NIRS-RSD-28

RADIOACTIVITY SURVEY DATA in Japan

NUMBER 28
AUG. 1970

National Institute of Radiological Sciences
Chiba, Japan

Radioactivity Survey Data in Japan

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Contents

DATE OF ROUTINE SURVEY

National Institute of Radiological Sciences

DATA OF ROUTINE SURVEY

External Dose Data

External Exposure due to National Radiation

(National Institute of Radiological Sciences)

A field survey of exposure rates due to natural radiation has been conducted thoughtout the Tohoku district of Japan during December, 1969, May, 1970 and October, 1970.

The situation of the Tohoku district in Japan is shown Figure 1. Distribution of observed locations in the district is indicated in Figure 2. In each location, from one to six sites contaning at least 5 stations were chosen for observation and measurements were made there. A total of 123 sites were measured.

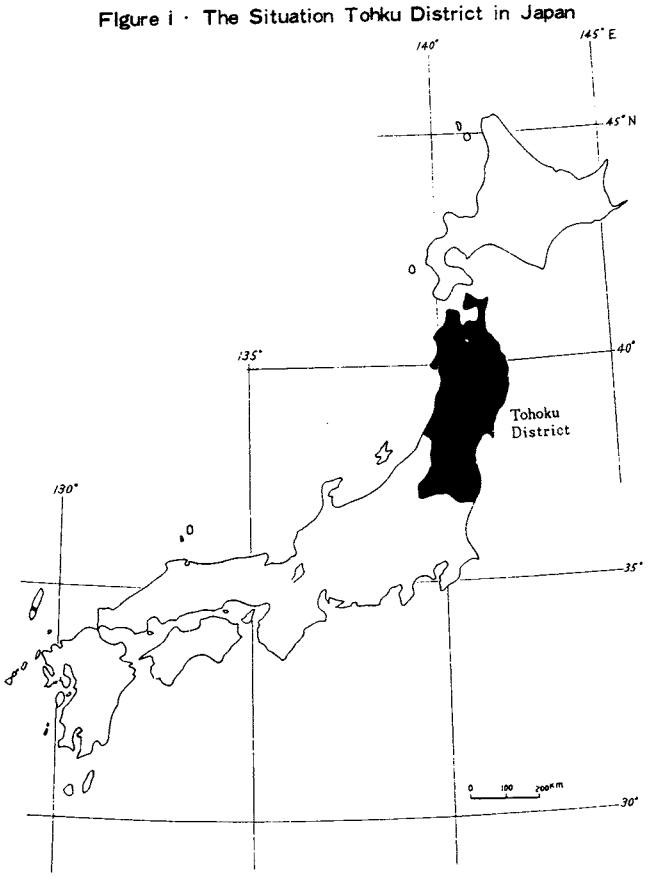
Observations were made using a spherical ionization chamber and several scintillation surveymater. The spherical plastic ionization chember of which inner diameter and wall thickness are respectively 200mm and 3mm (acrylate) has adequate sensitivity for field survey. The chamber was used as a standard of measurement, but it is difficult to observe all locations only by the apparatus, so that asurveymeter with a NaI (Tl) 1"ϕ x 1" scintllator was used for regular measurements. Two types of surveymeters, the one with a 2"ϕ x 2" NaI (Tl) scintillator, were used as auxiliary devices. In 15 sites, both the chamber and the surveymeter were used for measurment of given stations and their readings are compared for drawing a relationship between them.

Practically the direct readings of the surveymeter were reduced into the readings of the plastic chamber corresponding to it from the relationship of linear proportion. Systematic error at calibration (^{60}Co) and reading error (random) of the plastic chamber were respectively within ±6% (maximum overall error) and within ±3.5% (standard error for 6μR/hr). Reading error of the surveymeter is about ±3% (standard error for 6μR/hr)

Measurements in open bare field were made at one meter above the ground and outdoor gamma-rays as well as terrestrial radiation, so that it fallout due to artifical origin was very slight.

Gamma-ray exposure rates due to natural radiation in each location are shown in Table 1 and population exposure due to natural radiation in each prefecture of the Tohoku district is shown in Table 2.

