RADIOACTIVITY SURVEY DATA in Japan

NUMBER 14
FEB. 1967

National Institute of Radiological Sciences
Chiba, Japan

Radioactivity Survey Data in Japan

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DATA OF THE FIFTH NUCLEAR TEST OF THE 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 and fallout dust have been collected monthly, in a receiver (collection area, 1 m^2), at the Meteorological Reseach Institnte, Tokyo, to determine the content of Strontinm-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 to December, 1966 are shown in Table 1.

Total cumulative deposits of Strontium-90 and Cesium-137 reached the levels of 80.3 and 182.2 mCi/km^2 respectively, at the end of December 1966.

Figure 1. Seven Stations collected Sample

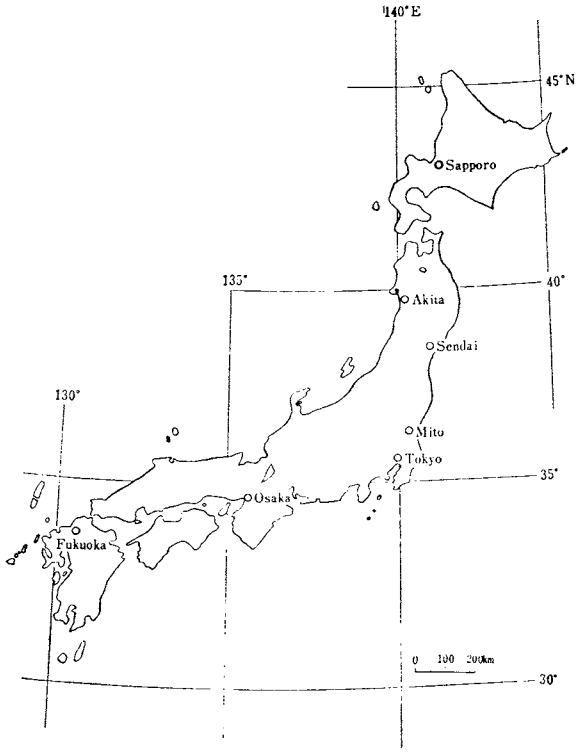


Table 1. Monthly Deposits of ^{90}Sr and ^{137}Cs—Jan. to Dec., 1966—

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

(Continud from Table 1, Issue No. 9~10 of this Publication)

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

	1966 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
^{90}Sr (mCi/km^2)	0.49	0.37	0.25	0.39	0.14	0.17	0.15	0.05	0.07	0.06	0.13	
Precipitation(mm)	181.0	74.0	143.0	75.8	43.3	96.3	58.2	118.5	102.6	169.4	85.2	

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	
Precipitation (mm)	169.8	118.0	143.5	95.6	103.6	153.2	380.5	139.6	143.7	238.0	262.7	

Sendai (Sendai District Central Meteorological Observatory)
Location : 38°16′ N, 140°54′ F (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	
Precipitation (mm)	31.3	78.5	141.1	118.6	113.6	252.6	132.3	50.2	311.2	85.6	16.4	

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/km²)	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/km²)	0.20	0.54	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	2.2	3.0	2.5
Precipitation (mm)	46.5	140.5	110.7	138.0	210.9	551.7	166.1	100.0	195.2	98.3	28.2	10.2

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/km²)	0.10	0.19	0.28	0.25	0.32	0.38	0.13	0.04	0.06	0.05	0.05	
Precipitation (mm)	23.6	122.0	99.9	133.7	196.2	510.2	160.8	54.5	197.1	108.5	29.0	

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

	1966 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
^{90}Sr (mCi/km²)	0.19	0.19	0.20	0.27	0.40	0.03	0.12	0.10	0.04	0.05	0.04	
Precipitation (mm)	55.1	96.8	145.0	106.9	170.5	186.8	274.0	132.0	217.3	67.4	54.3	

Fukuoka (Fukuoka District Central Meteorological Obesrvatory)
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/km²)	0.15	0.18	0.30	0.22	0.25	0.28	0.10	0.08	0.04	0.09	0.06	
Precipitation (mm)	34.1	53.1	133.0	106.9	101.4	214.8	119.9	52.6	342.0	110.2	123.6	

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/km²)	0.03	0.23	0.43	0.34	0.24	0.46	0.11	0.07	0.04	0.07	0.06	
Precipitation (mm)	27.2	137.8	138.9	122.7	178.3	310.0	104.2	25.7	167.5	96.3	42.8	

Water Data

Strontium-90 and Cesium-137 in Source Water

(Japan Analytical Chemistry Research Institute)

Since May 1963, the Japan Analytical Chemistry Research Institute has analyzed the Strontium-90 and Cesium-137 contents in source water from 21 locations in Japan. Sampling locations are shown in Figure 2.

The analytical procedure applied is the same one with that shown on page 9, Issue No. 6 of this publication.

Results obtained during the period September 1965 to March 1966 are shown in Table 2.

Figure 2. Source Water Sampling Locations

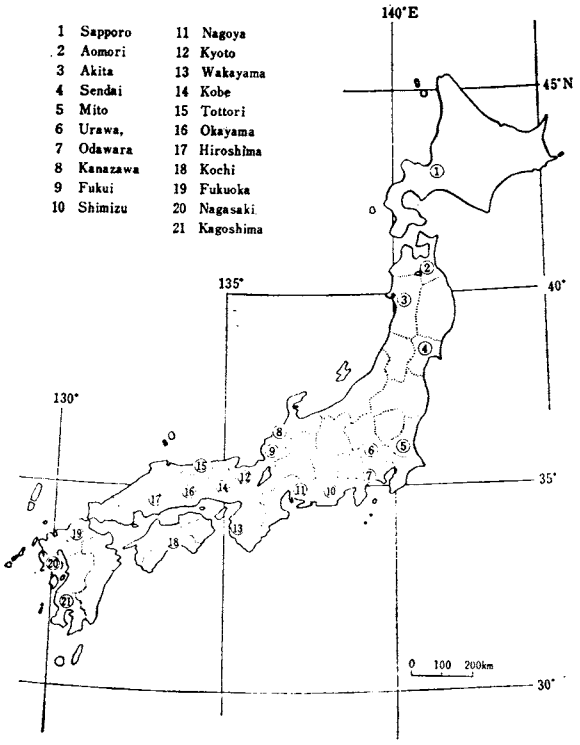


Table 2. ^{90}Sr and ^{137}Cs in Source Water —Sept., 1965 to Mar., 1966—

By T. Asari, M. Chiba and Kuroda

(*Japan Analytical Chemistry Research Institute*)

(Continued from Table 9, Issue, No. 8, of this Publication)

Location	Source	^{90}Sr (pCi/*l*)	^{137}Cs (pCi/*l*)	Nature of Water	
				pH	Appearance
Sept. 1965					
Sapporo, HOKKAIDO	Water Purification works	0.53	0.19	7.2	slight muddy
Oct. 1965					
Aomori, AOMORI	〃 〃	0.46	0.11	7.0	clear
Akita, AKITA	〃 〃	0.64	0.11	6.9	〃
Sendai, MIYAGI	〃 〃	0.29	0.17	6.7	slight muddy
Mito, IBARAGI	〃 〃	0.26	0.42	6.9	slight muddy
Urawa, SAITAMA	〃 〃	0.05	0.90	7.4	clear
Odawara, KANAGAWA	Intake	0.35	0.02	6.8	〃
Kanazawa, ISHIKAWA	〃	0.75	0.41	9.1	〃
Fukui, FUKUI	Water Purification works	0.10	0.03	7.7	〃
Shimizu, SHIZUOKA	Reservoir	0.59	0.02	7.2	〃
Nagoya, AICHI	Intake	0.18	0.02	7.0	〃
Kyoto, KYOTO	〃	1.01	0.07	7.61	〃
Kobe, HYOGO	Reservoir	0.18	0.03	7.0	slight muddy
Tottori, TOTTORI	〃	0.02	0.07	6.7	clear
Okayama, OKAYAMA	〃	0.25	0.02	7.0	〃
Hiroshima, HIROSHIMA	〃	0.25	0.03	7.05	〃
Kochi, KOCHI	Intake	0.23	0.83	7.2	〃
Fukuoka, FUKUOKA	Reservoir	0.20	0.05	6.7	〃
Nagasaki, NAGASAKI	〃	0.37	0.13	7.4	slight muddy
Kagoshima, KAGOSHIMA	〃	0.04	0.02	6.8	clear
Nov. 1965					
Sapporo, HOKKAIDO	Water Purification works	0.31	0.06	7.1	〃
Dec. 1965					
Akita, AKITA	Water Purification works	0.34	0.10	6.7	clear
Odawara, KANAGAWA	Intake	0.06	0.02	6.8	〃
Nagoya, AICHI	〃	0.10	0.03	7.1	〃
Kanazawa, ISHIKA	〃	0.59	0.16	7.3	〃
Wakayama, WAKAYAMA	Water Purification works	0.15	0.05	6.9	slight muddy
Kyoto, KYOTO	Intake	0.95	0.04	7.82	clear
Jan. 1966					
Sapporo, HOKKAIDO	Water Purification works	0.29	0.06	7.1	〃
Aomori, AOMORI	Reservoir	0.15	0.14	7.0	〃
Sendai, MIYAGI	Water Purification works	0.32	0.11	6.8	〃
Fukui, FUKUI	〃 〃	0.11	0.04	7.25	slight muddy
Shimizu, SHIZUOKA	Reservoir	0.07	0.01	7.4	clear
Wakayama, WAKAYAMA	Water Purification works	0.15	0.02	6.9	slight muddy
Tottori, TOTTORI	Reservoir	0.31	0.21	6.7	clear
Okayama, OKAYAMA	〃	0.23	0.17	6.8	〃
Hiroshima, HIROSHIMA	Intake	0.17	0.04	6.9	〃
Kochi, KOCHI	〃	0.14	0.02	7.2	〃
Nagasaki, NAGASAKI	Reservoir	0.27	0.14	7.1	slight muddy
Kagoshima, KAGOSHIMA	〃	0.02	0.02	6.7	clear
Feb. 1966					
Akita, AKITA	Water Purification works	0.46	0.11	6.7	〃
Mito, IBARAGI	〃 〃	0.11	0.05	7.0	slight muddy
Urawa, SAITAMA	〃 〃	0.04	0.02	7.4	clear
Odawara, KANAGAWA	Intake	0.08	0.02	6.6	〃
Nagoya, AICHI	〃	0.18	0.06	6.9	slight muddy
Kyoto, KYOTO	〃	0.98	0.05	7.05	clear
Kobe, HYOGO	Reservoir	0.44	0.09	7.0	〃
Mar. 1966					
Sapporo, HOKKAIDO	Water Purification works	0.39	0.08	7.1	slight muddy
Fukuoka, FUKUOKA	〃 〃	0.25	0.06	6.8	clear

