NIRS-RSD-29

RADIOACTIVITY SURVEY DATA in Japan

NUMBER 29
NOV. 1970

National Institute of Radiological Sciences
Chiba, Japan

Radioactivity Survey Data in Japan

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Contents

DATA OF ROUTINE SURVEY

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

National Institute of Radiological Sciences

Meteorological Date

The Concentration of Radionuclides in Air Borne Dust

(National Institute of Radiological Sciences)

The air borne dust samples were collected from 1~1.5m above the ground in the campus of National Institute of Radiological Sciences in Chiba City, using a improved dust collector that composed of a prefilter, a cottrell type dust collector and a spongy polyurethane filter.

Sampling station is shown in Figure 1.

The design of the improved dust collector is the same one mentioned in page 3, Issue No. 22 of this publication.

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

The results obtained during the period from April, 1969 to July, 1970 are shown in Table 1.

Figure 1. Air Borne Dust Sampling Location

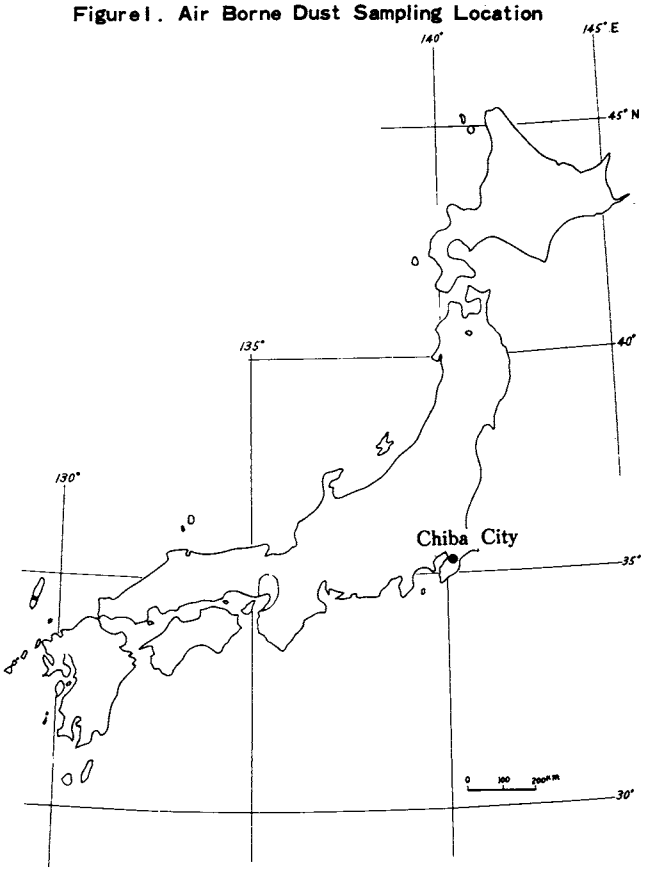


Table 1. The Concentration of Radionuclides in Air Borne Dust in Chiba City (10^{-3}pCi/m^3)
— April, 1969 to July, 1970 —

By M. Saiki, H. Kamada, K. Kimura and M. Mita
(National Institute of Radiological Sciences)

(Continued from Table 2, Issue No. 22, of this Publication)

