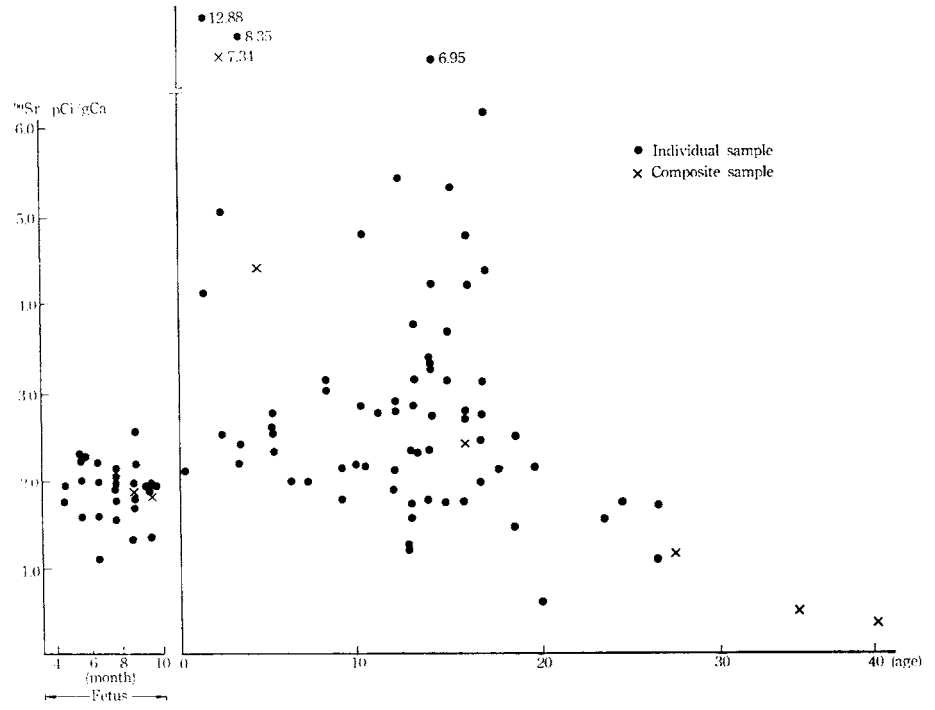
Location	Age	Sex	Month of Death	Number	Name of Bone	Natural Sr mg/gCa	^{90}Sr (pCi/gCa)
〃	3	F	Feb	1	〃	0.371	2.36
Miyagi	〃	M	Apr	〃	Femur	0.282	8.35
Tokyo	〃	〃	Nov	〃	Rib, Femur	0.312	2.14
〃	4	F	July	4	〃	0.291	4.37
Hokkaido	5	〃	May	1	Rib	0.211	2.49
Tokyo	〃	〃	July	〃	Rib, Femur		2.69
〃	〃	M	Sept	〃	〃	0.648	2.49
Miyagi	〃	〃	Nov	〃	Femur	0.232	2.27
Tokyo	6	—	Apr	〃	Whole Skeleton	0.381	1.92
〃	7	M	〃	〃	Rib, Femur	0.358	1.92
Miyagi	8	F	Jul	〃	Femur		3.07
〃	〃	〃	Oct	〃	〃		3.01
Tokyo	9	〃	Apr	〃	Rib, Femur	0.205	1.74
〃	〃	M	Jul	〃	〃	0.253	2.07
Hokkaido	10	〃	Feb	〃	Rib	0.346	4.77
Tokyo	〃	〃	Apr	〃	Rib, Vertebra	0.224	2.12
〃	〃	〃	Aug	〃	Rib, Femur	0.356	2.12
〃	〃	〃	〃	〃	〃		2.78
Hokkaido	11	〃	May	〃	Rib	0.362	2.76
Tokyo	12	M	Feb	〃	Rib, Femur	0.497	2.72
〃	〃	F	Apr	〃	〃	0.392	1.83
〃	〃	〃	Jul	〃	〃	0.703	2.86
〃	〃	〃	Nov	〃	〃	0.452	5.40
Hokkaido	〃	〃	〃	〃	Rib		2.07
Tokyo	13	M	Jan	〃	Rib, Femur	0.384	1.57
Hokkaido	〃	F	〃	〃	〃	0.157	3.72
Tokyo	〃	〃	Feb	〃	〃	0.430	1.22
〃	〃	M	〃	〃	〃	0.522	2.29
〃	〃	F	May	〃	〃	0.445	3.08
〃	〃	〃	Jul	〃	〃	0.426	1.23
〃	〃	〃	〃	〃	〃	0.506	1.69
Miyagi	〃	M	〃	〃	Femur	0.716	2.30
Hokkaido	〃	〃	Sep	〃	Rib	0.830	2.83
Tokyo	14	F	Apr	〃	〃	0.413	1.74
〃	〃	〃	Jun	〃	〃		3.38
〃	〃	〃	Jul	〃	〃		3.31
〃	〃	〃	Sep	〃	〃		2.33
〃	〃	M	Nov	〃	Vertebra		6.95
〃	〃	〃	〃	〃	Femur		4.17
〃	〃	〃	〃	〃	Vertebra		3.36
〃	〃	〃	〃	〃	Femur		2.70
〃	15	〃	Feb	〃	Rib, Femur	0.449	1.70
〃	〃	F	Apr	〃	〃		3.64
〃	〃	M	〃	〃	〃		5.22
〃	〃	〃	Nov	〃	〃		3.09
〃	16	〃	Jan	〃	Femur	0.473	4.17
〃	〃	F	Apr	〃	Rib	0.892	1.71
〃	〃	M	Jul	〃	Rib, Femur	0.464	2.73
〃	〃	〃	〃	〃	〃	0.426	4.77
Miyagi	〃	F	Aug	〃	〃	0.394	2.69
Tokyo	〃	M	Sep	3	Rib		2.37
〃	17	〃	May	1	〃	0.452	1.91
〃	〃	〃	Jun	〃	Femur	0.810	2.70
〃	〃	〃	Jul	〃	Rib, Femur	0.422	6.16
Hokkaido	〃	〃	Oct	〃	〃	0.552	4.34
Tokyo	〃	〃	Nov	〃	Rib		2.41
〃	〃	〃	〃	〃	〃		3.09
〃	18	〃	Feb	〃	〃	0.400	2.07
〃	19	F	May	〃	〃	0.317	1.46
〃	〃	M	Sep	〃	〃		2.45
〃	20	〃	Nov	〃	〃	0.404	2.16
Hokkaido	〃	F	Nov	〃	〃	0.363	0.70
Tokyo	24	M	Sep	〃	〃	0.585	1.84
〃	25	F	Oct	〃	〃	0.522	1.77
〃	27	M	〃	〃	〃	0.669	1.68
〃	〃	F	Nov	〃	〃	0.361	1.01
〃	25—29	M	Mar—Nov	5	〃	0.575	1.10
Osaka	32—35	F	Aug—Dec	3	〃	0.426	0.41
Kyoto	34—38	M	Oct—Nov	4	〃	0.413	0.35
Osaka	40—42	F	Apr—Aug	2	〃	0.510	0.29
Tokyo	45—48	M	Jun—Dec	4	〃	0.434	0.32
〃	51—55	F	July—Nov	3	〃	0.543	0.40
〃	56—59	M	Sep—Oct	2	〃	0.499	0.31
〃	60—69	〃	Oct—Nov	5	〃	0.535	0.30
〃	70—79	〃	Aug—Nov	〃	〃	0.628	0.33