Figure 1 · The Situation Tohku District in Japan



1 Oma
2 Mutsu
3 Yokohama
4 Noheji
5 Aomori

6 Kanita
7 Shiura
8 Goshogawara
9 Hirosaki
10 Kuroishi

11 Towada City
12 Nagawa
13 Hachinohe
14 Towada
15 Misawa

16 Rokkasho
17 Kuji Samuraihama
18 Kuji
19 Iwaizumi
20 Morioka

21 Hanawaki
22 Kitakami
23 Mizusawa
24 Ichinoseki
25 Rikuzentakada

26 Ofunato
27 Kamaishi
28 Tono
29 Kawai
30 Miyako

31 Kesenmura
32 Shizugawa
33 Naruto
34 Furukawa
35 Shiroishi

36 Iwanuma
37 Natori
38 Sendai
39 Shiogama
40 Ishinomaki

41 Onagawa Koyatari
42 Odate
43 Moriyoshi
44 Noshiro
45 Noshiro Asauchi

46 Oga
47 Akita
48 Honjo
49 Yuzawa
50 Yokote

51 Omagari
52 Kakunodate
53 Sakata
54 Tsuruoka
55 Atsumi

56 Nagai
57 Yonezawa
58 Nanyo
59 Kaminoyama
60 Yamagata

61 Tendo
62 Sagae
63 Murayama
64 Obanazawa
65 Shinjo

66 Fukushima
67 Nihonmatsu
68 Koriyama
69 Sukagawa
70 Shirakawa

71 Tanakura
72 Yamatsuri
73 Iwaki
74 Iwaki Kitayoshima
75 Hirono

76 Okuma
77 Futaba
78 Miyakoji
79 Namie
80 Odaka

81 Haranomachi
82 Soma
83 Inawashiro
84 Kitakata
85 Nishiaizu

86 Aizuwakamatsu

Figure 2. Distridution of Observed Location

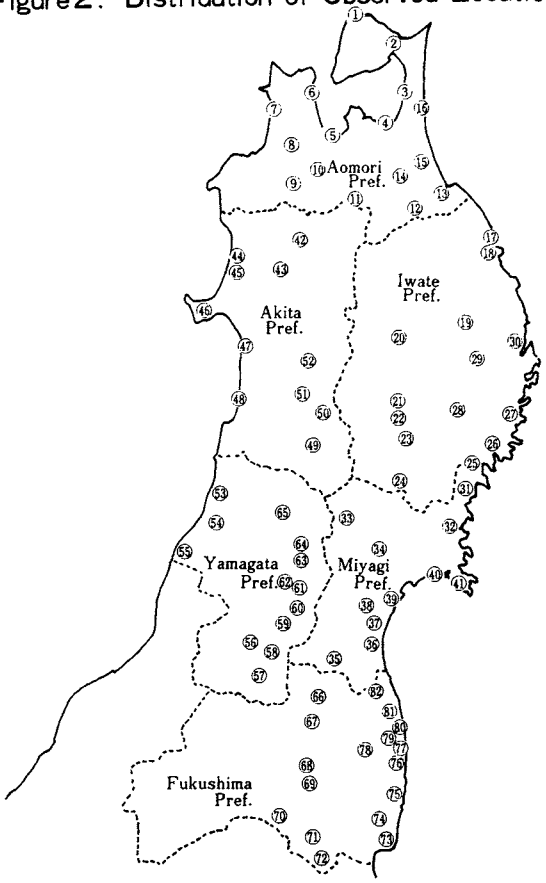


Table 1. Gamma-ray Exposure Rates due to National Radiation in each Location of the Tohoku district
– December, 1969, May, 1970 and October, 1970 –
by S. Abe, K. Arai, T. Iwakura and Y. Inoue

Prefecture	Location		Exposure Rate (μR/hr)	Apparatus	Number of Sites mesured in each Location
Aomori	1	Oma	5.8	D	1
	2	Mutsu	8.2	A D	1
	3	Yokohama	8.9	D	1
	4	Noheji	5.7	D	1
	5	Aomori	7.0	A D	4
	6	Kanita	7.1	D	1
	7	Shiura	7.3	D	1
	8	Goshogawara	7.1	D	1
	9	Hirosaki	8.6	A D	4
	10	Kuroishi	6.0	D	1
	11	Towada City	5.7	D	1
	12	Nagawa	4.5	D	1
	13	Hachinohe	5.5	A D	2
	14	Towada	3.9	D	1
	15	Misawa	5.3	D	1