Dietary Data

Strontium-90 and Cesium-137 in Rice

(National Institute of Agricultural Sciences, Institute of Public Health)

Strontium-90 content in rice has been determined at the National Institute of Agricultural Sciences since 1957, and Cesium-137 content in rice since 1961 in co-operation with the Institute of Public Health.

All rice samples are collected at, and sent from national and prefectural agricultural experimental stations, covering all important agricultural areas throughout Japan. Sampling location are shown in Figure 3.

The samples are chosen as representative of agricultural conditions, including soil type, crop variety, fertilizer application and harvest time.

The analytical procedure applied is the same one with that shown on page 14, Issue No. 3 of this publication.

Results obtained are shown in Table 3 and 4. The annual average of Strontium-90 and Cesium-137 contents during the period 1957 to 1965 is shown in Figure 4.

Figure 3. Rice Sampling Locations

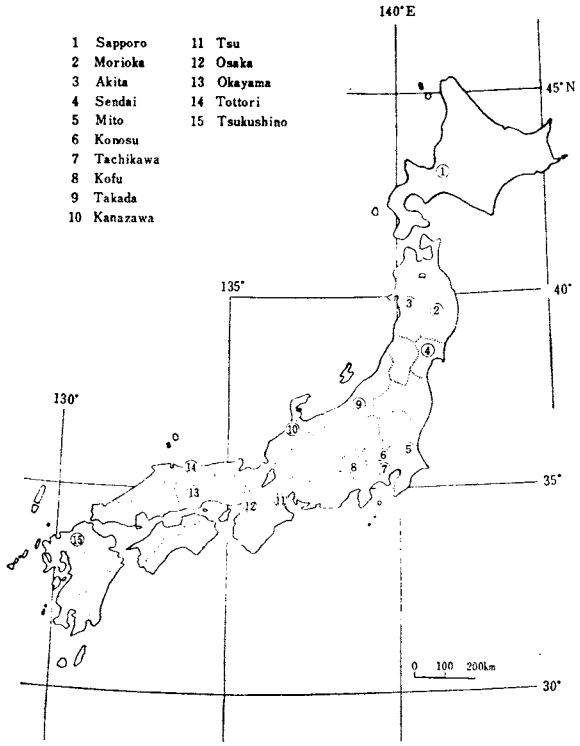


Table 3. ^{90}Sr in Rice —1965—

By H. Kobayashi and M. Ishikawa

(National Institute of Agricultural Sciences)

(Continued from Table 1, Issue No. 8, of this publication)

Location	Month Harvested	^{90}Sr (pCi/kg)	
		Brown Rice	Polished Rice
Sapporo, HOKKAIDO	Oct	18	1.9
Morioka, IWATE	〃	16	0.9
Akita, AKITA	Sept	18	3.1
Sendai, MIYAGI	〃	19	2.6
Mito, IBARAGI	Oct	23	2.3
Konosu, SAITAMA	〃	18	2.7
Tachikawa, TOKYO	〃	12	1.7
Kofu, YAMANASHI	〃	15	2.2
Takada, NIIGATA	〃	23	3.2
Kanazawa, ISHIKAWA	Sept	21	3.5
Tsu, MIE	Oct	10	1.2
Osaka, OSAKA	Nov	7	2.2
Okayama, OKAYAMA	〃	7	1.3
Tottori, TOTTORI	Oct	20	3.3
Tsukushino, FUKUOKA	Nov	16	2.2
Average for year		16	2.3

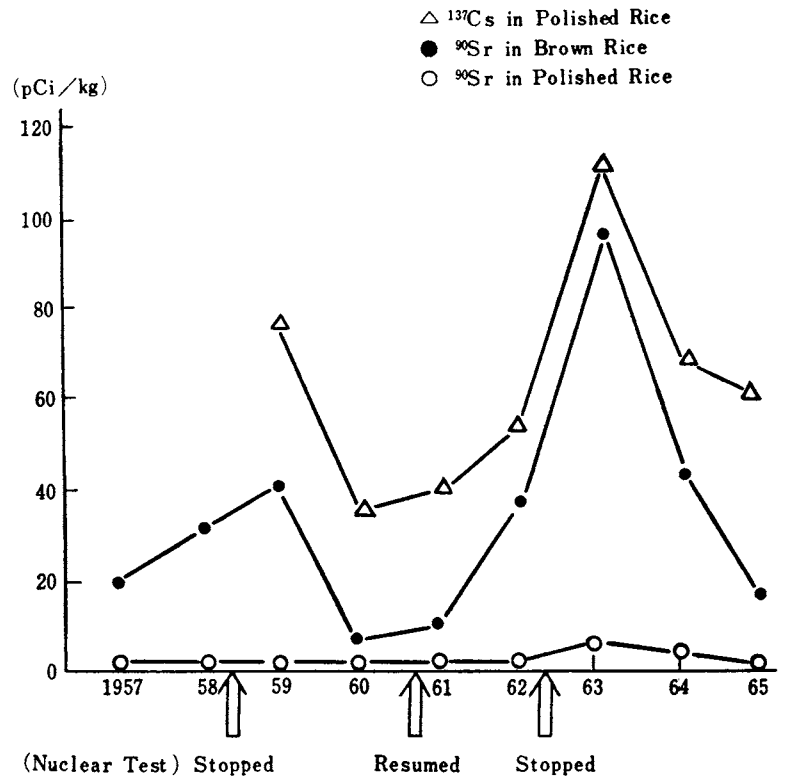
Table 4. ^{137}Cs in Rice —1965—

By H. Kobayashi and A. Tsumura
(*National Institute of Agricultural Sciences*)
N. Yamagata
(*Institute of Public Health*)

(Continued from Table 2, Issue No. 8, of this publication)

Location	Month Harvested	^{137}Cs (pCi/kg) Polished Rice
Sapporo, HOKKAIDO	Oct	116
Morioka, IWATE	〃	74
Akita, AKITA	Sept	90
Sendai, MIYAGI	〃	61
Mito, IBARAGI	Oct	80
Konosu, SAITAMA	〃	78
Tachikawa, TOKYO	〃	37
Kofu, YAMANASHI	〃	36
Takada, NIIGATA	〃	59
Kanazawa,ISHIKAWA	Sept	52
Tsu, MIE	Oct	37
Osaka, OSAKA	Nov	24
Okayama, OKAYAMA	〃	93
Tottori, TOTTORI	Oct	69
Tsukushino, FUKUOKA	Nov	27
Average for year		62

Figure 4. Temporal Variation of ^{90}Sr and ^{137}Cs in Rice —1957 to 1965—
—All Japan Mean Values—



Strontium-90 in Wheat

(*National Institute of Agricultural Sciences*)

Since 1957, Strontium-90 content in wheat has been determined at the National Institute of Agricultural Sciences. All wheat samples are collected at, and sent from national and prefectural agricultural experimental stations, covering all important areas of agriculture throughout Japan.

Sampling locations are shown in Figure 5.

The samples are chosen as representative of agricultural conditions, inculding soil type, crop variety, fertilizer application and harvest time.

The analytical method applied is the same one with that shown on page 15, Issue No. 6 of this publication.

Results obtained in 1966 are shown in Table 5.

The yearly average of Strontium-90 content during the period 1957 to 1966 is shown in Figure 6.