Table 13. Summary of ^{90}Sr (pCi/gCa) in Human Bone —1961 to 1964—

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

		Age group			
		Fetus	0—4	5—19	20<
1961	Number of Samples	2	9	51	106
	Mean	1.43	1.36	1.38	0.41
	Standard deviation	0.99	0.63	0.74	0.31
	Minimum~Maximum	1.38~1.98	0.22~2.15	0.32~3.64	0.06~1.91
1962	Number of Samples	10	26	45	243
	Mean	0.88	1.66	1.38	0.45
	Standard deviation	0.20	0.45	0.54	0.31
	Minimum~Maximum	0.59~1.17	0.95~2.24	0.37~2.37	0.03~1.33
1963	Number of Samples	17	38	44	47
	Mean	1.36	2.01	1.41	0.41
	Standard deviation	0.44	1.01	0.47	0.25
	Minimum~Maximum	0.86~2.38	0.80~4.37	0.55~2.50	0.22~1.29
1964	Number of Samples	36	14	58	39
	Mean	1.99	5.09	2.85	0.86
	Standard deviation	0.33	3.32	1.22	0.56
	Minimum~Maximum	1.04~2.52	2.06~12.88	1.22~6.95	0.29~2.16

Figure 5. ^{90}Sr in Japanese Human Bone Arranged According to Age in 1963



Cesium-137 Content in Human Body.

(National Institute of Radiological Sciences)

Content of cesium-137 in human body was observed by the National Institute of Radiological Sciences during the period November 1963 to July 1965. Total of 224 subjects, mainly from the staff of the National Institute of Radiological Sciences and the National Institute of Public Health were tested using a whole body counter at the National Institute of Radiological Sciences. The details are as follows: 16 males and 7 females of the healthy adult group ranging in age from 25 to 43 years old, were selected as subjects in November and December 1963. Since April 1964, a total of 132 healthy male adult subjects, age 18 to 44, were tested to determine body content of cesium-137. Between 6 and 18 persons were tested per month. From April to July 1965 observations were carried out on the same 16 or 18 subjects monthly. That is, a total of 69 healthy male subjects, age 23 to 39 years old, were tested to determine body content of cesium-137.

The whole-body counter used in this observation contained eight scintillation detector units. The subject's body was placed, between four units each located at the top and bottom.

The scintillation detector unit consists of a 50 × 50 × 15 cm home-made plastic scintillator, to which four × 5 inch diameter photomultiplier tubes (Du Mont 6364) were connected.

The container for the scintillation was made of stainless steel, 0.5 mm thick. MgO powder, about 3 mm thick, which was used as the reflecting material, covered the whole surface except for the light guide area.

The energy resolving power of this organic scintillator was 20% at maximum for ^{40}K at half-width. ^{137}Cs was evaluated to count around the 0.662 MeV energy band by a single channel pulse height analyzer for a quarter, while ^{40}K was evaluated at the same time to count around the 1.46 MeV energy band with a 2 channel analyzer. The calibration of K and ^{137}Cs amounts in the human body was conducted using a standard man phantom which contained a known amount of KCl and $^{137}CsCl$ water solution. Thus the absolute error of the measured amounts were dependent mostly upon the subject's weight. However, since the statistical accuracy of the measurements was 6.5%, the absolute error was roughly estimated to be within the former for the subjects of over 40 kg body weight. The results are shown in Table 14. The quartery variation of cesium-137 in man is summarized in Table 15.

Table 14. Cs-137 in man expressed in mμCi and pCi per gram of potassium
—Nov. 1963 to Jul. 1965—
By M. Saiki, T. Iinuma and M. Uchiyama
(National Institute of Radiological Sciences)

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Nov.—Dec. 1963						
I. T.	25	M	171.4	56.5	10.9	81
S. K.	25	F	149.7	42.0	5.7	64
M. Z.	27	M	161.4	47.0	2.4	22
K. T.	27	F	156.5	53.0	3.0	27
N. K.	28	M	163.1	56.5	4.4	33
O. I.	28	〃	166.5	75.0	5.9	44
Y. H.	30	〃	155.1	42.0	3.2	28
T. H.	32	〃	170.9	51.0	6.0	46
F. S.	32	〃	159.5	65.5	5.3	44
T. H.	32	F	148.8	38.5	3.0	33
I. Y.	34	M	170.8	74.0	2.2	14
I. S.	35	〃	161.5	47.5	3.1	21
S. M.	36	F	148.2	42.0	7.6	88
H. T.	36	〃	156.7	45.8	4.8	48
S. H.	37	M	165.8	61.5	3.6	26
W. T.	37	F	147.9	44.5	8.5	9
H. M.	38	M	164.5	55.5	4.5	34
O. H.	39	〃	172.5	59.0	3.5	24
Y. H.	40	〃	154.5	61.0	1.8	16
T. S.	41	〃	154.7	48.5	9.4	85
K. O.	42	〃	157.2	53.5	7.5	56
O. R.	43	〃	166.5	51.0	3.1	23
N. K.	43	F	149.8	48.5	4.9	53
					av. 5.0	av. 40

Number of persons measured: 23

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Apr. 1964						
A.	22	M	158.8	50.5	13.8	109
K.	22	〃	168.2	52.8	6.9	51
Y. K.	22	〃	173.4	60.2	13.4	88
S.	24	〃	160.3	56.0	13.3	94
K. S.	27	〃	166.5	50.5	10.0	78
K. I.	32	〃	162.5	59.3	14.6	112
N. Y.	44	〃	162.2	55.0	14.3	125
					av. 12.3	av. 94

Number of persons measured: 7

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
May 1964						
A.	22	M	159.0	50.5	14.5	111
K.	22	〃	168.8	53.3	7.2	51
Y. K.	22	〃	173.4	59.0	14.8	96
S.	24	〃	160.2	55.0	13.9	92
S.	27	〃	166.8	50.8	10.7	78
K. I.	32	〃	162.1	59.3	17.1	123
					av. 13.0	av. 92

Number of persons measured: 6

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Jun. 1964						
A.	22	M	158.8	51.0	14.2	108
K.	22	〃	168.4	54.0	8.6	59
Y. K.	22	〃	173.4	59.1	14.7	91
S.	24	〃	160.1	55.0	15.0	100
S.	27	〃	166.3	50.8	11.5	86
K. I.	32	〃	163.2	58.6	17.7	129
N. Y.	44	〃	162.3	56.0	17.0	138
					av. 14.1	av. 102

Number of persons measured: 7

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Jul. 1964						
A.	22	M	158.8	49.0	13.7	103
K.	22	〃	168.4	54.2	8.9	83
Y. K.	22	〃	173.2	58.2	14.1	89
S.	24	〃	160.5	55.5	17.2	146
S.	27	〃	166.3	52.1	10.7	78
S.	30	〃	166.0	64.0	16.4	117
K. I.	32	M	162.5	59.8	19.5	142
N. Y.	44	〃	162.1	55.5	18.8	151
M. U.	26	〃	173.5	50.2	10.6	78
T. I.	30	〃	163.0	49.5	11.4	83
S. Y.	35	〃	164.5	54.0	16.2	110
O.	18	〃	169.6	68.5	16.9	96
I.	19	〃	160.0	65.5	12.9	91
I.	19	〃	165.2	64.0	13.3	82
N.	19	〃	165.5	61.5	17.4	99
S.	19	〃	171.5	70.0	22.0	122
H.	20	〃	166.5	63.0	11.2	71
					av. 14.8	av. 102