Prefecture	Location	Exposure Rate (μR/hr)	Apparatus	Number of Sties mesured in each Location
Aomori	16 Rokkasho	7.1	D	1
Iwate	17 Fuji Samuraihama	9.4	D	1
	18 Kuji	8.1	D	1
	19 Iwaizumi	4.9	D	1
	20 Morioka	6.4	A D	4
	21 Haramaki	5.2	D	1
	22 Kitakami	7.9	A D	1
	23 Mizusawa	5.9	D	1
	24 Ichinose	6.7	D	1
	25 Rikuzentakada	10.7	D	1
	26 Ofunato	10.2	D	1
	27 Kamaishi	9.8	D	2
	28 Tono	7.2	A D	1
	29 Kawai	7.7	D	1
	30 Miyako	9.7	D	1
Miyagi	31 Kesennuma	10.5	D	1
	32 Shizugawa	10.4	D	1
	33 Naruko	7.6	D	1
	34 Furukawa	7.6	D	1
	35 Shiroishi	9.5	D	1
	36 Iwanuma	7.2	D	1
	37 Natori	7.3	D	1
	38 Sendai	6.7	A D	6
	39 Shiogama	7.3	D	1
	40 Ishinomaki	10.0	D	1
	41 Onagawa Koyatori	13.6	A D	2
Akita	42 Odate	8.2	D	1
	43 Moriyoshi	8.8	D	1
	44 Noshiro	9.4	A D	2
	45 Noshiro Asauchi	9.6	D	1
	46 Oga	10.5	D	1
	47 Akita	8.6	A D	4
	48 Honjo	8.3	D	1
	49 Yuzawa	10.5	D	1
	50 Yokote	8.0	D	1
	51 Omagari	8.8	D	1
	52 Kakunodate	8.3	D	1
Yamagata	53 Sakata	6.4	A D	3
	54 Tsuruoka	7.9	D	3
	55 Atsumi	9.7	D	1
	56 Nagai	12.0	D	1
	57 Yonezawa	10.6	A D	3
	58 Nanyo	9.4	D	1
	59 Kaimoyama	9.0	D	1
	60 Yamagata	6.9	A D	4
	61 Tendo	7.3	D	1
	62 Sagae	9.5	D	1

Prefecture	Location	Exposure Rate (μR/hr)	Apparatus	Number of Sties mesured in each Location
Yamagata	63 Murayama	8.7	D	1
	64 Obanazawa	6.7	D	1
	65 Shinjo	8.3	D	1
Fukushima	66 Fukushima	8.6	B D	3
	67 Nihonmatsu	9.0	B D	1
	68 Koriyama	9.3	B D	3
	69 Sukagawa	7.4	B D	1
	70 Shirakawa	10.2	B D	1
	71 Tanakura	9.7	B D	1
	72 Yamatsuri	11.3	B D	1

Table 2. Population Exposure due to Natural Radiation in each Prefecture of the Tohoku district

by S. Abe, K. Arai, T. Iwakura and Y. Inoue

(National Institute of Radiological Sciences)

Prefecture	Population (× 1,000)	Exposure Rate ± Standard Deviation (μR/hr)
Aomori	1417	6.7 ± 1.3
Iwate	1411	7.5 ± 1.8
Miyagi	1753	7.8 ± 1.6
Akita	1280	8.9 ± 0.8
Yamagata	1263	8.6 ± 1.5
Fukushima	1984	9.4 ± 0.9
Tohoku	9108	8.1 ± 1.6

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 experimental stations, covering all important agricultural areas throughout Japan. Sampling locations 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 as described on page 14, Issue No. 3, of this publication.

The results obtained in 1968 are shown in Table 3 and 4. The annual average of strontium-90 and cesium-137 contents during the period 1957 to 1966 is shown in table 5.