Figure 5. Wheat Sampling Locations

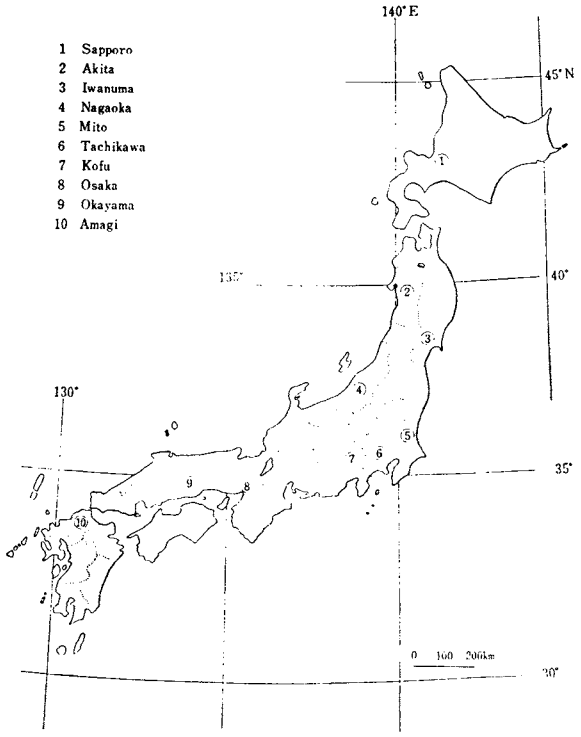


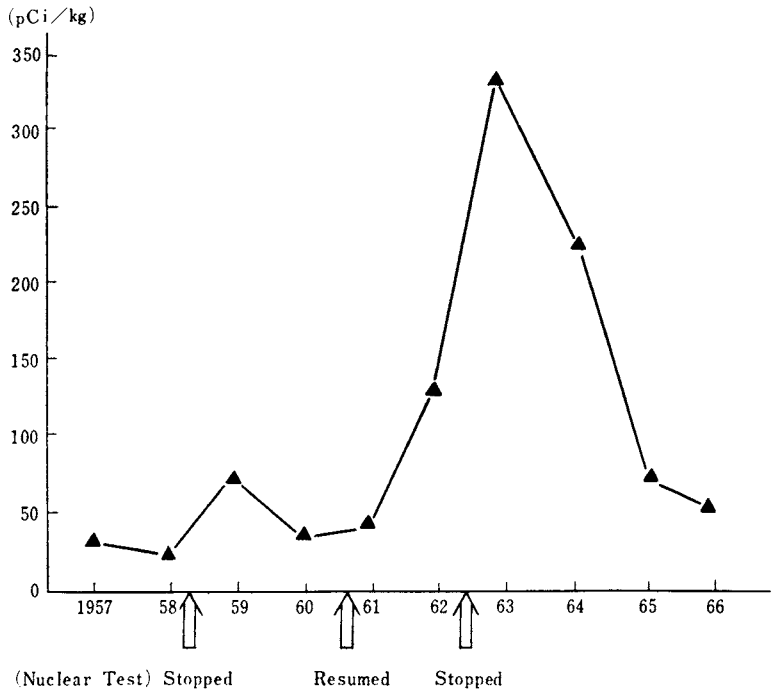
Table 5. ^{90}Sr in Wheat —1966—

By H. Kobayashi and M. Ishikawa
(*National Institute of Agricultural Sciences*)

(Continued from Table 3, Issue No. 8, of this publication)

Location	Month Harvested	^{90}Sr (pCi/kg) Wheat Grain
	1966	
Sapporo, HOKKAIDO	Aug	26
Akita, AKITA	Jul	152
Iwanuma, MIYAGI	Jun	75
Nagaoka, NIIGATA	〃	74
Mito, IBARAGI	〃	91
Tachikawa, TOKYO	〃	53
Kofu, YAMANASHI	〃	40
Osaka, OSAKA	〃	37
Okayama, OKAYAMA	〃	38
Amagi, FUKUOKA	〃	50
Average for year		64

Figure 6. Temporal Variation of ^{90}Sr in Wheat —1957 to 1966—
—All Japan Mean Values—



Human Data

Cesium-137 Content in Human Body

(National Institute of Radiological Sciences)

Content of Cesium-137 in human body has been observed by the National Institute of Radiological Sciences since November 1963. During the period from August 1965 to March 1967, 177 male subjects were tested using a plastic scintillation whole body counter at the National Institute of Radiological Sciences. The detail of method for determination is the same one with that shown on page 22, Issue No. 7 of this publication. A slightly decreasing trend to quarterly content of Cesium-137 in human body was found in this term. The monthly results and the quarterly variation are shown in Table 6 and 7, respectively.

Table 6. Cesium-137 in man expressed in mμCi and pCi per gram of potassium
—Aug. 1965 to Mar. 1967—
By M. Saiki, T. Iinuma and M. Uchiyama
(National Institute of Radiological Sciences)

(Continued from Table 14, Issue No. 7.of this publication)

Name	Age	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
Aug. 1965					
Y. K.	23	173.2	58.5	10.0	72
N. N.	23	180.5	86.5	9.4	60
T. H.	25	168.5	54.0	3.3	27
J. I.	25	170.0	59.5	2.8	22
K. K.	26	168.6	61.0	8.7	62

M. U.	27	174.4	49.0	7.0	60
T. I.	27	171.5	58.5	7.5	64
Z. M.	29	163.1	46.5	7.4	89
Y. K.	29	175.1	60.5	4.9	35
T. K.	30	176.6	66.5	12.4	92
K. W.	30	167.2	57.0	9.3	77
M. Y.	31	162.3	52.5	7.5	57
T. I.	31	163.2	49.5	6.4	54
K. I.	33	163.2	60.0	12.3	100
S. O.	34	158.1	59.0	13.2	119
S. Y.	36	164.7	50.5	6.0	53
T. U.	37	157.0	49.0	5.1	48
Number of persons measured :		17		av. 7.8	av. 64

Sept. 1965

Y. K.	23	173.5	57.5	9.1	65
N. N.	23	180.7	85.0	8.1	51
T. H.	25	167.2	54.5	7.1	56
J. I.	25	170.1	60.0	6.1	47
K. K.	26	168.6	62.0	8.0	56
M. U.	27	174.2	50.0	5.6	48
T. I.	27	171.5	58.0	10.4	86
Z. M.	29	162.3	46.5	6.2	71
Y. K.	30	174.6	61.5	8.2	60
Y. O.	31	162.0	68.5	11.1	95
T. K.	31	176.6	66.6	12.6	90
K. W.	30	166.5	57.5	10.7	90
M. Y.	31	162.3	54.0	7.5	58
T. I.	31	163.4	50.5	7.2	59
K. I.	33	162.2	60.0	14.4	119
S. C.	34	158.0	59.0	11.5	109
S. Y.	36	164.5	50.0	8.5	73
T. U.	37	156.8	49.2	8.4	74
Number of persons measured :		18		av. 8.9	a.v 73

Oct. 1965

Y. K.	23	173.2	60.0	9.0	61
N. N.	23	181.6	85.0	8.1	49
T. H.	25	168.3	54.0	5.7	45
J. I.	25	170.0	60.0	6.3	51
K. K.	26	168.9	61.5	11.6	80
M. U.	27	174.3	50.0	6.9	59
T. I.	27	171.5	59.0	10.5	87
Z. M.	29	162.8	47.0	6.9	79
Y. K.	30	174.6	61.5	7.1	52
Y. O.	31	162.1	68.5	9.7	83
T. K.	31	176.5	67.0	13.1	99
K. W.	31	166.9	57.0	9.0	76
M. Y.	31	162.6	52.5	9.8	75
T. I.	31	163.5	51.0	7.8	66
K. I.	33	162.9	60.5	12.6	103
S. O.	34	158.5	58.0	11.5	106
S. Y.	36	165.0	50.0	9.4	80
T. U.	37	156.2	48.0	8.5	78
Number of persons measured :		18		av. 9.1	av. 74

Nov. 1965

Y. K.	23	173.5	60.0	10.1	59
N. N.	23	182.2	83.5	6.9	47
T. H.	25	168.5	52.0	5.6	38
J. I.	25	170.5	60.0	7.6	50
K. K.	26	168.8	62.0	8.2	51
M. U.	27	174.1	50.3	7.8	55
T. I.	27	171.3	58.3	11.8	78
Z. M.	29	162.6	47.0	4.8	41
Y. K.	30	174.5	61.0	6.6	40
Y. O.	31	162.4	69.0	9.9	78
T. K.	31	176.8	66.5	14.8	94
K. W.	31	166.5	58.5	9.0	59
M. Y.	31	162.3	54.2	8.6	53
T. I.	31	163.2	50.5	6.7	49
S. O.	34	158.1	58.5	10.6	87
S. Y.	36	164.0	51.0	10.6	92
Number of persons measured :		16		av. 8.7	av. 61

Dec. 1965

Y. K.	23	173.5	60.5	8.2	52
N. N.	23	181.8	84.5	7.2	46
T. H.	25	167.6	53.5	5.6	45
J. I.	26	170.3	60.0	5.4	42
K. K.	26	169.4	62.0	7.6	51
M. U.	27	174.4	52.5	5.6	48
Z. M.	29	162.2	47.5	4.9	45
Y. K.	30	174.5	60.0	6.4	47
Y. O.	31	162.6	69.0	10.2	79
T. K.	31	176.8	68.0	13.3	87
K. W.	31	167.1	59.0	7.8	56
M. Y.	31	162.1	55.0	7.5	50
T. I.	31	163.1	50.5	6.9	58
K. I.	33	162.3	61.0	8.1	49
S. O.	34	157.7	58.0	11.2	104
S. Y.	36	165.0	50.5	9.5	77
T. U.	37	157.2	49.5	7.1	62
Number of Persons measured :		17		av. 7.8	av. 54

Jan. 1966

Y. K.	23	173.8	61.5	11.1	73
N. N.	23	181.0	85.5	9.5	73
T. H.	25	168.3	53.5	8.1	77
J. I.	26	170.8	60.0	8.2	70
K. K.	26	168.9	63.5	9.1	73
M. U.	27	173.9	51.5	5.0	42
T. I.	28	171.0	59.0	12.1	123
Y. K.	30	174.4	60.5	8.4	78
Y. O.	31	162.5	70.0	7.8	62
T. K.	31	177.2	67.0	14.4	117
K. W.	31	167.1	57.0	12.4	103
M. Y.	31	162.2	55.0	11.2	98
T. I.	31	163.2	50.0	8.6	96
K. I.	33	162.7	62.5	12.4	97
S. O.	34	157.9	59.0	8.8	74
S. Y.	36	163.0	52.0	7.8	62
T. U.	37	157.0	50.5	7.5	65
Number of persons measured :		17		av. 9.6	av. 81