Number of persons measured: 17

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Aug. 1964						
A.	22	M	159.2	48.5	12.7	104
K.	22	〃	168.8	53.0	7.5	55
Y. K.	22	〃	173.4	58.7	13.6	89
S.	24	〃	161.2	56.0	15.2	105
S.	27	〃	166.6	50.0	9.8	77
S.	30	〃	166.1	63.5	13.9	108
K. I.	32	〃	162.5	58.3	18.1	135
N. Y.	44	〃	162.8	53.5	17.8	153
M. U.	26	〃	173.4	50.0	9.2	71
T. I.	26	〃	171.5	54.0	14.5	109
K. W.	29	〃	166.5	59.0	12.3	94
T. I.	30	〃	163.0	49.0	11.9	91
S. Y.	35	〃	165.1	53.5	14.2	103
					av. 13.1	av. 100

Number of persons measured: 13

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Sept. 1964						
A.	22	M	158.6	49.5	13.5	109
K.	22	〃	168.4	52.0	8.3	60
Y. K.	22	〃	173.4	58.7	15.5	100
K.	26	〃	167.8	60.0	13.6	91
S.	27	〃	166.6	52.5	12.1	94
S.	30	〃	165.9	63.5	16.3	127
K. I.	32	〃	162.8	58.7	19.2	144
M. U.	26	〃	173.7	49.5	10.4	77
T. I.	26	〃	171.4	54.5	16.4	115
K. W.	29	〃	167.1	59.0	12.0	90
T. I.	30	〃	163.0	49.0	11.8	84
S. Y.	35	〃	164.4	53.5	13.7	96
					av. 13.6	av. 99

Number of persons measured: 12

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Oct. 1964						
A.	22	M	159.1	50.0	17.0	133
Y. K.	22	〃	173.5	59.0	17.9	116
K.	26	〃	168.1	60.0	16.2	109
S.	27	〃	166.8	52.5	15.2	115
S.	30	〃	167.3	64.2	24.3	186
K. I.	32	〃	163.1	60.5	20.5	132
N. Y.	44	〃	163.6	54.5	19.8	156
T. I.	26	〃	171.5	54.5	19.9	129
K. W.	29	〃	167.5	58.5	13.3	95
T. I.	30	〃	163.2	48.5	12.3	84
S. Y.	35	〃	164.8	52.8	20.2	130
					av. 17.9	av. 126

Number of persons measured: 11

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Nov. 1964						
A.	22	M	159.1	50.0	15.0	113
K.	22	〃	169.0	53.0	9.0	63
Y. K.	22	〃	173.8	61.5	16.1	99
K.	26	〃	168.5	60.5	15.0	99
S.	27	〃	167.2	52.0	12.0	88
S.	30	〃	169.5	65.5	16.7	119
K. I.	32	〃	163.0	58.5	17.7	129
N. Y.	44	〃	163.0	54.5	18.7	161
T. I.	26	〃	171.5	56.0	17.4	123
K. W.	29	〃	166.8	59.0	13.0	97
I.	31	〃	163.3	49.0	11.2	81
S. Y.	35	〃	164.5	51.0	13.5	97
M. I.	19	〃	161.5	61.0	12.8	82
M. I.	20	〃	163.0	63.0	16.6	101
Y. S.	20	〃	160.7	52.0	11.9	79
K. H.	21	〃	168.5	70.0	15.7	88
Y. I.	23	〃	165.0	56.5	14.3	93
H. T.	23	〃	169.0	65.0	11.5	68
					av. 14.3	av. 99

Number of persons measured: 18

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Dec. 1964						
A.	22	M	159.3	49.5	15.4	105
K.	22	〃	168.6	55.0	9.5	63
Y. K.	22	〃	173.6	60.0	15.9	92
K.	26	〃	168.5	60.5	14.6	93
S.	30	〃	166.8	65.0	14.8	102
K. I.	32	M	162.9	59.5	18.3	125
N. Y.	44	〃	163.5	54.0	17.8	145
M. U.	26	〃	174.3	50.0	9.8	70
T. I.	26	〃	171.7	56.0	16.5	115
K. W.	29	〃	169.7	58.5	11.6	87
T. I.	31	〃	163.3	47.0	14.4	108
S. Y.	35	〃	164.8	51.0	14.5	103
					av. 14.4	av. 101

Number of persons measured: 12

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Jan. 1965						
A.	22	M	159.4	51.0	13.6	101
Y. K.	22	〃	173.5	61.0	14.4	92
K.	23	〃	167.9	53.8	7.8	55
K.	27	〃	168.8	61.5	13.5	87
S.	30	〃	165.8	65.0	14.4	89
K. I.	33	〃	162.7	60.7	17.3	125
N. Y.	44	〃	164.3	53.0	17.6	131
M. U.	26	〃	174.7	51.5	9.7	71
T. I.	27	〃	172.0	57.5	16.5	118
W. K.	29	〃	167.5	58.0	10.8	81
T. I.	31	〃	163.2	48.0	10.8	83
S. Y.	35	〃	164.7	52.0	14.1	101
					av. 13.4	av. 95

Number of persons measured: 12

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Feb. 1965						
A.	23	M	159.2	50.5	12.0	87
Y. K.	23	〃	174.0	61.0	14.3	85
M.	28	〃	162.0	59.0	9.3	61
K. I.	33	〃	163.4	61.5	16.8	114
N. Y.	44	〃	163.0	53.5	14.7	113
M. U.	27	〃	173.7	52.5	9.6	64
T. I.	27	〃	171.6	57.4	14.8	99
K. W.	29	〃	167.5	58.0	10.7	76
T. I.	31	〃	163.7	48.0	9.7	69
S. Y.	35	〃	164.5	52.0	13.9	93
					av. 12.6	av. 86

Number of persons measured: 10

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Mar. 1965						
Y. K.	23	M	173.7	59.5	13.5	75
M. U.	27	〃	174.3	52.0	8.7	84

T. I.	27	M	171.5	58.0	14.1	71
K. W.	29	〃	167.1	58.5	11.5	109
T. I.	31	〃	163.5	48.5	9.8	65
K. I.	33	〃	163.0	60.5	17.8	124
K. Y.	35	〃	164.6	52.0	12.0	94
					av. 12.5	av. 89

Number of persons measured: 7

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Apr. 1965						
N. N.	23	M	182.1	85.3	12.5	82
Y. K.	23	〃	173.4	59.5	12.6	79
T. H.	24	〃	167.3	53.0	8.9	65
J. I.	25	〃	169.4	60.0	6.3	47
K. K.	25	〃	168.8	62.5	9.7	73
M. U.	27	〃	174.1	51.0	8.5	67
T. I.	27	〃	171.5	57.0	13.0	93
Z. M.	28	〃	163.0	50.0	7.0	67
Y. K.	29	〃	173.8	62.5	10.0	66
K. W.	31	〃	167.0	58.0	12.1	111
T. K.	30	〃	177.4	68.0	20.9	152
Y. O.	30	〃	162.5	68.5	12.7	98
M. Y.	31	〃	162.0	55.0	10.2	70
T. I.	31	〃	163.4	48.5	7.8	57
S. O.	34	〃	157.1	59.5	14.9	122
S. Y.	35	〃	165.2	51.0	13.6	108
T. U.	37	〃	156.9	49.0	10.0	77
S. K.	39	〃	162.0	60.0	12.5	83
					av. 11.3	av. 84