Figure 3. Rice Sampling Location

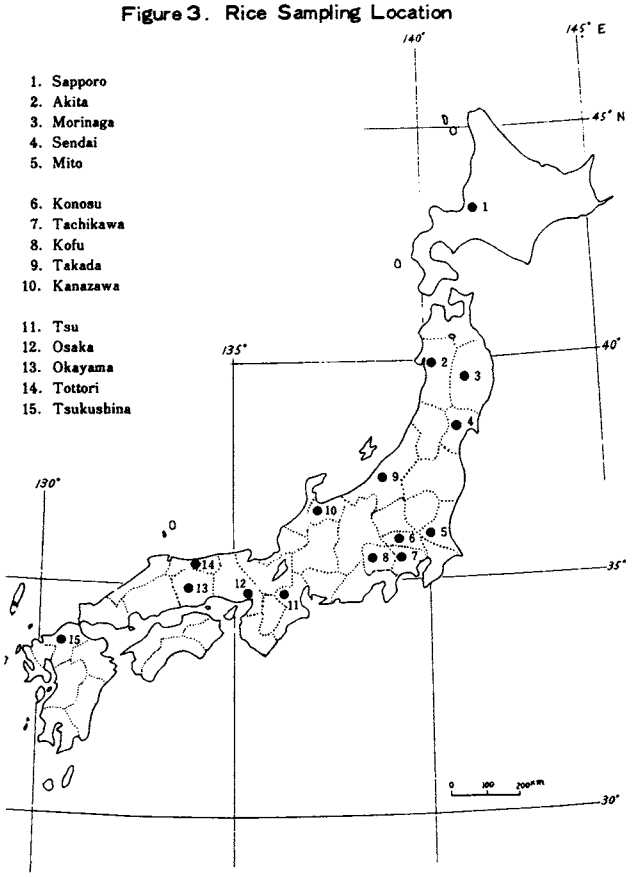


Table 3. ^{90}Sr in Rice – 1968 –
By H. Kobayashi and M. Ishikawa
(National Institute of Agriculutral Sciences)

Location	Month harvested	Brown Rice			Polished Rice		
		gCa/kg	PCi/kg	S. U	gCa/kg	pCi/kg	S. U
1968							
Sapporo, HOKKAIDO	Oct.	0.110	12.1	110	0.042	1.1	26
Akita, AKITA	Oct.	0.114	12.9	113	0.052	2.6	50
Morioka, IWATE	Oct.	0.110	10.3	94	0.028	1.3	46
Sendai, MIYAGI	Oct.	0.078	15.4	197	0.061	1.3	21
Mito, IBARAGI	Sept.	0.096	4.1	42	0.052	0.92	18
Konosu, SAITAMA	Oct.	0.141	8.9	63	0.051	1.3	25
Tachikawa, TOKYO	Nov.	0.130	6.7	52	0.048	0.95	20
Kofu, YAMANASHI	Sept.	0.103	3.1	30	0.023	0.95	13
Takada, NIIGATA	Sept.	0.144	21.8	151	0.045	3.0	67
Kanazawa, ISHIKAWA	Sept.	0.127	10.1	80	0.043	2.3	54
Tsu, MIE	Sept.	0.126	18.4	146	0.060	2.2	37
Osaka, OSAKA	Nov.	0.117	5.2	44	0.072	0.69	10
Okayama, OKAYAMA	Nov.	0.114	3.5	31	0.042	0.54	13
Tottori, TOTTORI	Oct.	0.095	10.5	110	0.032	0.65	20
Tsukushino, FUKUOKA	Nov.	0.104	4.4	42	0.071	0.62	29
Average for year		0.114	9.8	87	0.048	1.3	29

Table 4. ^{137}Cs in Rice – 1968 –
By H. Kobayashi and A. Tsumura
(National Institute of Agricultural Sciences)
By N. Yamagata
(Institute of Public Nealth)

Location	Month harvested	Polished Rice		
		gK/kg	pCi/kg	C. U
1968				
Sapporo, HOKKAIDO	Oct.	0.907	28	31
Akita, AKITA	Oct.	1.240	27.2	22
Morioka, IWATE	Oct.	0.827	26.7	32
Sendai, MIYAGI	Oct.	1.013	24.5	24
Mito, IBARAGI	Sept.	1.067	10.9	20
Konosu, SAITAMA	Oct.	0.933	17.5	19
Tachikawa, TOKYO	Nov.	1.440	15.7	11
Kofu, YAMANASHI	Sept.	0.453	8.9	20
Takada, NIIGATA	Sept.	0.827	20.6	25
Kanazawa, ISHIKAWA	Sept.	0.947	14.6	15
Tsu, MIE	Sept.	1.107	15.1	14
Osaka, OSAKA	Nov.	1.307	8.4	6.4
Okayama, OKAYAMA	Nov.	1.413	11.0	7.8
Tottori, TOTTORI	Oct.	0.547	11.9	22
Tsukushino, FUKUOKA	Nov.	1.440	11.4	18
Average for year		1.042	16.2	18

Table 5. ^{90}Sr in Rice – 1969 –
By H. Kobayashi and Ishikawa
(National Institute of Agricultural Sciences)