Month collected			Duration (days)	Air inhaled (m^3)	Ash Weight	^{89}Sr	^{90}Sr	^{95}Zr +95Nb	^{103}+^{106}Ru	^{137}Cs	^{141}+^{144}Ce
	1969										
Apr.	1-April	30	30	432,000	11.0	0.87	0.11	4.52	2.85	0.42	8.52
May	1-May	31	31	446,400	6.0	0.77	0.13	7.02	3.16	0.36	10.73
June	1-June	30	30	432,000	8.5	—	0.23	22.62	2.81	0.64	9.05
July	1-July	31	31	446,400	9.0	—	0.35	18.51	1.86	1.17	9.81
Aug.	1-August	31	31	446,400	9.0	—	0.05	6.02	0.82	0.22	4.79
Sept.	1-Sept.	30	30	432,000	8.0	—	0.18	20.26	1.95	0.58	5.28
Oct.	1-Oct.	31	31	446,400	5.0	—	0.11	2.50	0.57	0.64	1.28
Nov.	1-Nov.	30	30	432,000	5.0	—	0.07	3.10	0.23	0.22	1.75
Dec.	1-1970 Jan.	5	36	518,400	13.5	—	0.08	2.52	0.98	0.19	3.04
	1970										
Jan.	6-Jan.	31	26	374,400	27.4	0.59	0.33	10.20	2.70	0.85	9.59
Feb.	1-Feb.	28	28	403,000	33.7	0.80	0.76	22.06	4.99	1.54	23.71
Mar.	1-March	31	31	446,400	25.8	2.25	0.86	38.00	5.23	2.17	32.33
Apr.	1-April	30	30	432,400	24.3	4.69	1.23	65.09	8.04	1.22	57.14
May	1-May	31	31	446,400	18.2	2.89	2.21	90.52	10.58	3.76	86.82
June	1-June	30	30	432,000	13.7	3.32	1.56	73.28	10.50	2.83	87.14
July	1-July	31	31	446,400	11.5	1.09	0.65	13.23	2.05	0.75	18.37

* — : non detectable

** ^{140}Ba – ^{140}La was non detectable

Geographical Date

Strontium-90, Ruthenium-106, Cesium-137 and Cerium-144 in Soil

(National Institute of Radiological Sciences)

The purpose of this survey is to investigate the amount of ground deposit and leaching rates of radionuclides from soil to river.

Undisturbed and uncultivated soil up to the depth of 5 cm and 20 cm were collected at the same site. Sampling site are shown in Figure 2.

The amounts of radionuclides deposited on ground are shown in Table 2 and 3.

Figure2. Soil Sampling Locations

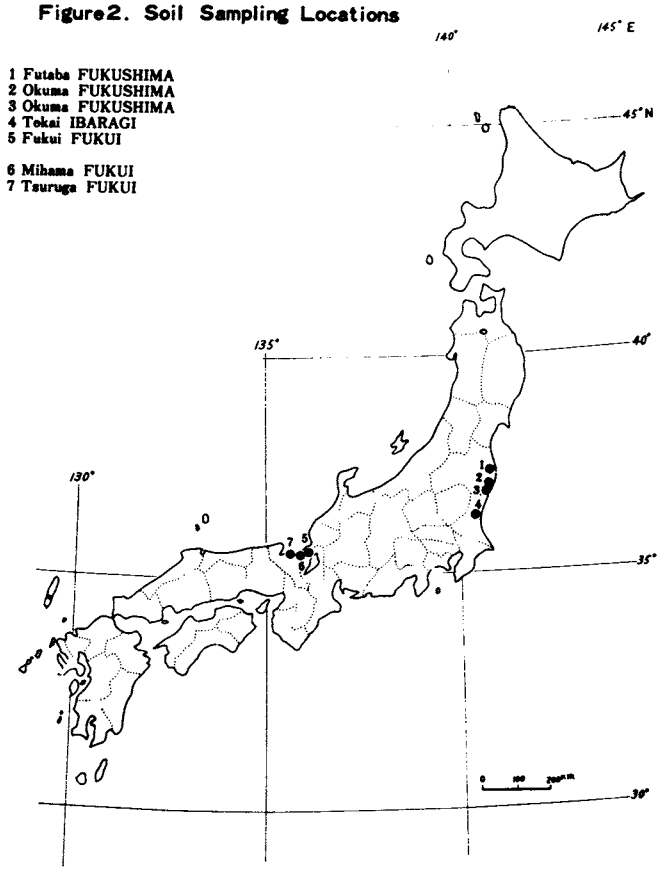


Table 2. ^{90}Sr, ^{106}Ru, ^{137}Cs and ^{144}Ce in Soil (0 ~ 5cm) — July to August 1969 —