Number of persons measured: 18

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
May 1965						
N. N.	23	M	183.9	86.0	11.4	74
Y. K.	23	〃	173.6	58.0	14.1	87
T. H.	23	〃	168.5	54.0	7.9	56
J. I.	25	〃	170.0	60.0	6.3	43
K. K.	25	〃	169.1	62.0	*23.1	150
M. U.	27	〃	174.2	50.5	9.5	74
T. I.	27	〃	171.6	57.0	15.4	120
Z. M.	28	〃	163.1	48.0	7.7	67
Y. K.	29	〃	174.3	61.0	7.9	53
K. W.	31	〃	167.2	57.0	10.0	76
T. K.	31	〃	176.6	67.0	18.4	120
Y. O.	30	〃	162.5	67.4	9.5	69
M. Y.	31	〃	162.0	55.0	9.1	61
T. I.	31	〃	163.6	49.0	11.3	87
K. I.	33	〃	163.3	60.5	15.6	92
S. O.	34	〃	158.3	58.5	15.6	125
S. Y.	36	M	164.8	51.0	11.1	81
T. U.	37	〃	157.0	49.5	9.7	73
					av. 11.9	av. 84

Number of persons measured: 18

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Jun. 1965						
N. N.	23	M	180.8	86.0	9.0	62
Y. K.	23	〃	173.5	59.2	11.0	79
T. H.	25	〃	168.6	53.5	7.9	58
J. I.	25	〃	169.4	59.5	8.4	63
K. K.	26	〃	169.3	61.5	7.4	54
M. U.	27	〃	174.1	51.25	9.9	78
T. I.	27	〃	171.5	57.5	13.3	103
Z. M.	28	〃	162.6	48.5	7.3	63
Y. K.	29	〃	174.7	61.0	7.6	57
K. W.	31	〃	167.1	57.0	11.0	89
T. K.	31	〃	176.8	67.5	14.9	113
Y. O.	31	〃	162.3	66.0	11.3	89
M. Y.	31	〃	162.1	55.5	9.4	67
T. I.	31	〃	163.2	49.5	8.3	63
K. I.	33	〃	163.0	60.0	14.2	122
S. O.	34	〃	158.3	58.5	13.9	120
S. Y.	36	〃	164.7	51.0	13.4	103
T. U.	37	〃	157.2	49.5	9.9	78
					av. 10.5	av. 81

Number of persons measured: 18

Name	Age	Sex	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Jul. 1965						
N. N.	23	M	182.0	85.5	13.6	88
T. H.	25	〃	167.9	54.0	6.2	49
J. I.	25	〃	170.2	59.0	11.7	88
K. K.	26	〃	168.6	61.0	5.7	41
M. U.	27	〃	174.6	50.5	3.9	29
T. I.	27	〃	171.5	57.5	11.2	83
Z. M.	28	〃	162.8	48.0	10.8	106
Y. K.	29	〃	174.5	61.0	5.8	42
K. W.	31	〃	166.9	58.0	13.5	108
T. K.	31	〃	177.4	67.5	12.4	79
Y. O.	31	〃	162.2	68.0	6.8	57
M. Y.	31	〃	162.2	55.0	7.4	54
I. I.	31	〃	163.5	50.0	11.6	91
S. O.	34	〃	158.1	58.5	9.6	72
S. Y.	36	〃	164.7	50.5	12.9	96
T. U.	37	〃	156.9	50.0	6.5	55
					av. 9.3	av. 71

Number of persons measured: 16

Table 15. Average values of Cesium-137 in man determined with a whole body counter

By. M. Saiki, T. Iinuma and M. Uchiyama
(National Institute of Radiological Sciences)

		1963	1964				1965		
		Oct. ~Dec.	Jan. ~Mar.	Apr. ~Jun.	Jul. ~Sep.	Oct. ~Dec.	Jan. ~Mar.	Apr. ~Jun.	Jul.
Number of persons		23	—	20	42	41	29	53	16
Total body burden expressed in (mμCi)	Mean	5.0	—	13.2	13.9	15.3	12.9	11.0	9.4
	Standard deviation	±3.2	—	±3.2	±3.3	±2.9	±2.8	±3.1	±3.2
	Minimum~Maximum	1.8~10.9	—	6.9~17.7	7.5~22.0	9.0~24.5	7.8~17.8	6.3~20.9	3.9~13.6
Total body burden expressed in (pCi, ^{137}Cs/gK)	Mean	40	—	96	101	107	90	82	71
	Standard deviation	±23	—	±9	±24	±27	±21	±24	±25
	Minimum~Maximum	9~88	—	51~138	55~153	63~186	61~131	43~125	41~108

DATA OF THE SECOND NUCLEAR TEST BY PEOPLE'S REPUBLIC OF CHINA

Meteorological Data

Gross Beta-activity and Activity of Radio-iodine in Rain and Dry Fallout

Part 1 *(Meteorological Agency)*

The Meteorological Agency has measured gross beta-activity in rain and dry fallout since 1955 at local weather stations.

At the 13 stations shown in Figure 6, rain samples were collected by the same method mentioned in the explanation of Page 2, Issue No. 5 of this publication.

Results obtained during the period May 7th to June 11th, 1965 are shown in Table 16.

The meteorological trajectory estimates that the radioactive debris emitted into the troposphere first passed about 10 kilometers of altitude (300 mb level) in the northern part of Japan, one or two days after the explosion date.

Associated with this situation, very little fallout was first observed in the northern station. High fallout readings were first observed in the southern part of Japan five or six days after the explosion. The radioactive cloud which produced the fallout was carried up to about 5 kilometers of altitude (500 mb level) by the westerly winds in the middle troposphere.

The arrival time later than that of the first test of October 16th, 1964 may be due to low speed of the 500 mb westerly winds in neighborhood of the explosion site. The small deposits of highly radioactive particles in this test compared to that of the first test may be explained by this meteorological situation.

Figures 7 and 8 show the features mentioned above.

Radioactivity in rain and suspended dust near the ground were first detected on the 16th then subsequently on the 19th, and remained high during the period May 20th to 26th.

After the 27th, the radioactivity in rain decreased rapidly, and activity above 1.0 pCi/cc was not observed in June. Figure 9 shows temporal variation of the radioactivity concentration in rain since June, 1964. The value was measured 6 hours after sampling. Fallout in May 1965 was comparable to the first test of October 16th, 1964.

At five stations, air samples were collected by a filter paper type dust sampler. The radioactivity of the filter paper was measured 20 hours after sampling.

Results obtained during the period May 7th to June, 11th 1965 are shown in Tables 17 and 18.

Figure 10 shows the temporal variation of radioactivity content in air since June 1964.