Location	Month harvested	Brown Rice		
		gCa/Kg	pCi/Kg	S. U
1969				
Sapporo, HOKKAIDO	Oct.	0.103	9.1	88
Akita, AKITA	Oct.	0.113	13.1	116
Morioka, IWATE	Oct.	0.110	6.0	55
Sendai, MIYAGI	Oct.	0.124	6.0	48
Mito, IBARAGI	Sept.	0.107	5.0	47
Konosu, SAITAMA	Oct.	0.133	8.3	62
Tachikawa, TOKYO	Oct.	0.127	7.5	59
Kofu, YAMANASHI	Sept.	0.104	2.4	23
Takeda, NIIGATA	Sept.	0.210	14.5	72
Kanazawa, ISHIKAWA	Sept.	0.110	4.1	37
Tsu, MIE	Oct.	0.100	10.0	100
Osaka, OSAKA	Nov.	0.114	2.4	21
Okayama, OKAYAMA	Nov.	0.087	2.8	32
Tottori, TOTTORI	Oct.	0.119	10.5	88
Tsukushino, FUKUOKA	Nov.	0.161	4.6	29
Average for year		0.123	7.1	58

Strontium-90 and Cesium-137 in Standard Diet

(National Institute of Radiological Sciences)

Since May 1966, National Institute of Radiological Sciences has conducted analyses of individual foodstuff samples from four prefectures (Hokkaido, Niigata, Tokyo and Kagoshima). The sampling locations are shown in Figure 4. Individual foodstuffs produced in each prefecture were collected separately according to nine categories: cereals, beans, potatos, milk, eggs, meat, fish and shellfish, leafy vegetables and root vegetables.

The standard diet, taken in this study, was based Resource Council, Science and Technology Agency, in 1964: cereals: 422g, beans: 35g, potatos: 85g, milk: 180g, eggs: 30g, meat: 30g, fish and shellfish: 75g, leafy vegitables: 144g, root vegetables: 96g.

Collected foodstuffs were ashed and analyzed separately.

Results obtained during the period November, 1968 are shown in Table 6.

Figure4. Sampling Locations of Standard Diet

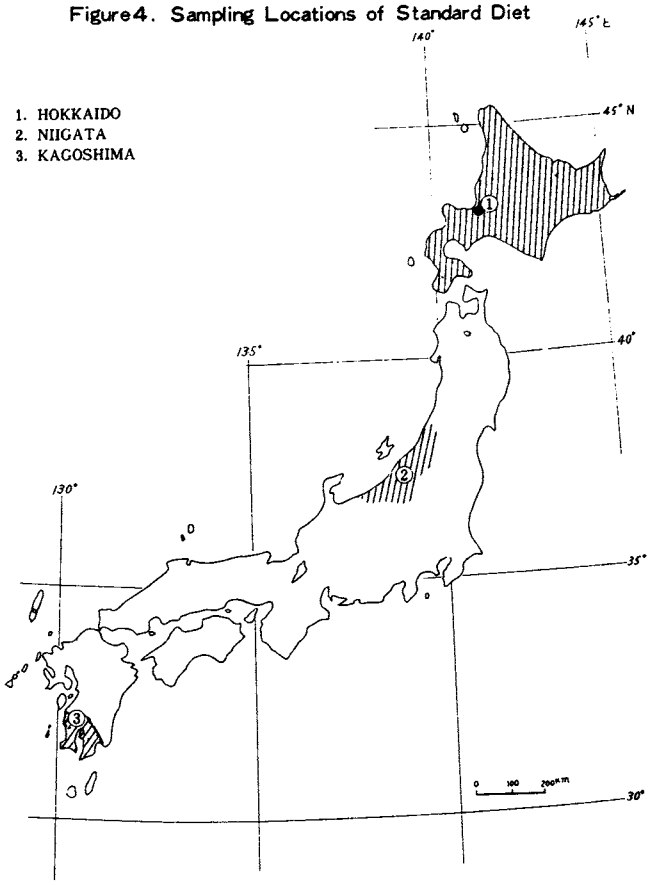


Table 6. ^{90}Sr and ^{137}Cs in Standard Diet – November 1968 –

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

(Continued from Table 6, Issue No. 24 of this Publication)