By M. Saiki and H. Kamada

(National Institute of Radiological Sciences)

Sampling Locations	Date	^{90}Sr (mCi/km²)	^{106}Ru (mCi/km²)	^{137}Cs (mCi/km²)	^{144}Ce (mCi/km²)
Futaba FUKUSHIMA	July 1969	34.4	48	59	11
Ohama FUKUSHIMA	July 1969	33.8	42	49	37
Ohama FUKUSHIMA	July 1969	30.1	56	25	34
Tokai IBARAGI	Aug. 1969	9.3	117	83	8
Fukui FUKUI	Aug. 1969	19.7	47	102	20
Mihama FUKUI	Aug. 1969	9.3	66	89	56
Tsuruga FUKUI	Aug. 1969	10.2	120	129	90

Table 3. ^{90}Sr, ^{106}Ru, ^{137}Cs and ^{144}Ce in Soil (0 ~ 20 cm) — July to August 1969 —

By M. Saiki and H. Kamada

(National Institute of Radiological Sciences)

Sampling		^{90}Sr	^{106}Ru	^{137}Cs	^{144}Ce
Locations	Date	(mCi/km^2)	(mCi/km^2)	(mCi/km^2)	(mCi/km^2)
Futaba FUKUSHIMA	July 1969	54.7	98	90	99
Ohama FUKUSHIMA	July 1969	74.8	119	71	74
Ohama FUKUSHIMA	July 1969	48.1	118	34	39
Tokai IBARAGI	Aug. 1969	14.9	137	109	89
Fukui FUKUI	Aug. 1969	69.3	69	363	125
Mihama FUKUI	Aug. 1969	38.1	288	223	260
Tsuruga FUKUI	Aug. 1969	28.5	479	519	440

Strontium-90, Ruthenium-106, Cesium-137 and Cerium-144 in River Sediments

(National Institute of Radiological Sciences)

The quantity of radionuclides precipitated or deposited in river sediments from 1964 was determined. These results were shown in Radioactivity Survey Data in Japan, PP 13–14 No. 18 Feb. 1968 and PP 6–7, No. 22, Feb. 1969.

The concentrations of Strontium-90, Ruthenium-106, Cesium-137 and Cerium-144 in the river sediments collected in 1969 are shown in Table 4.

Sampling locations are shown in Figure 3.