Table 16. Gross β-activity in Rain —May 10 to Jun. 11, 1965—
Compiled by N. Murayama, H. Fujimoto, and M. Kamiyama.
(Meteorological Agency)

Gross β-activity (pCi/ml)

Station	May 10	11	12	13	14	15	16	17	18	19	20
Wakkanai		0.1							0.3		
Sapporo		0.4	0.3					0.6	0.0		
Kushiro			0.3						0.2		
Sendai						0.1		0.6			
Akita										1.6	
Tokyo			0.2			0.0		0.2			
Wajima						0.0		0.3			
Hachijojima		0.1			0.1	0.0	0.0	0.0			4.2
Osaka						0.1	0.2				
Yonago	0.3					0.0					
Murotomisaki								0.2			
Fukuoka	0.1				0.0	0.0					
Kagoshima	0.0				0.1	0.0					0.8

Station	May 21	22	23	24	25	26	27	28	29	30	31
Wakkanai		0.5	0.1	0.4	0.2						
Sapporo		0.9			0.2	0.1					
Kushiro	3.6	0.7									
Sendai	1.5	2.9					0.1	0.1			
Akita	8.0	6.0					0.4	0.1			0.3
Tokyo	4.9			0.8	0.1		0.2	0.0		0.2	0.0
Wajima	10.0	3.0					0.8	0.1	0.2	0.2	
Hachijojima	0.2			0.2		0.2	0.1			0.1	0.1
Osaka	2.1					0.5	0.1	0.1		0.1	0.1
Yonago	18.0					0.4	0.1	0.1	0.1	0.1	
Murotomisaki	0.9					0.2					
Fukuoka	21.0					0.4	0.1	0.8	0.5	0.2	
Kagoshima	1.2					0.5	0.1	0.0			

Station	Jun 1	2	3	4	5	6	7	8	9	10	11
Wakkanai		0.4			0.3	0.1	0.3			0.4	0.3
Sapporo			0.1		0.3	0.1	0.4	0.3			
Kushiro			0.1		0.4	0.2	0.3	0.3			
Sendai	0.4			0.3	0.2		0.6	0.4			
Akita	0.1		0.1	0.3	0.1						
Tokyo	0.2			0.2	0.1						
Wajima				0.2	0.2						
Hachijojima	0.1	0.1		0.1	0.0						0.1
Osaka				0.1							
Yonago				0.1							
Murotomisaki											
Fukuoka				0.2							
Kagoshima				0.0							

Table 17. Gross β-diposits —May 10 to Jun. 11, 1965—
Compiled by N. Murayama, H. Fujimoto, and M. Kamiyama.
(Meteorological Agency)

Gross β-deposits (mCi/km^2)

Station	May 10	11	12	13	14	15	16	17	18	19	20
Wakkanai		1.0							0.7		
Sapporo		0.7	0.7					1.3	0.0		
Kushiro			0.4						0.5		
Sendai						0.6		0.6			
Akita										1.9	
Tokyo			1.0			0.0		0.1			
Wajima						0.0		0.6			
Hachijojima		1.0			0.2	0.0	0.0	0.0			7.6
Osaka						2.0	1.5				
Yonago	1.0					0.0					
Murotomisaki								0.2			
Fukuoka	1.7				0.0	0.0					
Kagoshima	0.0				2.0	0.0					0.9

Station	May 21	22	23	24	25	26	27	28	29	30	31
Wakkanai		6.4	0.2	2.4	0.4						
Sapporo		1.8			2.4	0.5					
Kushiro	22.0	7.6									
Sendai	33.0	20.0					3.1	6.0			
Akita	29.0	27.0					1.5	4.2			0.7
Tokyo	250.0			6.0	0.4		20.0	0.0		4.0	0.0
Wajima	58.0	5.4					48.3	0.9	2.2	1.1	
Hachijojima	15.5			3.0		1.9	4.1			7.6	2.4
Osaka	51.2					2.3	13.5	0.7		0.9	1.6
Yonago	120.0					5.0	5.0	0.8	2.0	0.9	
Murotomisaki	32.3					1.8					
Fukuoka	430.0					15.0	2.6	4.2	1.9	0.3	
Kagoshima	4.2					35.3	7.3	0.0			

Station	Jun 1	2	3	4	5	6	7	8	9	10	11
Wakkanai		1.5			3.9	2.7	1.8			1.6	0.4
Sapporo			0.8		0.7	0.9	1.0	2.9			
Kushiro			1.7		1.2	0.5	9.4	0.8			
Sendai	0.7			4.0	2.0		2.0	2.0			
Akita	0.3		1.4	0.8	3.3						
Tokyo	0.8			9.0	0.3						
Wajima				2.0	0.3						
Hachijojima	1.9	0.4		0.9	0.0						1.3
Osaka				2.6							
Yonago				3.0							
Murotomisaki											
Fukuoka				3.1							
Kagoshima				0.0							0.0

Table 18. Gross β-activity in Dust —May 10 to Jun. 11, 1965—

Compiled by N. Murayama, H. Fujimoto, and M. Kamiyama.

(Meteorologicat Agency)

Gross β-activity (pCi/m^3)

Station	May 10	11	12	13	14	15	16	17	18	19	20
Sapporo	0.7		0.2		0.5		0.2	0.2	0.5	0.5	0.5
Sendai	0.7		0.5		0.2		0.0	0.2	1.0	1.0	0.0
Tokyo	0.6		0.5		0.9		0.6	0.6	0.6	0.9	0.6
Osaka	1.0		1.0		1.2		0.7	0.7	1.0	1.2	2.2
Fukuoka	0.5		1.2		1.2		0.7	0.7	0.7	1.4	2.9

Station	May 21	22	23	24	25	26	27	28	29	30	31
Sapporo	0.2	0.2	0.5	0.5		0.2	0.5	0.2			0.0
Sendai	0.2	1.2	1.2	1.2		1.0	0.5	0.7			0.2
Tokyo	16.0	1.5	1.2	1.4		2.2	0.1	0.3			0.1
Osaka	28.0	1.0	1.4	2.9		1.9	0.3	0.5			0.2
Fukuoka	0.5	1.0	1.0	7.0		0.2	0.5	0.2			0.2

Station	Jun 1	2	3	4	5	6	7	8	9	10	11
Sapporo		0.2		0.2		0.2			0.5		0.5
Sendai		0.5		0.2			0.5		0.2		0.5
Tokyo		0.4		0.1			0.8		0.7		0.9
Oaska		0.7		0.5			0.7		0.7		1.7
Fukuoka		1.0		1.7			1.0		0.7		1.4