Foodstuff Samples	Daily Intake/Person					
	^{90}Sr (pCi)	Ca (mg)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	K (mg)	^{137}Cs (pCi/gK)
			HOKKAIDO – Nov. 1968 –			
Cereals	4.87	55	88.5	7.1	384	18.5
Beans	0.69	37	18.6	1.3	89	14.6
Potatos	0.57	12	47.5	1.9	190	10.0
Milk	1.40	119	11.8	11.1	243	45.7
Eggs	0.01	16	0.6	0.2	36	5.6
Meat	0.03	2	15.6	1.0	47	21.3
Fish and shellfish	0.03	20	1.5	0.5	136	3.7
Leafy vegetables	2.73	23	118.7	1.7	320	5.3
Root vegetables	0.85	17	50.0	3.3	188	17.6
			NIIGATA – Nov. 1968 –			
Cereals	1.39	54	25.7	8.2	370	22.2
Beans	1.81	20	90.5	0.9	96	9.4
Potatos	0.07	18	3.9	2.1	281	7.5
Milk	0.86	94	9.1	3.5	217	16.1
Eggs	0.01	17	0.6	0.2	31	6.5
Meat	0.01	10	1.0	0.9	21	42.9
Fish and shellfish	0.04	13	3.1	1.4	177	7.9
Leafy vegetables	4.80	38	126.3	2.0	271	7.4
Root vegetables	0.69	11	62.7	1.1	146	7.5
			KAGOSHIMA – Nov. 1968 –			
Cereals	0.96	43	22.3	13.7	474	28.9
Beans	0.57	51	11.2	1.5	209	7.2
Potatos	0.15	9	16.7	2.3	370	6.2
Milk	0.81	139	5.8	7.2	354	20.3
Eggs	0.07	17	4.1	0.2	56	3.6
Meat	0.01	8	1.3	1.0	67	14.9
Fish and shellfish	0.06	57	1.1	0.4	348	1.1
Leafy vegetables	2.49	22	113.2	3.9	431	9.0
Root vegetables	1.91	7	272.9	1.4	243	5.8

Strontium-90 and Cesium-137 in Total Diet

(national Institute of Radiological Sciences)

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

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

Results obtained during the period from Feb., 1969 to Aug., 1969 are shown in Table 7.

Figure5. Total Diet Sampling Location

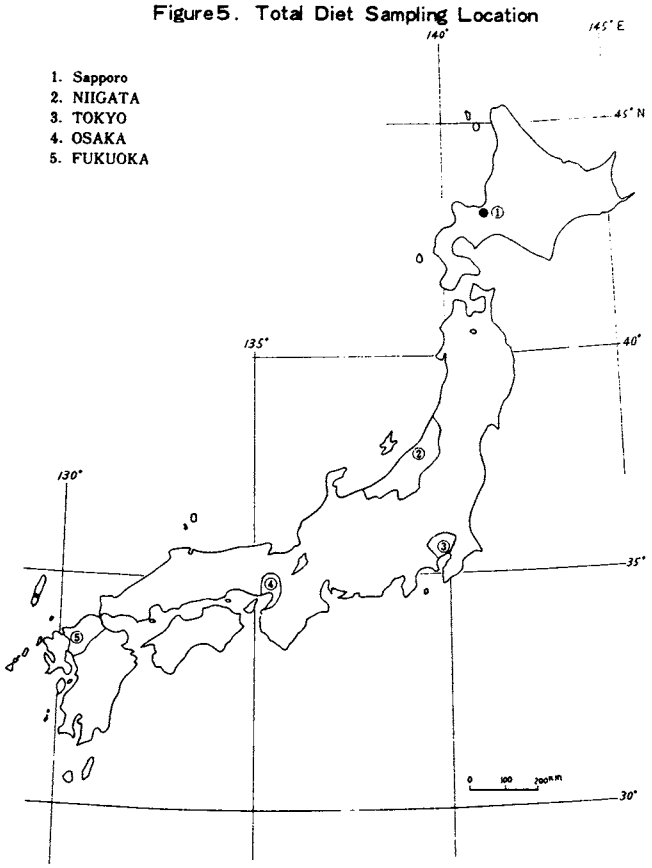


Table 7. ^{90}Sr and ^{137}Cs in Total Diet – Feb., to Aug., 1969 –

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

(Continued from Table 4, Issue No. 20 of this Publication)