Feb. 1966

Y. K.	23	173.8	62.0	8.8	56
N. N.	23	181.9	85.0	4.8	30
T. H.	25	168.4	53.5	3.1	25
J. I.	26	170.6	60.5	2.4	15
K. K.	26	169.3	64.5	5.0	33
T. I.	28	171.1	58.5	8.3	62
Z. M.	29	162.6	49.0	4.5	48
Y. K.	30	175.3	61.0	6.4	46
Y. O.	31	162.7	70.0	9.2	70
T. K.	31	176.9	67.0	13.3	91
K. W.	31	167.7	59.0	4.5	36
T. I.	32	163.5	50.0	4.1	34
S. O.	34	157.7	57.5	8.5	77
S. Y.	36	164.7	52.5	6.4	51
Number of persons measured :		14		av. 6.4	av. 48

Mar. 1966

Y. K.	23	173.5	61.8	8.3	55
T. H.	25	168.8	54.0	7.3	57
J. I.	26	170.3	60.5	6.1	43
K. K.	26	169.7	65.0	5.8	41
Z. M.	29	163.0	49.0	5.7	56
Y. K.	30	173.7	60.5	6.5	44
Y. O.	31	162.3	70.5	10.4	77

Name	Age	Height (cm)	Weight (kg)	Body-burden (mμCi)	pCi of ^{137}Cs per gram of K
T. K.	31	177.4	67.5	11.8	83
K. W.	31	167.0	58.5	6.0	50
M. Y.	32	162.2	55.0	8.8	62
T. I.	32	163.4	49.0	8.5	72
S. O.	34	157.9	56.2	9.0	84
S. Y.	36	164.5	51.5	11.3	87
T. U.	37	157.1	50.0	6.6	58
Number of persons measured :		14		av. 8.0	av. 61
Sept. 1966					
H. K.	25	157.0	50.5	4.2	36
T. H.	25	169.3	53.5	1.4	11
K. K.	27	168.6	64.5	3.7	25
M. U.	28	173.8	48.0	1.8	18
T. I.	28	171.5	58.0	9.2	69
Z. M.	30	162.9	50.5	2.9	31
Y. S.	30	170.4	70.5	8.9	64
K. K.	31	158.0	50.5	2.7	25
Y. O.	32	162.5	71.0	9.0	74
K. W.	32	167.5	57.5	6.7	56
T. K.	32	177.0	69.0	13.4	94
T. I.	33	163.2	49.5	3.4	27
S. O.	35	157.9	56.5	11.0	105
H. K.	35	161.1	55.0	3.8	30
S. Y.	37	164.5	51.0	5.4	44
T. U.	38	156.8	48.5	2.7	26
Number of persons measured :		16		av. 5.6	av. 46
Dec. 1966					
H. K.	25	157.2	51.5	7.3	60
T. H.	26	167.3	53.5	4.0	32
K. K.	27	169.1	62.2	1.8	13
M. U.	28	173.5	50.0	3.7	35
T. I.	28	171.7	57.5	7.3	57
Y. S.	31	171.0	71.0	9.4	72
Y. O.	32	163.0	72.2	7.2	57
K. W.	32	157.5	57.0	6.8	57
T. I.	33	163.3	48.5	5.3	43
S. O.	35	157.4	56.0	8.0	79
H. K.	35	160.7	56.5	7.6	62
S. Y.	37	164.7	49.1	6.8	56
T. U.	39	156.9	50.0	4.8	39
Number of persons measured :		13		av. 6.2	av. 51
Mar. 1967					
H. K.	26	157.8	53.5	4.1	35
T. H.	26	168.2	52.3	1.9	16
K. K.	27	169.2	64.5	3.9	27
M. U.	29	173.9	49.0	2.0	18
T. I.	29	171.5	57.0	4.5	39
Z. M.	30	163.0	50.5	2.9	33
K. K.	31	156.7	49.5	2.2	20
K. W.	32	167.1	57.5	3.8	35
T. K.	32	176.7	70.0	6.7	48
T. I.	33	163.1	49.0	2.7	25
S. O.	35	158.8	56.0	5.8	54
H. K.	35	160.6	54.3	4.5	41
S. Y.	37	164.7	50.5	3.4	27
T. U.	38	157.2	50.0	3.1	28
Number of persons measured :		14		av. 3.7	av. 32

Table 7. 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*)

		1965		1966			1967
		Jul. ~Sept.	Oct. ~Dec.	Jan. ~Mar.	Sept.	Dec.	Mar.
Number of persons		51	51	45	16	13	14
Total body burden expressed in mμCi	Mean	8.7	8.5	8.1	5.6	6.2	3.7
	Standard deviation	2.9	2.3	2.8	3.6	2.1	1.4
	Minimum~Maximum	2.8~14.4	4.8~14.8	2.4~14.4	1.4~13.4	1.8~9.4	1.9~6.7
Total body burden expressed in pCi of ^{137}Cs/gk	Mean	69	65	65	46	51	32
	Standard deviation	24	19	24	28	18	11
	Minimum~Maximum	22~119	38~106	15~123	11~105	13~79	16~54

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

Meteorological Data

Gross Beta-radioactivity and Radioactivity of Iodine in Rain and Dust

Part 1 (*Meteorological Agency*)

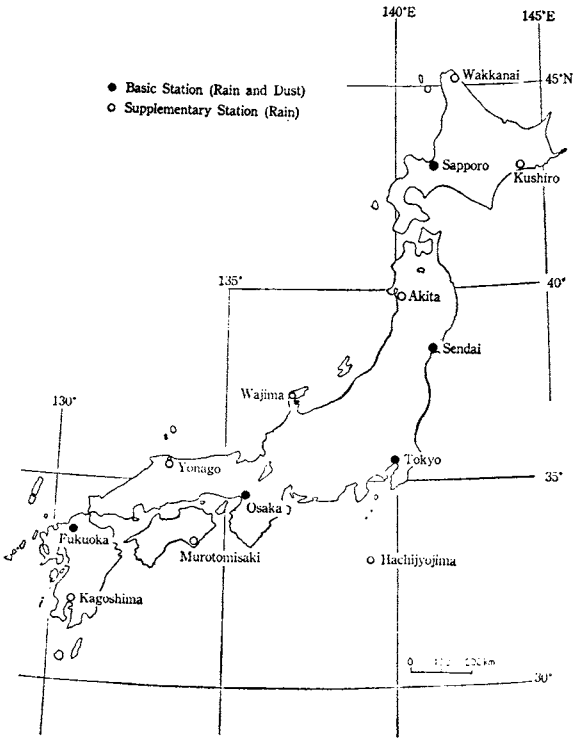
Survey of gross beta-activity in precipitation and airborne dusts has been conducted with the network of 13 stations shown in the Figure 7. Processes of sampling and counting are the same ones with that in the explanation on page 2, Issue No. 5 of this publication series.

The results obtined during the period from 26 December, 1966 to 18 January, 1967 are shown in Table 8 and 9. Both airborne radioactivity concentrations and radioactive depositions in these period were recorded as the highest of those ever experienced since the Meteorological Agency undertook to monitor the radioactive fallout.

The fifth nuclear detonation of the People's Republic of China was carried out on 28 December, 1966 according to the news reporting. Judging from meteorological aspects of the radioactive fallout from the detonation over Japan, it is assumed that the time and location of the detonation are respectively at 3.00 a.m. (GMT) on 28 December and 40° N, 90°E.

The first arrival of the fallout was on 30 December, 1966 and increase of the overall fallout in Japan was the period from 30 December, 1966 to 1 January, 1967. Later, the time of the detonation was supported by an investigation of micro-barographic records and the other scientific information. Transit of the radioactive cloud over Japan can be understood by meteorolgical trajectories drawn in Figure 8 in which showed

Figure 7. Fallout Observation Network of Meteorological Agency



the starting time and location of air parcel assumed as described above.

Actual situation of the fallout in airbone dusts near the ground and precipitation, i. e., the first arrival, the highest concentration, and the increase and decrease are shown in the Figure 9. The very early arrival and the higher value of the fallout may be caused by the meteorological condition prevailing in the early winter and the related fall of highly-active fallout particles having the larger size. The second arrival of the fallout in Japan, which passed the course of the around the world was traced in the middle January by drawing the 500 mb and 100 mb trajectories in the northern hemispheric chart.

Table 8. Gross β-activity in Dust —26 Dec., 1966 to 18 Jan., 1967—
Compiled by N. Murayma, H. Fujimoto, M. Kamiyama, H. Shimura and S. Maeshima
(*Meteorological Agency*)

(pCi/m³)

Station	Dec. 1966 26	27	28	29	30	31	Jan. 1967 1	2	3	4	5	6
Sapporo	0.0		0.0		0.0	0.0	0.2	0.2		0.0		0.0
Sendai	0.5			0.0	0.2	0.5	0.3	0.2		0.1		0.5
Tokyo	0.6		0.2		3.6	12.0	2.5	0.2		1.1		0.3
Osaka	0.5		0.0		22.0	43.0	2.9	2.4		0.5		1.4
Fukuoka	0.2		0.2		423.0	510.0	16.0	7.0	2.6	1.7		3.1

Station	Jan. 7	8	9	10	11	12	13	14	15	16	17	18
Sapporo			0.0		0.5		0.2			0.0		
Sendai			0.3		0.4		0.4			0.8		
Tokyo			1.9		1.2		0.4			0.6		
Osaka			1.0		1.7		1.7				0.5	0.2
Fukuoka			32.0		4.6		7.0			1.0		

Table 9. Gross β-activity in Rain —26 Dec., 1966 to 18 Jan., 1967—

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

(*Meteorological Agency*)

Upper Rank : Concentration (pCi/cc)
Lower Rank : Deposition (mCi/km²)