Figure 6. Fallout Observation Network of Meteorological Agency

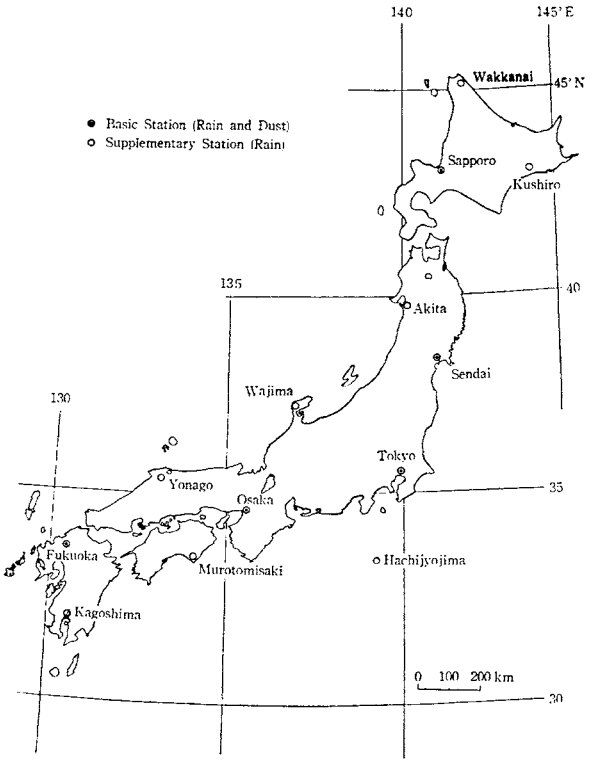
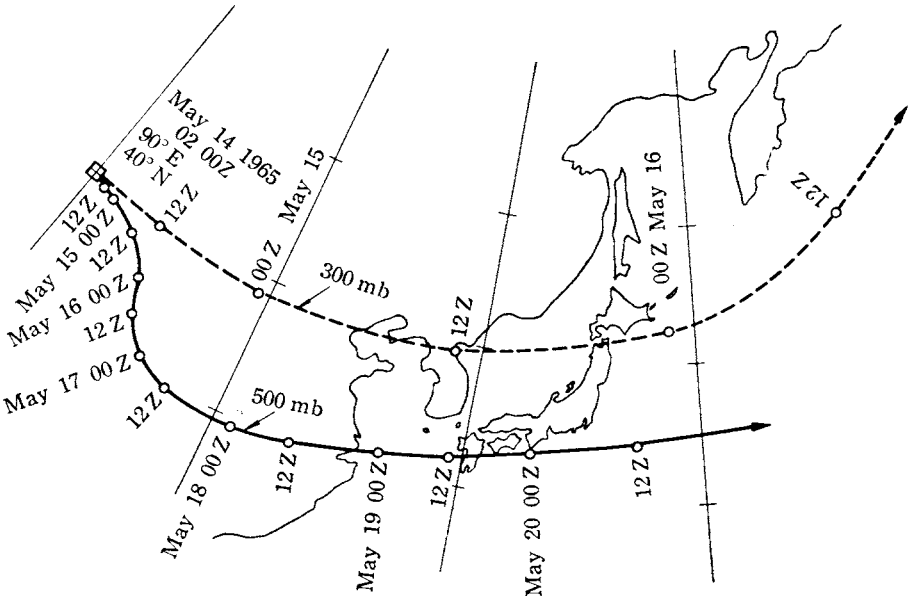


Figure 7. The Meteorological Trajectory at that time the Second Nuclear Test was carriedout by the People's Republic of China



Z=Greenwich Mean Time.

Figure 8. Temporal Variation of Gross β-activity in Rain and Dust near the Ground (Maximum Value: in Japan)

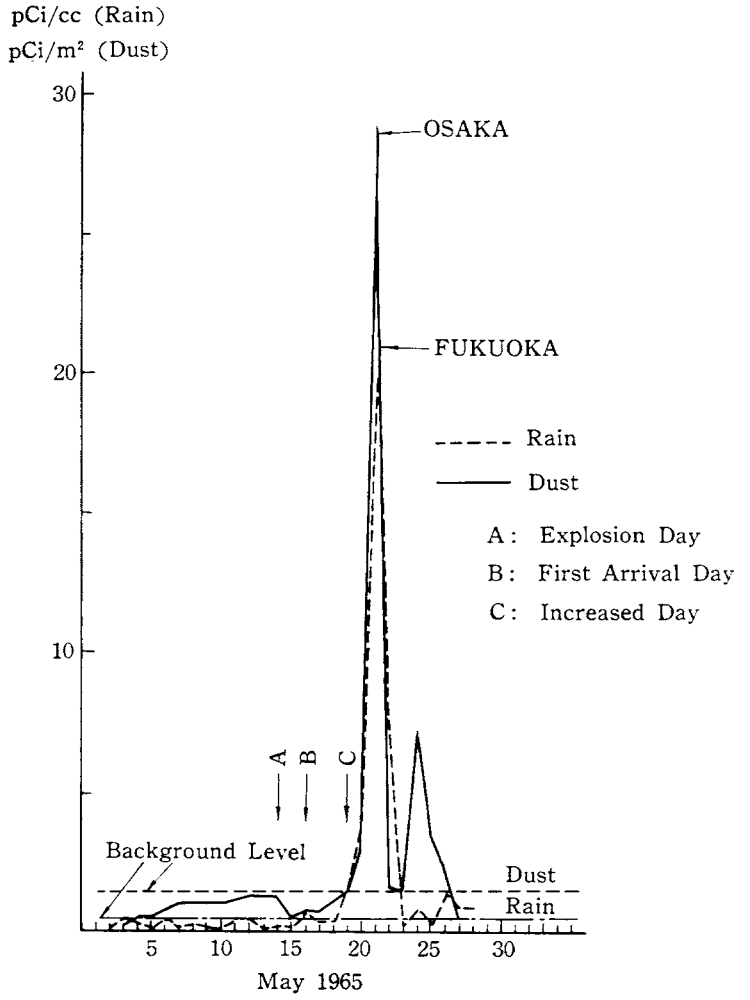


Figure 9. Temporal Variation of Gross β-activity in Rain
- All Japan Mean Value -

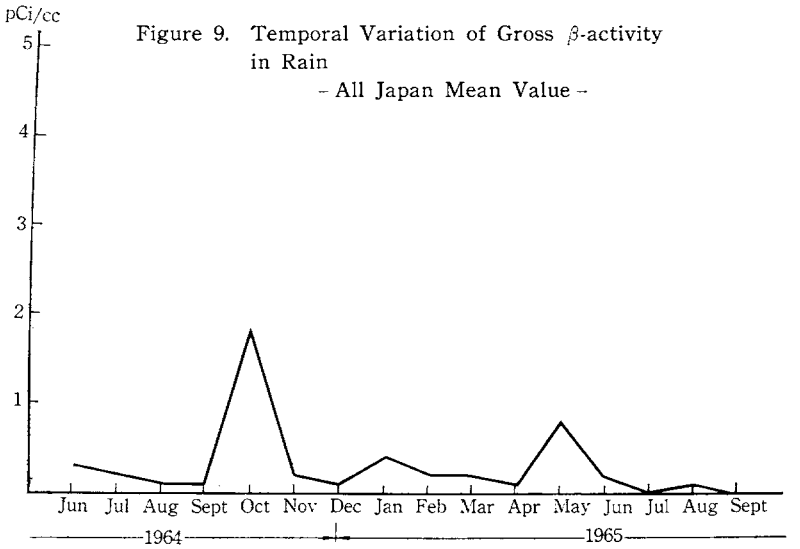
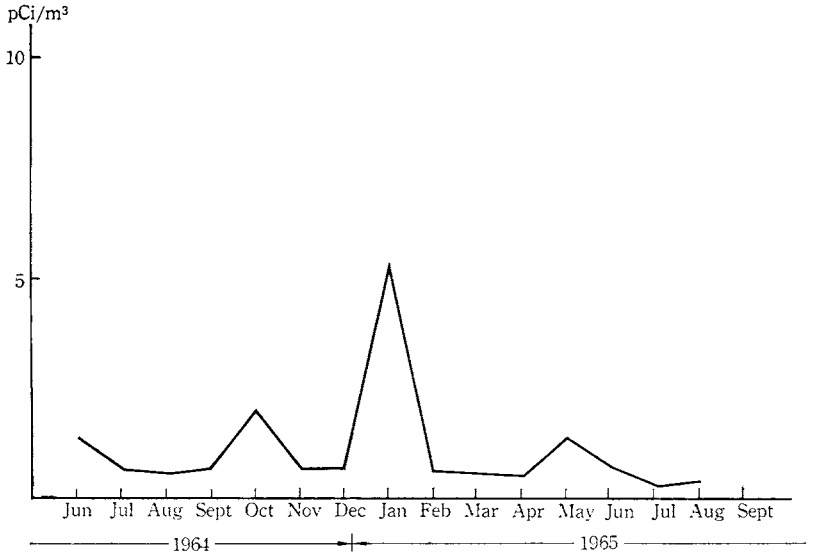


Figure 10. Temporal Variation of Gross β-activity in Air
- All Japan Mean Value -



Part 2 *(Meteorological Research Institute, Tokyo)*

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

Results of measurements obtained during the period from May 15th, 1965 to June 22nd, 1965, when the effect of Chinese atomic bomb was noticed, are shown in Table 19.