Location	Daily Intake				^{90}Sr (pCi/gCa)	^{137}Cs (pCi/gK)
	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)		
			URBAN ADULT DIET			
Feb. 1969						
Sapporo, HOKKAIDO	306	1786	7.5	24.6	24.5	13.8
Niigata, NIIGATA	627	1451	19.5	13.6	31.1	9.4
TOKYO	284	1653	5.7	17.5	20.0	10.6
Osaka, OSAKA	441	1434	6.9	13.2	15.6	9.2
Fukuoka, FUKUOKA	412	1111	5.0	9.4	12.1	8.5
			RURAL ADULT DIET			
Sapporo, HOKKAIDO	442	2074	9.3	29.9	21.0	14.4
Niigata, NIIGATA	309	1998	10.5	12.1	34.0	6.1
TOKYO	317	1123	5.4	11.1	17.0	9.9
Osaka, OSAKA	361	1125	4.3	10.2	11.9	9.1
Fukuoka, FUKUOKA	462	819	6.0	6.9	13.0	8.4
			URBAN ADULT DIET			
June-Aug., 1969						
Sapporo, HOKKAIDO	317	1687	9.9	23.8	31.2	14.1
Niigata, NIIGATA	616	1547	23.6	18.7	38.3	12.1
Fukui, FUKUI	619	1691	8.7	16.2	14.1	9.6
Fukushima, FUKUSHIMA	653	2458	9.3	25.9	14.2	10.5
Mito, IBARAGI	250	908	4.0	15.6	16.0	17.2
Osaka, OSAKA	538	1622	6.8	11.5	12.6	7.1
Fukuoka, FUKUOKA	469	1406	6.0	11.6	12.8	8.3
			RURAL ADULT DIET			
Sapporo, HOKKAIDO	363	1434	13.3	34.1	36.7	23.8
Niigata, NIIGATA	517	1677	21.6	20.3	41.7	12.1
Fukui, FUKUI	378	1406	11.8	17.6	31.2	12.5
Fukushima, FUKUSHIMA	796	3188	7.2	20.7	9.0	6.5
Mito, IBARAGI	310	1507	6.7	15.9	21.6	10.6
Osaka, OSAKA	523	1697	8.3	13.9	15.9	8.2
Fukuoka, FUKUOKA	617	1643	9.9	16.1	16.0	9.8

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

(Meteorological Research Institute, Tokyo)

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

Locations of the stations are shown in Figure 6.

The results of observation during the period from January, 1969 to July, 1970 are shown in Table 8.

Total cumlative deposits of strontium-90 and cesium-137 in Tokyo reached the levels of 72 and $191mCi/km^2$ respectively, at the end of Dec., 1969.

Figure 6. Rain and Fallout Dust Sampling Stations

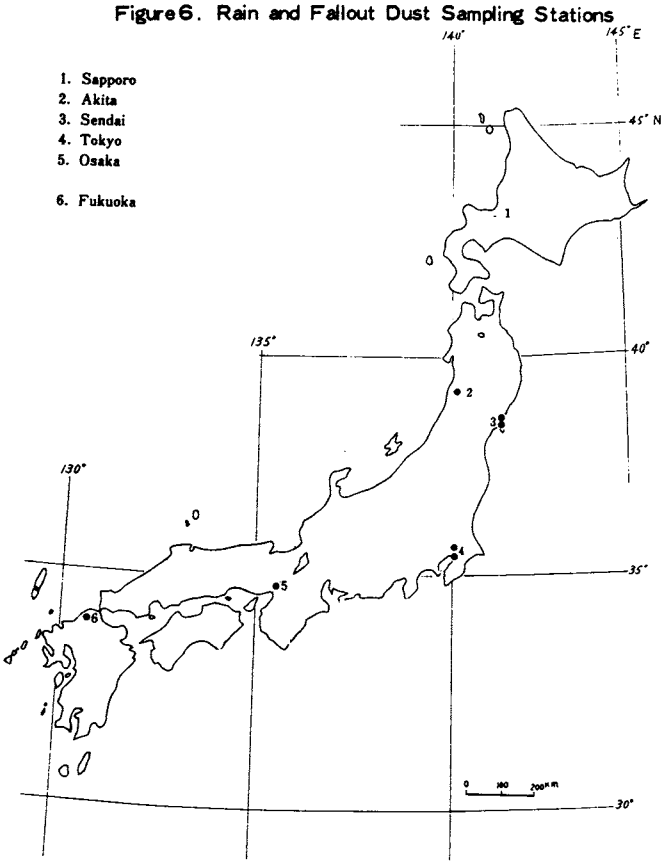


Table 8. Monthy Deposits of ^{90}Sr and ^{137}Cs –Jan. 1969 to July 1970–
By Y. Miyake, K. Saruhashi, Y. Katuragi and T. Kanazawa
(Meteorological Research Institute, Tokyo)