Station	Dec. 1966 26	27	28	29	30	31	Jan. 1967 1	2	3	4	5	6
Wakkanai	0.0		0.0	0.1	0.1	0.1			0.0	0.6	0.1	0.1
〃	0.0		0.0	0.0	0.1	0.2			0.0	0.9	0.8	0.7
Sapporo		0.0	0.0	0.1	0.0				0.0	0.0		
〃		0.0	0.0	2.0	0.0				0.0	0.0		
Kushiro								0.4		0.2		
〃								1.0		0.2		
Sendai			0.0					0.6	0.4	0.1	0.1	
〃			0.0					6.0	0.6	0.2	0.3	
Akita		0.1	0.0	0.1	0.1		58.0	0.5	1.8	1.0	0.2	0.3
〃		0.4	0.0	0.5	0.5		58.0	9.0	2.5	2.8	0.9	0.3
Tokyo								1.9				
〃								27.0				
Wajima	0.0	0.0	0.0	0.0	910.0	473.0	10.0	0.6	9.0	1.5	0.3	2.3
〃	0.0	0.0	0.0	0.0	5600.0	1560.0	88.0	20.0	200.0	44.0	5.0	14.0
Hachijojima												
〃												
Osaka							60.0	1.4				
〃							190.0	20.0				
Yonago	0.1	0.1	0.1	0.1			406.0	11.0	45.0	3.4	16.0	
〃				0.2			3900.0	200.0	230.0	23.0	100.0	
Murotomisaki							23.0	0.1				
〃							350.0	2.0				
Fukuoka			0.1				10.0	1.4		6.0	1.9	
			0.2				180.0	14.0		200.0	2.3	
Kagoshima		0.0					55.0	7.0	40.0	4.0		
〃		0.0					770.0	20.0	170.0	8.8		

Station	Jan. 1967 7	8	9	10	11	12	13	14	15	16	17	18
Wakkanai	0.1	0.1	0.1			1.4	0.6	0.7	0.1	1.1		0.9
〃	0.2	2.0	0.5			5.5	1.0	10.0	1.0	4.7		2.0
Sapporo	0.1	0.0	0.0	0.9		0.1	0.0	0.0	0.8			0.0
〃	1.0	0.0	0.0	3.0		0.6	0.0	0.3	2.0			0.0
Kushiro						0.2	0.2					
〃						0.7	0.3					
Sendai				0.1							0.1	
				0.1							0.4	
Akita	0.2	0.2	2.3	0.8		0.4	0.4	1.9	1.6	2.2	1.0	0.4
〃	0.6	0.9	6.7	4.0		2.0	1.0	19.0	5.3	3.3	8.3	1.0
Tokyo						1.8						
〃						6.8						
Wajima	0.9	0.5	1.1	2.1		2.8	0.1	1.0	1.0	0.3	0.0	0.4
〃	30.0	9.0	15.0	5.5		43.0	0.9	10.0	5.0	10.0	0.0	4.0
Hachijojima												
〃												
Osaka						0.5						
〃						5.0						
Yonago	1.7	0.3	0.2	1.7		0.9			0.3	2.2	0.4	0.6
〃	5.8	2.0	3.0	28.0		2.0			3.0	17.0	7.0	6.0
Murotomisaki						0.6						
〃						6.0						
Fukuoka					4.1	16.0				7.0		
					42.0	34.0				20.0		
Kagoshima	15.0				3.6					1.2		
〃	170.0				7.2					8.4		

Figure 8. The Meteorological Trajectory at the Time when the 5th Nuclear Test was carried out by the People's Republic of China

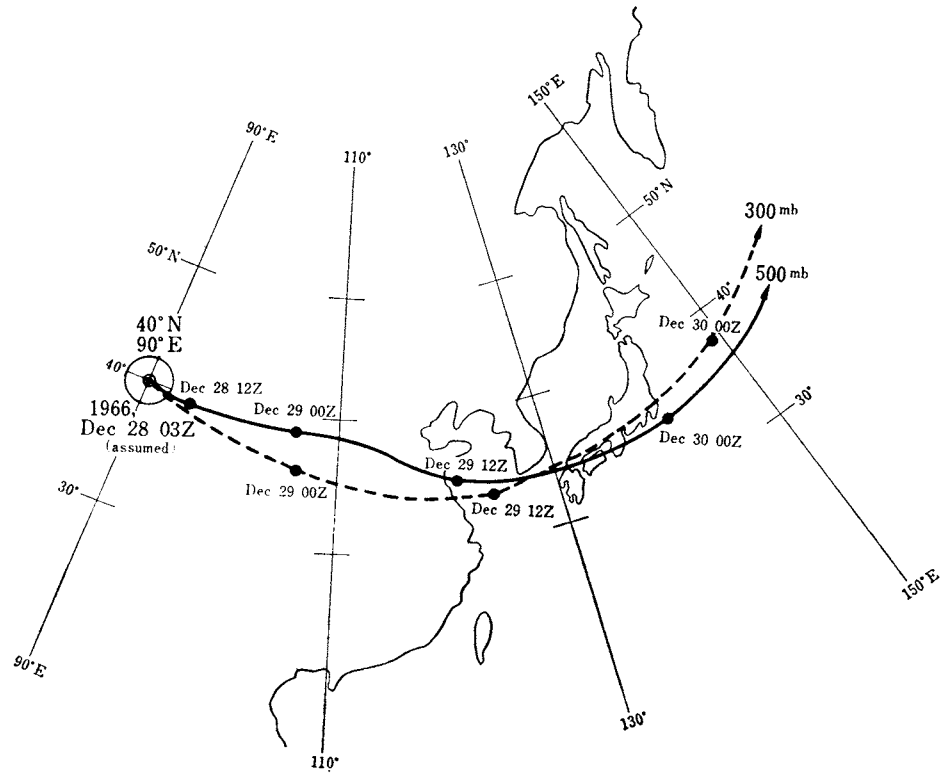
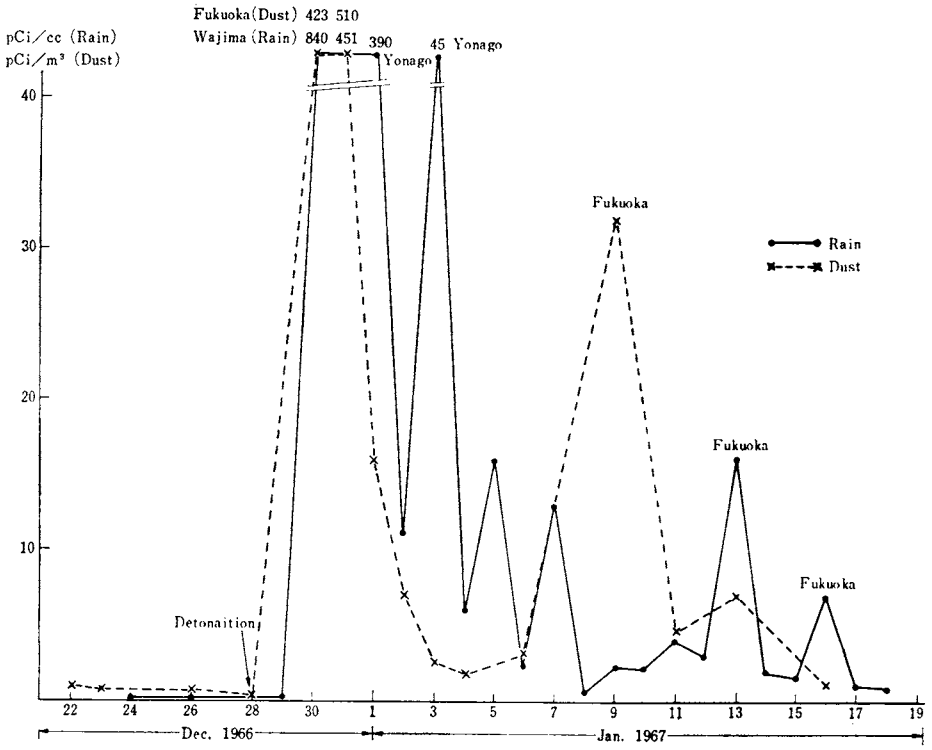


Figure 9. Temporal Variation of Gross β-activity in Rain and Dust near the Ground (Maximum Value : in Japan)



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

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

Results of measurements obtained during the period from 24 December, 1966 to 21 January, 1967 when the effect of the 5th Chinese atomic detonation was noticed, are shown in Table 10.

Table 10. Deposits of Radioactive Fallout —24 Dec., 1966 to 21 Jan., 1967—

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

(*Meteorological Research Institute*, Tokyo)

Date of Sampling				Collection time (hr)	Total β-activity (mCi/km^2)	Remarks
Dec. 1966						
9.00 a.m.,	24 th	to 9.00 a.m.,	26 th	48	0.03	Dry fallout
〃	26 〃	〃	28 〃	48	0.03	〃
〃	28 〃	〃 0.30 p.m.,	29 〃	27.5	0.89	〃
0.30 p.m.,	29 〃	〃	30 〃	24	1500	〃
〃	30 〃	〃 2.00 〃	31st	25.5	412	〃
Jan. 1967						
	Cec.		Jan.			
2.00 p.m.,	31st	to 10.00 a.m.,	2nd	44	35	rain (12.9 mm)
10.00 a.m.,	2nd 〃	9.00 〃	4th	47	22	dry fallout
9.00 〃	4th 〃	〃 〃	5 〃	24	1.8	〃
〃	5 〃	〃 〃	6 〃	24	5.5	〃
〃	6 〃	〃 〃	7 〃	24	4.6	〃
〃	7 〃	〃 〃	9 〃	48	3.7	〃
〃	9 〃	〃 〃	10 〃	24	0.49	〃
〃	10 〃	〃 〃	11 〃	24	0.54	〃
〃	11 〃	〃 〃	12 〃	24	4.4	rain (3.4 mm)
〃	12 〃	〃 〃	13 〃	24	0.68	dry fallout
〃	13 〃	〃 〃	14 〃	24	0.16	〃
〃	14 〃	〃 〃	16 〃	48	2.2	〃
〃	16 〃	〃 〃	17 〃	24	0.34	〃
〃	17 〃	〃 〃	18 〃	24	0.10	〃
〃	18 〃	〃 〃	19 〃	24	0.04	〃
〃	19 〃	〃 〃	20 〃	24	0.06	〃
〃	20 〃	〃 〃	21st		0.08	〃

Gross Beta-activity and Radioactivity of Iodine in Rain and Dry fallout

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

Daily rain and dry fallout samples were continuously (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 activity of radio-iodine.