Table 19. Deposits of Radioactive fallout
—May 15 to Jun. 22, 1965—
By Y. Miyake, K. Saruhashi, Y. Katsuragi, T. Kanazawa, and Y. Sugimura
(Meteorological Research Institute, Tokyo)

Date of Sampling	Collection time (hr)	Total β-activity (mCi/km²)	Remarks
May 1965			
9 AM, 15th to 11 AM, 16th	26	0.23	dry fallout
11 AM, 16th 〃 9 AM, 17th	22	0.24	rain (0.25 mm)
9 AM, 17th 〃 〃 18th	24	0.11	dry fallout
〃 18th 〃 〃 19th	〃	0.08	〃
〃 19th 〃 〃 20th	〃	0.07	〃
〃 20th 〃 〃 21st	〃	344	rain (72.0 mm)
〃 21st 〃 〃 22nd	〃	5	dry fallout
〃 23rd 〃 〃 24th	〃	10	rain (14.5 mm)
〃 24th 〃 〃 25th	〃	0.3	dry fallout
〃 25th 〃 〃 26th	〃	1.4	rain (0.6 mm)
〃 26th 〃 〃 27th	〃	16	〃 (85.5 mm)
〃 27th 〃 〃 28th	〃	1.6	〃 (50.2 mm)
〃 28th 〃 〃 29th	〃	1.3	〃 (3.0 mm)
〃 29th 〃 〃 31st	48	5.3	〃 (75.0 mm)
〃 31st 〃 〃 1st	24	1.2	〃 (8.8 mm)

Date of Sampling				Collection time (hr)	Total β-activity (mCi/km²)	Remarks
		Jun 1965				
9 AM,	1st to	9 AM,	2nd	24	0.02	dry fallout
〃	2nd 〃	〃	3rd	〃	0.03	〃
〃	3rd 〃	〃	4th	〃	4.9	rain (53.5 mm)
〃	4th 〃	〃	5th	〃	0.2	〃 (1.4 mm)
〃	5th 〃	〃	7th	48	0.06	dry fallout
〃	7th 〃	〃	8th	24	0.1	〃
〃	8th 〃	〃	9th	〃	0.04	〃
〃	9th 〃	〃	10th	〃	0.03	〃
〃	10th 〃	〃	11th	〃	0.04	〃
〃	11th 〃	〃	12th	〃	0.02	〃
〃	12th 〃	〃	14th	48	13.9	rain (51.0 mm)
〃	14th 〃	〃	15th	24	0.9	〃 (28.5 mm)
〃	15th 〃	〃	16th	〃	0.04	dry fallout
〃	16th 〃	〃	17th	〃	0.05	〃
〃	17th 〃	〃	18th	〃	0.08	〃
〃	19th 〃	〃	21st	48	1.0	rain (7.0 mm)
〃	21st 〃	〃	22nd	24	0.8	〃 (16.8 mm)

Part 3 *(National Institute of Radiological Sciences)*

Daily rain and dry fallout samples were continuously (9 AM. to 9 AM) collected by the National Institute of Radiological Sciences at Chiba city, to determine gross beta-activity and activity of radioiodine.

Gross beta-radioactivity was measured using the standards of uranium oxide (U_3O_8) with a Geiger Müller counter and measured 8 hours after the time of collection, except in the case of samples collected on 15–16, 16–17 and 28–29 May, 1965. After the addition of an iodine carrier to the fallout samples, the iodine was chemically separated for radioactivity determination using an iodine-131 standard with a beta-ray low background counter.

The radioactivity of the iodine was calculated back to the time of collection using a decay curve for radioactivity of the iodine fraction.

Results obtained during the period 15 to 31 May, 1965 on gross beta-activity and radioactive iodine are shown in Table 20.

Table 20. Gross β-radioactivity and Radioactivity of Iodine in Rain and Dry Fallout
—May 15 to 31, 1964—

By M. Saiki, H. Kamada, Y. Ohmomo, H. Yamaguchi and S. Miyakuni.
(National Institute of Radiological Sciences)

Date of Sampling	Date of Determination	Grorss β-activity (mCi/km²)	β-activity of Iodine at the Time of Sampling (mCi/km²)	Ratio $\frac{\beta\text{-activity of Iodine}}{\text{Gross } \beta\text{-activity}} \times 100$
15～16 May 1965	16 May 1965	0.10		
16～17 〃	18 〃	0.10		
17～18 〃	18 〃	0.24		
18～19 〃	19 〃	0.16		
19～20 〃	20 〃	0.07		
20～21 〃	21 〃	94.45	3.05	3.2
21～22 〃	22 〃	6.13	0.39	6.4
22～23 〃	23 〃	2.32		
23～24 〃	24 〃	8.15		
24～25 〃	25 〃	4.36		
25～26 〃	26 〃	1.86		
26～27 〃	27 〃	6.40	0.01	0.2
27～28 〃	28 〃	1.59	0.09	5.7
28～29 〃	31 〃	0.20	0.09	7.0
29～31 〃	31 〃	1.08		

Chemical Composition of Fallout

(Meteorological Research Institute, Tokyo)

The Meteorological Research Institute carried out radiochemical analysis of rain water collected on May 21st, when the effects of 2nd Chinese bomb was extraordinary. Results obtained are shown in Table 21.

Table 21. Radiochemical Analysis of Dry Fallout
-May 21, 1965-
By Y. Miyake, K. Saruhashi, Y. Katsuragi, T. Kanazawa and Y. Sugimura
(Meteorological Research Institute, Tokyo)

Nuclides	Percentage in Activity	
	Fission and induced product	Fission product
^{239}Np	31.2%	%
^{237}U	1.0	
^{99}Mo ^{103}Ru, ^{106}Ru ^{105}Ru Rh ^{132}Te	13.7	20.2
^{89}Sr, ^{90}Sr ^{140}Ba	14.3	21.1
^{137}Cs	0.3	0.4
^{91}Y, ^{140}La ^{141}Ce, ^{144}Ce ^{147}Nd, ^{147}Pm	28.3	41.7
^{95}Zr, ^{97}Zr ^{95}Nb, ^{96}Nb	2.9	4.3
^{131}I	5.7	8.4
Others	2.6	3.8

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-radioactivity of dust in the lower layer of the stratosphere and tropopause using aircraft as collectors.

The samples were taken over three areas of Japan using gummed paper and dust samplers attached to the front of the aircraft wings.

The sampling flight 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 should be the value at the flight altitude.

Figure 11 shows three sampling areas of Japan, and Table 22 shows the results obtained.

Results at an altitude of 6,000 meters was obtained by dust sampler, at 10,000 meters by both the dust sampler and gummed paper, 12,000 meters samples were taken by gummed paper only.

Figure 12 shows monthly variation of gross beta-activity at three altitudes in the Chubu sky area.