(Continued from Table 1, Issue No. 22 of this Publication)

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

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.10	0.05	0.05	0.04	0.16	0.13	0.08	0.19	0.15	0.06	0.05	0.11	1.17
Precipitation (mm)	70.1	115.0	43.3	35.9	82.5	107.8	63.8	153.6	108.8	91.6	72.5	79.3	1,024.2

	1970 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
	0.04	0.08	0.09	0.05	0.14	0.22							–
	74.2	122.2	150.9	52.9	40.1	97.2	74.2						–

Akita (Akita District Meteorological Observatory)
Location : 39°03'N, 140°06'E (9.1 m)

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.22	0.11	0.15	0.18	0.31	0.12	0.14	0.13	0.12	0.08	0.17	0.30	2.02
Precipitation (mm)	117.5	69.4	75.0	202.5	124.0	85.0	200.5	245.5	143.5	97.0	151.6	221.5	1,733.0

	1970 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.11	0.26	0.27	0.10	0.19	0.17							–
Precipitation (mm)	142.8	144.5	93.5	107.0	49.5	53.0	58.0						–

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

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.04	0.03	0.04	0.06	0.23	0.17	0.18	0.17	0.09	0.07	0.02	0.03	1.11
Precipitation (mm)	24.0	85.1	78.2	53.4	112.8	121.9	148.4	171.2	34.6	147.8	38.7	33.3	1,049.4

	1970 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.03	0.04	0.03	0.06	0.22	0.12							–
Precipitation (mm)	47.6	38.5	44.0	44.5	148.0	64.5	70.4						–

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

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.05	0.03	0.05	0.07	0.21	0.17	0.17	0.09	0.15	0.10	0.06	0.03	1.17
^{137}Cs (mCi/km^2)	0.06	0.09	0.15	0.19	0.32	0.34	0.34	0.13	0.20	0.19	0.10	0.03	2.15
$^{137}Cs/^{90}Sr$	1.4	2.7	3.3	2.6	1.5	2.0	2.0	1.5	1.4	2.0	1.8	1.2	1.8
$^{89}Sr/^{90}Sr$	–	–	–	5.2	5.8	7.6	4.0	4.8	3.3	4.0	4.4	2.7	–
Precipitation (mm)	74.8	114.5	140.9	72.9	104.9	185.3	188.4	120.9	181.9	148.6	110.7	27.7	1,471.5

	1970 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.02	0.04	0.04	0.12	0.24	0.54							–
^{137}Cs (mCi/km^2)	0.07	0.08	0.12	0.32									–
$^{89}Sr/^{90}Sr$	3.3	2.3	2.7	2.6									–
Precipitation (mm)	74.6	40.4	51.0	150.9	209.5								–

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

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.04	0.05	0.05	0.08	0.19	0.13	0.10	0.10	0.24	0.07	0.05	0.03	1.13
Precipitation (mm)	35.5	119.0	121.0	72.5	88.0	186.5	104.0	131.5	238.5	146.0	78.5	22.0	1,343.0

	1970 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.02	0.05	0.04	0.13	0.21	0.39							–
Precipitation (mm)	58.0	30.5	50.0	94.0	161.5	218.0							–

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

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.05	0.04	0.06	0.12	0.21	0.16	0.08	0.01	0.05	0.03	0.03	0.08	0.91
Precipitation (mm)	53.8	113.3	163.3	127.8	100.9	316.9	152.7	77.9	32.7	58.9	56.7	49.8	1,304.7

	1970 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr (mCi/km^2)	0.02	0.05	0.05	0.10	0.14	0.25							–
Precipitation	44.8	58.4	50.5	221.5	98.6	322.9	135.4						–

Fukuoka (Fukuoka District Central Meteorological Observatory)
Location : 33°35'N, 130°23'E (2.1 m)

	1969 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Sum
^{90}Sr(mCi/km^2)	0.03	0.05	–	0.18	0.15	0.21							–
Precipitation (mm)	36.9	56.6	25.0	162.3	192.9	314.6							–