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

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 radioactivities of both samples were measured 6 hours after the time of collection of samples.

Results obtained during the period from 29 December, 1966 to 31 January, 1967 are shown in Table 11.

On 28 December 1966, the nuclear explosion test was carried out by the People's Republic of China. The radioactivity of initial precipitations of the fallout showed the highest values among

the results obtained from previous research on the effects of four nuclear explosion tests of the People's Republic of China, while the contribution rate of iodine on the total activities showed the lowest value among them.

Table 11. Gross β-radioactivity and Radioactivity of Iodine in Rain and Dry Fallout collected in a tray at Chiba City —29 Dec., 1966 to 31 Jan., 1967—

By M. Saiki, H. Kamada, Y. Ohmomo, T. Koyanagi, K. Kimura, M. Uchiyama, Z. Murakoshi, H. Kawamura, E. Kase, E. Nakano and H. Yamaguchi.
(*National Institute of Radiological Sciences*)

Date of Sampling	Date of Determination	Gross β-activity (mCi/km^2)	β-activity of Iodine (mCi/km^2)	Remarks
29~30 Dec. 1966	30 Dec. 1966	14,600.0	74.0	
30~31 〃	31 〃	453.0	8.5	
31~ 1 Jan. 1967	1 Jan. 1967	190.0	3.3	
1~ 2 〃	2 〃	137.0	7.0	Rain (19 mm)
2~ 3 〃	3 〃	7.0	0.7	Rain (0.5 mm)
3~ 4 〃	4 〃	4.2	0.5	
4~ 5 〃	5 〃	0.3	<0.4	
5~ 6 〃	6 〃	0.1		
6~ 7 〃	7 〃	0.1		
7~ 9 〃	9 〃	11.0		
9~11 〃	11 〃	0.8		
11~12 〃	12 〃	6.3		Snow and Rain (5 mm)
12~13 〃	13 〃	0.2		
13~14 〃	14 〃	0.2		
14~16 〃	16 〃	0.7		
16~17 〃	17 〃	0.6		
17~18 〃	18 〃	0.0		
18~19 〃	19 〃	0.1		
19~21 〃	21 〃	0.1		
21~23 〃	24 〃	0.3		
23~24 〃	24 〃	0.2		
24~25 〃	25 〃	0.1		
25~26 〃	28 〃	0.0		
26~28 〃	28 〃	0.2		
28~30 〃	31 〃	1.2		Rain (30 mm)
30~31 〃	31 〃	0.2		

Gross Beta-activity 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 is taken as the value at the flight altitude.

But, at this time, the value of sample collected by the aircraft which made a level sampling flight for an hour was rather lower than one by the upward and downward flight.

It seems that this result was caused by the radioactive airborne dust and fallout particles which were floating unequal at the lower altitude than that of level sampling flight.

On this occasion, the quantitative value was not obtained.

So, the true value obtained is shown in Table 12.

Figure 10 shows three sampling areas of Japan.

Figure 11 and 12 show the temporal variation of gross β-activity in upper air at an altitude of 10 km and 12 km.

Table 12. Gross β-radioactivity in Upper Air —30 Dec., 1966 to 5 Jan., 1967—

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

(pCi/m²)

Sky Area / Date	Tohoku, Hokkaido		Chubu		Kyushu	
	12,000 m	10,000 m	12,000 m	10,000 m	12,000 m	10,000 m
Dec. 30, 1966	0.81			9693.0	*{5311.45 {8546.86	
〃 31		46.6		51.1		4014.0
Jan. 1, 1967	2.1					
〃 2				4.1		76.0
〃 3		5.9			593.0	
〃 4	25.8			0.47		*{258.4 {1059.2
〃 5		31.8		1.4	51.9	

* Upper rank : the value of level sampling flight (pCi/1 gummed paper)
Lower rank : the value of upward and downward sampling flight (pCi/1 gummed paper)

Figure 10. Three Sampling Areas of Japan

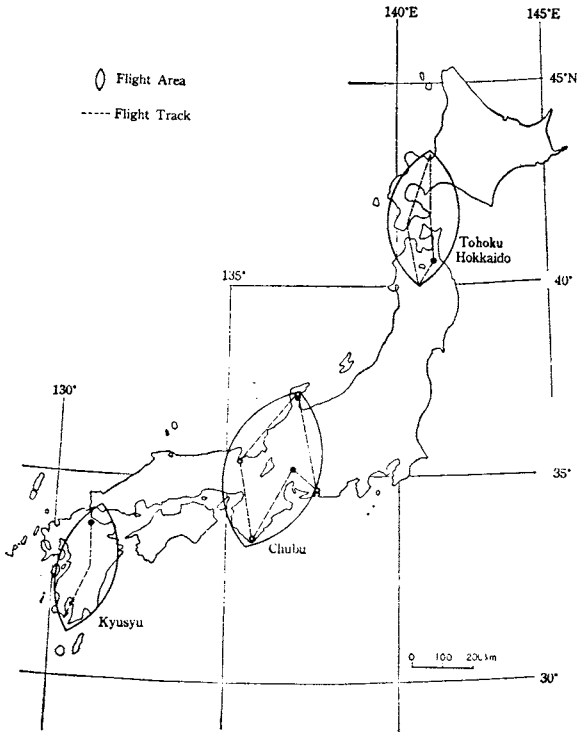


Figure 11. Temporal Variation of Gross β-activity in Upper Air (at an Altitude of 10 km)

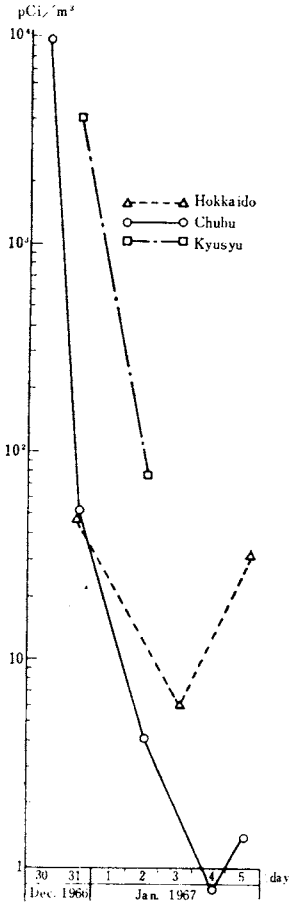
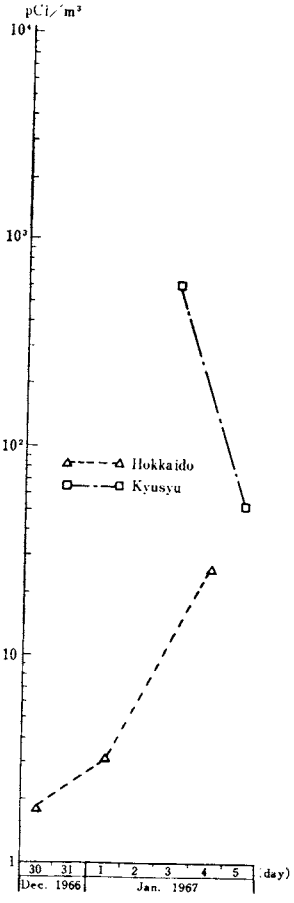


Figure 12. Temporal Variation of Gross β-activity in Upper Air (at an Altitude of 12 km)



Highly Radioactive Fallout Particles

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

The monitoring of highly radioactive fallout particles has been performed on the roof of building of National Institute of Radiological Sciences in Chiba City, using a gamma-ray scintillation counter synchronized with recorder.

A NaI(Tl) scintillator (2 in. $\phi \times$ 1.5 in.) was used as a detector, the out put of which was fed to the single channel pulse height analyser. And a receptacle on the detector for collection of highly radioactive fallout particles was 20 cm in diameter and 30 cm in depth. Background of the detector was in 9,000 cpm.

At 10.15 a.m. on 30 December 1966, radioactivity of the fallout measured by the detector was 75,000 cpm as shown in Figure 13, and by the recorder, it was clearly observed that they had fallen during 5.15 a.m. to 10.15 a.m.

Highly radioactive particles showing 4.5 to 74 mμCi were counted up to 176 over 1 m^2, and those particles were easily detected with a Geiger-Müller survey meter of end window type.

Daily sampling of the particles was continued by using vinyl sheet collector, about 1 m^2, prepared on the roof of building of the Institute. Results obtained are indicated in Table 13.

The particles were analyzed by scintillation

gamma-ray spectroscopic method. The changes in gamma spectrum as a result of decay are shown in Figure 14.

The particles were proved to contain a great deal of Neptunium-239 followed by Molybdenum-99+Technetium-99 m, Cerium-143, Zirconium-97 +Niobium-97 m+Niobium-97 and Barium-140+ Lanthanum-140.

After radioactive nuclides as mentioned above has decayed, the main radioactivity on 7 February 1967 seems to be originated from Cerium-141, Zirconium-95+Niobium-95, Barium-140+Lanthanum-140, Ruthenium-103 and Neodynium-147.