Figure 11. Three Sampling Areas of Japan

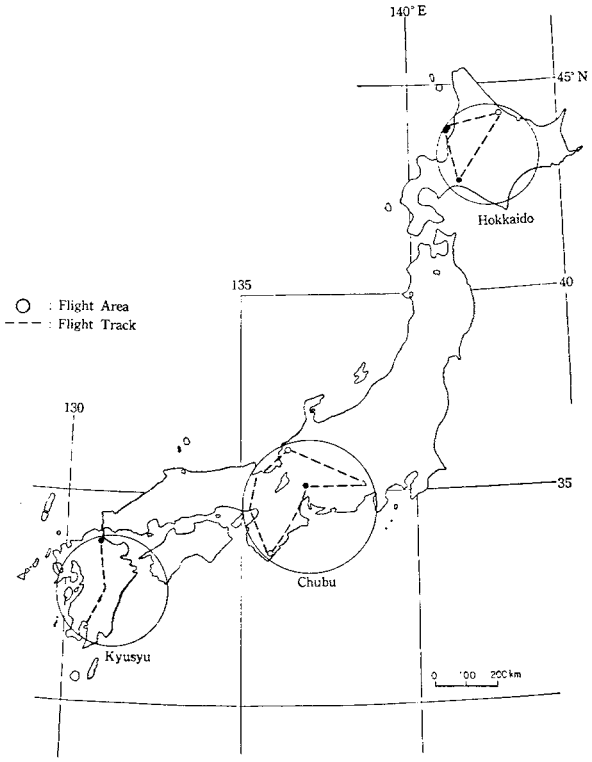


Table 22. Gross β-radioactivity in Upper Air
-May 11 to Jun. 29, 1965-

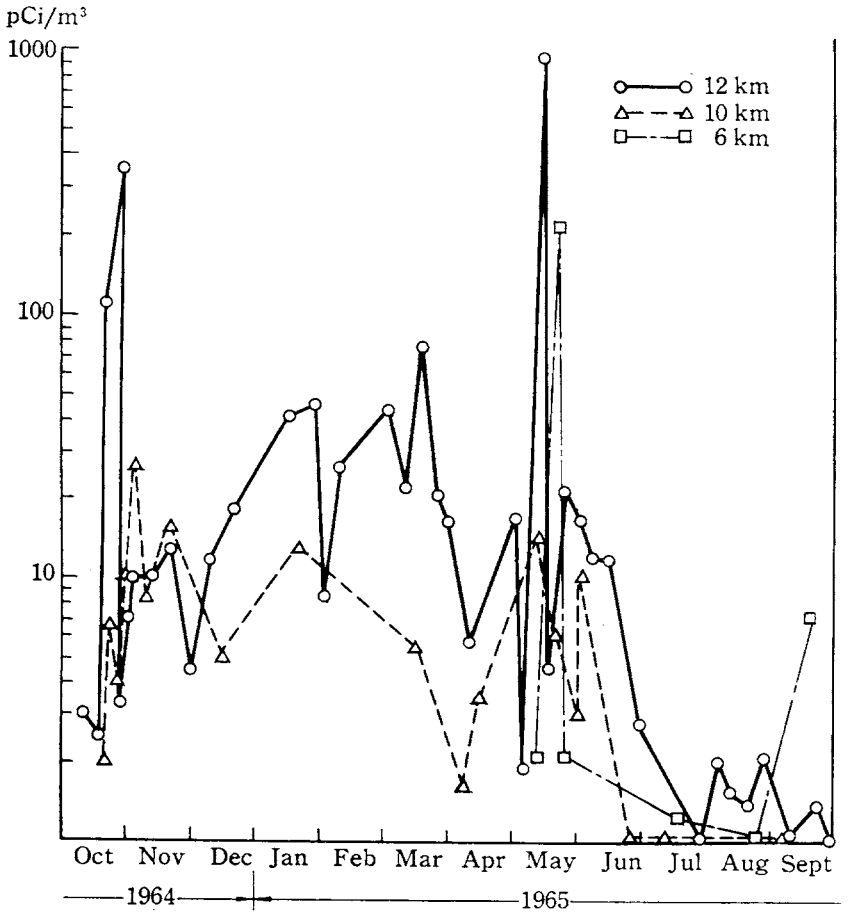
By T. Urai and T. Igarashi
(Research and Development H. Q., Japan Defense Agency)

** pCi/m³

Sky Area	Hokkaido		Chubu			Kyushu	
	12,000 m	10,000 m	12,000 m	10,000 m	6,000 m	12,000 m	10,000 m
11 May			17.4				
15 〃		12.0	1.96			{2.15 (AM) 1.66 (PM)	
16 〃	*( )			3.6		2.8	
17 〃		172.0			2.1		2.5
18 〃	88.5		941.0			344.0	
19 〃		65.4		13.9			130.4
20 〃	406.3				221.8		
21 〃			4.6				
22 〃				6.1			
23 〃					2.0		
24 〃			21.0				
31 〃			16.8				
1 June				2.95			
7 〃			11.6	9.86			
15 〃			11.3				
29 〃			2.8	0.34			

Note *It was certain that the value increased rapidly, but the precise value could not obtained.
**The unit pCi/l gummed paper, shown in Table 5 (Page 9), Issue No. 5 of this Publication, was error and should read pCi/m².

Figure 12. Monthly Variation of Gross β-activity in Chubu Sky Area.
- Oct. 1964 to Sept. 1965. -



Dietary Data

Iodine-131 in Milk

(National Institute of Radiological Sciences)

Concentrations of iodine-131 in milk were determined by the National Institute of Radiological Sciences during the period 20th to 26th May, 1965. Milk samples were taken mainly from a farm located in the northern part of Chiba Prefecture and the remaining samples were collected from a milk plant in Tokyo. Iodine was chemically separated from the milk sample and it's decay of beta-radioactivity was determined to calculate radioactivity of iodine-131. The radioactivity of iodine-131 was calculated back to the date of sampling.

Results obtained are shown in Table 23.

Table 23. Iodine-131 in Milk —May 20 to 26, 1965—
By M. Saiki, Y. Ohmomo and H. Yamaguchi
(National Institute of Radiological Sciences)

Date of Sampling	^{131}I (pCi/l)	Sample from
20 May 1965	Not detected	Farm
22 〃	35	〃
24 〃	113	〃
24 〃	8	Plant
25 〃	38	Farm
25 〃	Not detected	Plant
26 〃	29	〃

Contributor

The results quoted in this Issue were contributed by the following Institute.

Institute and Address	Item
Meteorological Agency 7, Ote-machi-1-chome, Chiyoda-ku, Tokyo	Fallout
Meteorological Research Institute Kita-4-chome, Koenji, Suginami-ku, Tokyo	Fallout
Research and Development H. Q., Japan Defense Agency 13, Mita, Meguro-ku, Tokyo	Upper Air
National Institute of Animal Industry 959, Aoba-cho, Chiba-shi	Milk
Institute of Physical and Chemical Research 31, Komagome-kamifujimae-cho, Bunkyo-ku, Tokyo	External Dose
St. Paul's University 3, Ikebukuro, Toshima-ku, Tokyo	External Dose
Japan Analytical Chemistry Research Institute 17, Kikukawa-cho-2-chome, Sumida-ku, Tokyo	Fallout, Air, Milk, Total Diet
National Institute of Radiological Sciences 9-1, Anagawa-4-chome, Chiba-Shi	Fallout, External Dose, Total Diet, Human Bone, Body Burden, Milk