From the results of analyses, these highly radioactive fallout particles were considered to be originated from the debris of the 5th nuclear explosion test by the People's Republic of China which was carried out on 28 December 1966.

Figure 13. Monitoring record of radioactive fallout.
By M. Saiki, H. Kamada and Z. Murakoshi
(*National Institute of Radiological Sciences*)

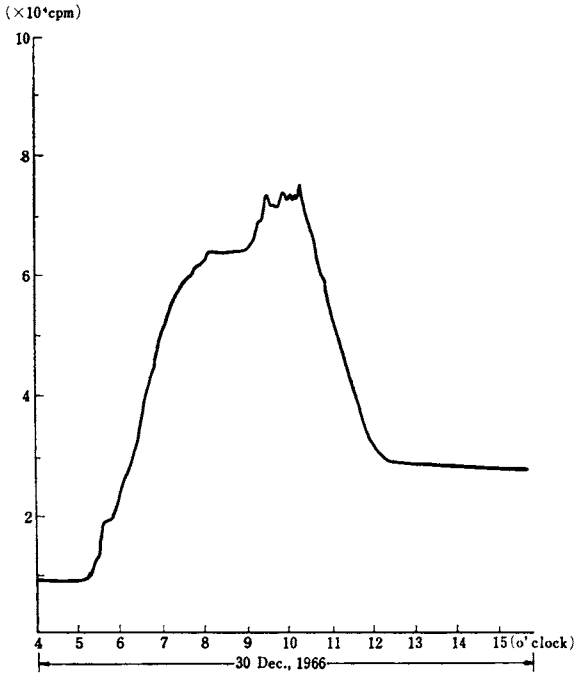


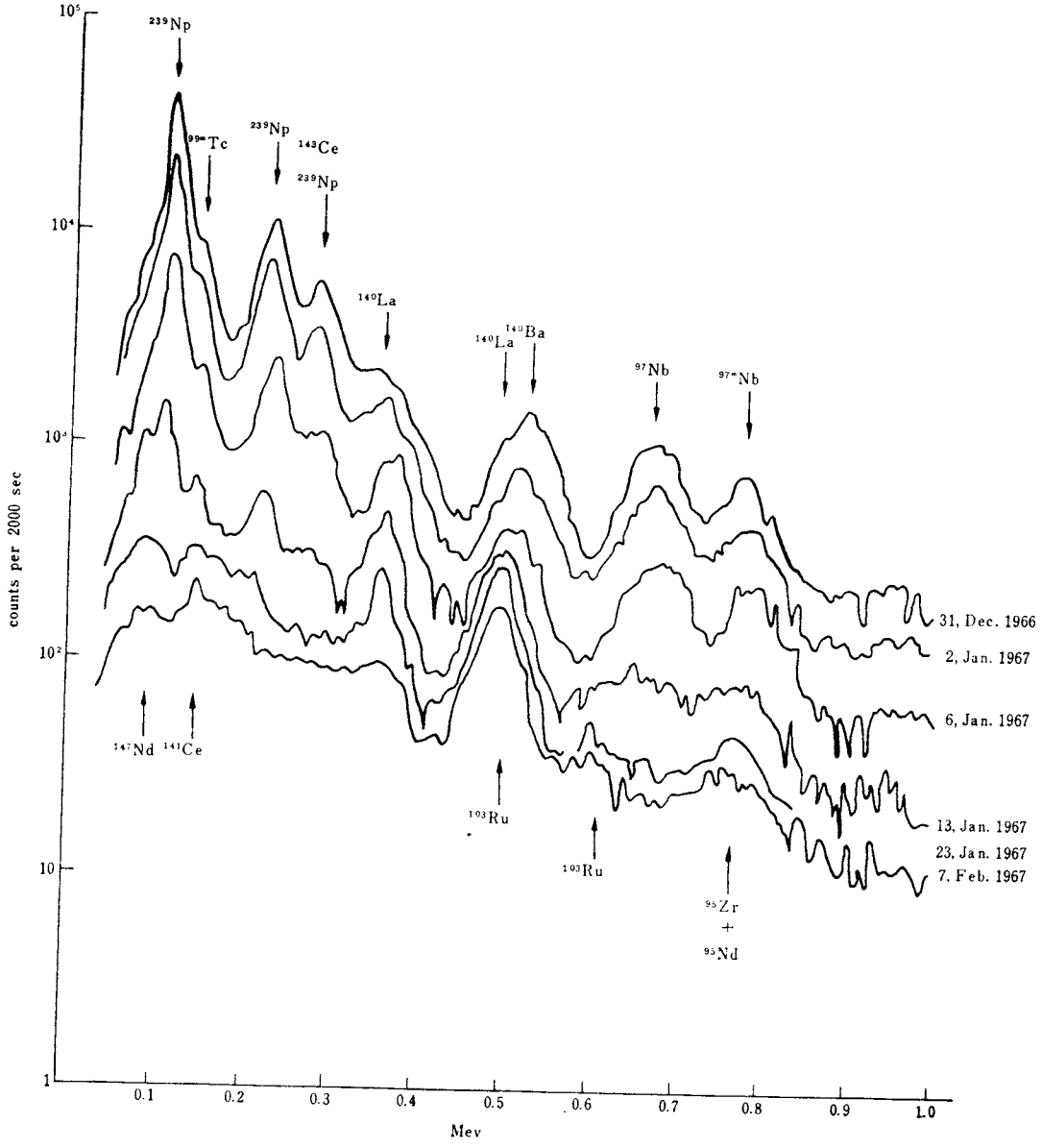
Table 13. Survey of Highly Radioactive Fallout Particles
By M. Saiki, T. Koyanagi, K. Kimura, Z. Murakoshi and H. Kawamura
(*National Institute of Radiological Sciences*)

Date of Sampling	Fall Rate (number of particle/m²)	Radioactivity of a Particle (mμCi)		
		Maximum	Minimum	Mean
~11.00 a.m., 30 Dec., 1966	176	74.0	4.5	23.0
4.00 p.m., 30 Dec., 1966~ 〃 31 〃	51	27.0	2.7	9.7
2.00 p.m., 31 〃 ~10.00 a.m., 1 Jan., 1967	31	7.7	0.9	4.0
10.00 a.m., 2 Jan., 1967~ 〃 3 〃	28	7.2	0.5	3.4
〃 3 〃 ~ 〃 4 〃	20	4.1	0.7	1.7
〃 4 〃 ~12.00 p.m., 5 〃	20	3.2	0.6	1.7

Figure 14. Gamma-ray Spectrum of Highly Radioactive Fallout Particle

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

(National Institute of Radiological Sciences)



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

The Meteorological Research Institute carried out radiochemical analysis of fallout particles collected on 13 January, 1967 when the effect of the 5th Chinese atomic detonation was detected.

Results obtained are indicated in Table 14.

Table 14. Radiochemical Analysis of Highly Radioactive Fallout Particles —13 Jan., 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
^{239}Np	6.4
^{237}U	6.5
^{99}Mo, ^{132}Te ^{103}Ru, ^{106}Ru	6.7
^{95}Zr, ^{95}Nb	6.8
^{89}Sr, ^{90}Sr, ^{140}Ba	13.2
The rare-earth elements	60.4

Radiochemical Separation of Radioactive Fallout

(*National Institute of Radiological Sciences*)

A sample of radioactive fallout was collected for radiochemical separation during 9.00 a.m., 29 December, 1966 to 9.00 a.m., 5 January, 1967, using a stainless steel pot, 47 cm in diameter, 49 cm in depth.

After the sample was dried up, it was heated and layed in ashes, then fused with sodium carbonate and potassium carbonate, (the ratio is 1 to 1), by heating in a platinum crucible. The fused sample was radiochemically determined for radioactive nuclides after separation by barium sulfate, (Claude W. Sill and Conrad P. Willis, Anal, Chem. Vol. 38, No. 1, p. 97~102, 1966).

The separated nuclides was qualified by beta-ray spectrum, gamma-ray spectrum and decay on a each radioactive nuclide.

The measured beta-ray spectra using a low back ground beta-ray spectrometer are shown in Figure 15.

Curve I, the spectrum 10 days after collection obtained on sample which collected during 9.00 a.m., 29 to 9.00 a.m., 30 December, 1966, shows the presence of a great deal of Barium-140+Lanthanum-140 emitting 1.0~1.6 Mev. of main maximum beta-ray and 2.2 Mev. of maximum one, and Curve II, 14 days after collection, shows the result of decay. Curve III, the spectrum on 13 January 1967 of Cerium, Barium, Lanthanum and Strontium fraction separated from sample which collected during 9.00 a.m., 29 December, 1966 to 9.00 a.m., 5 January 1967, shows the presence of Barium-140+Lanthanum-140. Curve IV, the spectrum on the same day of Neptunium fraction separated from the same sample, shows the presence of Neptunium-239 emitting 0.33~0.38 Mev. of main maximum beta-ray and 0.72 Mev. of maximum one.

Gamma-ray spectra of the Cerium, Barium, Lanthanum and Strontium fraction, Zirconium and Strontium fraction and Neptunium fraction, which were measured using the 400 channel gamma-ray pulse height analyser on 12 January, 1967 are shown in comparison to the original sample in Figure 16.

In Curve 1, the spectrum of original sample, all peaks shown are identifiable with the nuclides indicated. Curve 2, spectrum of Cerium, Barium and Lanthanum fraction, shows photo-peaks originated from Cerium-141, -143 and Barium-140+Lanthanum-140. A photo-peak in Curve 3, spectrum of Zirconium fraction, is attributable to Zirconium-95+Niobium-95. In Curve 4, the spec-

trum of Neptunium fraction, all photo-peaks shown are attributable to Neptunium-239.

The results obtaind, composition of radio-nuclides by beta-ray counting with Geiger Müller counter, are indicated in Table 15.

Figure 15. Beta-ray Spectra of Radioactive Fallout and its Separated Samples
by M. Saiki and H. Kamada
(National Institute of Radiological Sciences)

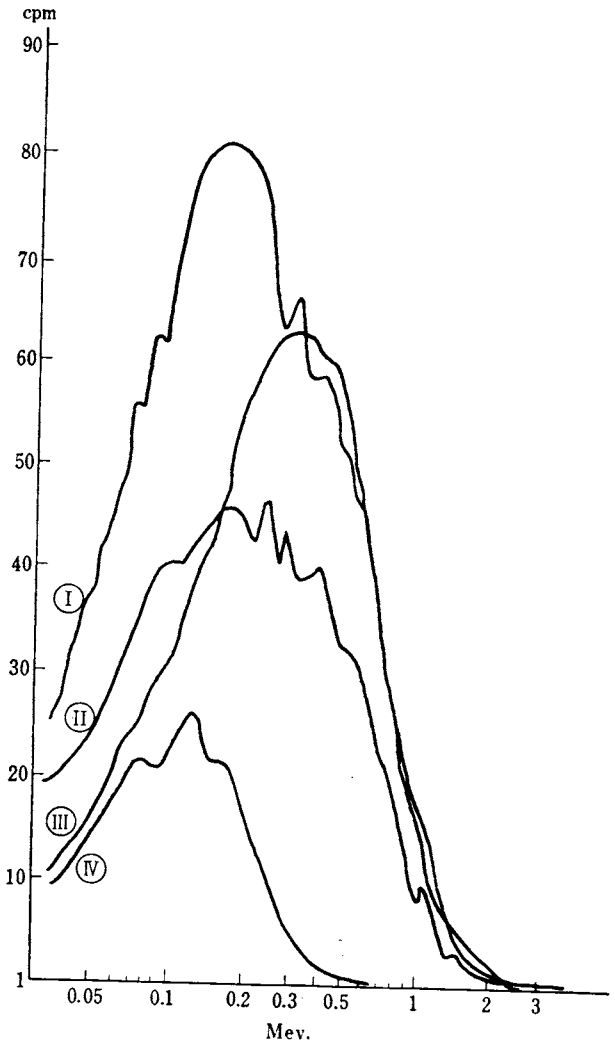


Figure 16. Gamma-ray Spectra of Radioactive Fallout and its Separated Samples

By M. Saiki, H. Kamada and T. Koyanagi

(National Institute of Radiological Sciences)

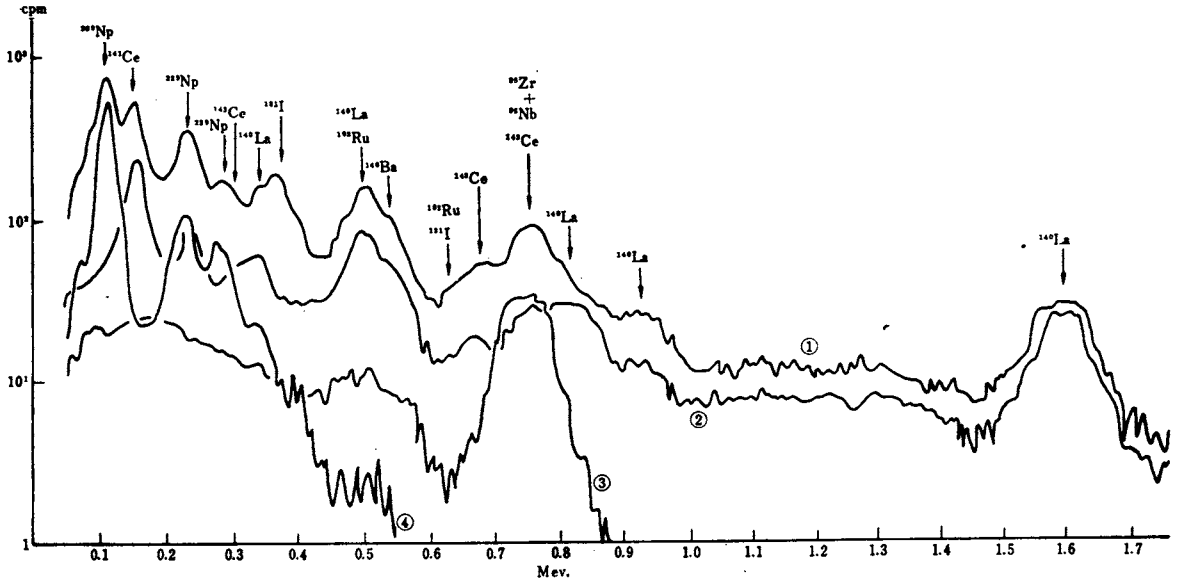


Table 15. Radioactivity Composition in Total Beta-activity —12 Jan., 1967—

By M. Saiki and H. Kamada

(National Institute of Radiological Sciences)

Days after Nuclear Test	Radionuclides	Beta-ray Radioactivity (%)
15	^{239}Np	16
	^{140}Ba + ^{140}La ^{141}Ce ^{143}Ce ^{89}Sr	39
	^{95}Zr + ^{95}Nb ^{89}Sr	19
	^{103}Ru ^{131}I and others	26

Radioactive Iodine in Milk

(National Institute of Radiological Sciences and National Institute of Animal Industry)

Concentrations of radioactive iodine in milk were determined by National Institute of Radiological Sciences during the period from 30 December, 1966 to 26 January, 1967.

Milk samples were market milk and raw milk, which were taken from a farm and a milk collecting center located in the northern part of Chiba prefecture and the other samples were collected from farms in Kumamoto and Sapporo.

Sampling locations are indicated in Figure 17.

Iodine was chemically separated and measured by using an Iodine-131 standard with a beta-ray low back ground counter.

Results obtained are shown in Table 16 and 17.

It is considered that the considerable percentage of radioactivity depends upon Iodine-132 and Iodine-133.

Figure 17. Milk Sampling Locations

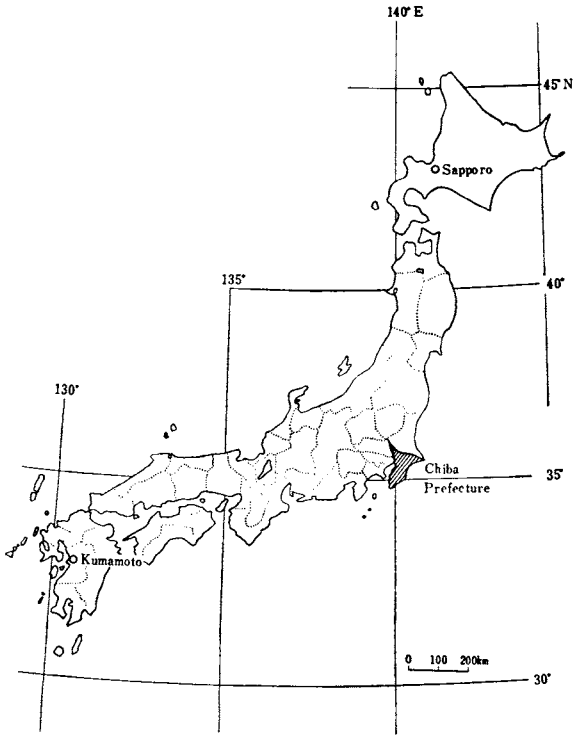


Table 16. Radioactive Iodine in Milk collected from the Northern part of Chiba prefecture
—30 Dec., 1966 to 26 Jan., 1967—

By M. Saiki, G. Tanaka, Y. Ohmomo, K. Nakamura, H. Kawamura, H. Yamaguchi, *H. Danbara and T. Mitsuhashi

(*National Institute of Radiological Sciences, *National Institute of Animal Industry*)

Date of Sampling	Date of Determination	Farm	Radioactive Iodine (pCi/*l*)	
			Milk collecting center	Market
30 Dec., 1966	31 Dec., 1966	27		
31 〃	〃	225	33	
1 Jan., 1967	1 Jan., 1967	275	167	
2 〃	2 〃	68	26	
3 〃	3 〃	20	164	
4 〃	4 〃	17	69	
5 〃	5 〃	10	70	
6 〃	6 〃	6	80	25*
7 〃	7 〃	23	58	63**
9 〃	9 〃			26*
10 〃	10 〃			21*
11 〃	11 〃		26	29**
12 〃	12 〃			7*
13 〃	13 〃		21	29**
16 〃	16 〃		15	10***
18 〃	18 〃		10	
21 〃	23 〃		6	3***
23 〃	24 〃		5	
26 〃	28 〃		4	2***

Note ; * Milk purchased from Chiba city
** Milk purchased from Kashiwa city, Chiba
*** Milk purchased from Tokyo

Table 17. Radioactive Iodine in Milk from Kumamoto and Sapporo in Japan —1, 5and 9 Jan., 1967—

By M. Saiki, Y. Ohmomo, K. Nakamura, H. Yamaguchi *H. Danbara and T. Mitsuhashi
(*National Institute of Radiological Sciences, *National Institute of Animal Industry*)

Date of Sampling	Date of Determination	Radioactive Iodine (pCi/*l*)	Sample from
1 Jan., 1967	2 Jan., 1967	0	Farm in Sapporo
〃	〃	214	〃 Kumamoto
5 Jan., 1967	6 Jan., 1967	0	〃 Sapporo
〃	〃	73	〃 Kumamoto
9 Jan., 1967	10 Jan., 1967	68	〃 Sapporo