Figure3. River Sediments Sampling Locations

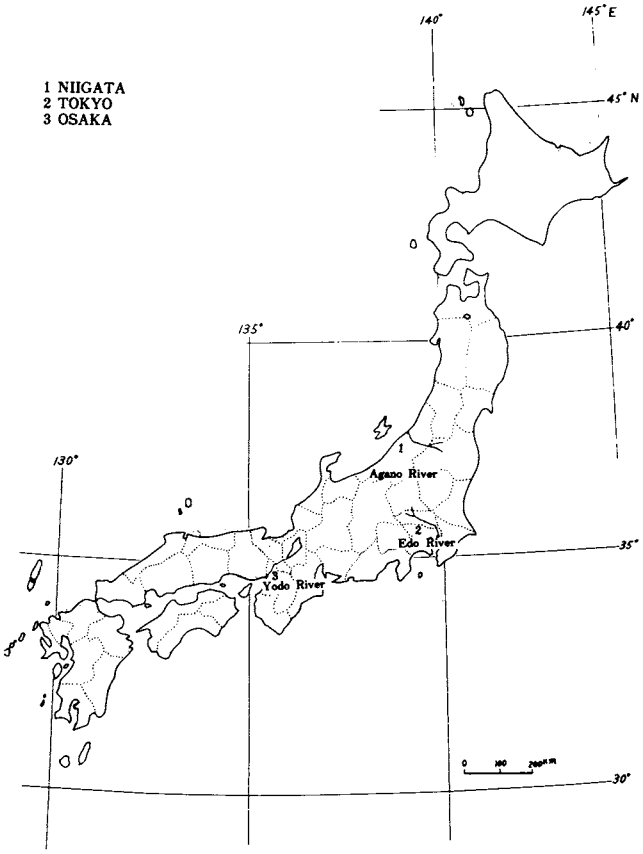


Table 4. ^{90}Sr, ^{106}Ru, ^{137}Cs and ^{144}Ce in River Sediments — July to December 1969 —

By M. Saiki and H. Kamada

(National Institute of Radiological Sciences)

Sampling Location	Sampling Date	^{90}Sr (mμCi/kg)	^{106}Ru (mμCi/kg)	^{137}Cs (mμCi/kg)	^{144}Ce (mμCi/kg)
Agano River (NIIGATA)	July 1969	0.03	1.11	0.81	0.72
"	Dec. 1969	0.08	0.22	0.69	0.14
Edo River (TOKYO)	July 1969	0.03	0.43	0.14	0.44
"	Dec. 1969	0.04	0.11	0.15	0.09
Yodo River (OSAKA)	July 1969	0.08	1.75	0.87	1.19
"	Dec. 1969	0.11	0.74	0.41	0.14

Note: The above values, respectively inclicate the mean values of the center and left side or right side in the sampling river.

Water Date

Strontium-90 and Cesium-137 in Source Water and Treated Water

(National Institute of Radiological Sciences)

Since December 1961, the concentrations of strontium-90 and cesium-137 in city water in Japan have been determined in co-operation with 24 prefectural Public Health Laboratries.

From April 1963, sampling points have been selected in Tokyo, Niigata and Osaka prefectures. Sampling locations are shown in Figure 3.

The samples have been analyzed for strontium-90 and cesium-137. Ruthenium-106 and cerium-144 were non detectable. The analytical method is the same one mentioned in page 7, Issue No. 22 of this publication.

The results obtained from Feb. 1969 to Feb. 1970 are shown in Table 5.

Table 5. ^{90}Sr and ^{137}Cs in Source Water and Treated Water — Feb. 1969 to Feb. 1970 —

By M. Saiki and H. Kamada
(National Institute of Radiological Sciences)

Location	Source	Type	Date	Ash (g/100ℓ)	^{90}Sr	^{137}Cs
					pCi/ℓ	
Niitsu NIIGATA	Agano River	SW	18th Feb. 1969	9.0	0.30	0.07
"	"	TW	18th Feb. 1969	8.0	0.16	0.06
"	"	SW	22th Apr. 1969	11.5	0.26	0.11
"	"	TW	22th Apr. 1969	12.5	0.25	0.06
"	"	SW	5th June 1969	12.0	0.34	0.08
"	"	TW	5th June 1969	13.0	0.28	0.05
"	"	SW	14th Aug. 1969	148.0	0.46	138.88
"	"	TW	14th Aug. 1969	42.4	0.30	0.09
"	"	SW	9th Oct. 1969	12.7	0.44	0.07
"	"	TW	9th Oct. 1969	12.2	0.38	0.04
"	"	SW	22th Dec. 1969	5.0	0.26	0.07
"	"	TW	22th Dec. 1969	10.5	0.22	0.03
"	"	SW	12th Feb. 1969	74.5	0.35	1.25
"	"	TW	12th Feb. 1969	28.6	0.06	0.05
Kanamachi TOKYO	Edo River	SW	21st Feb. 1969	15.5	0.20	0.10
"	"	TW	21st Feb. 1969	15.5	0.15	0.02
"	"	SW	22th Apr. 1969	23.5	0.36	0.08
"	"	TW	22th Apr. 1969	18.0	0.09	0.05
"	"	SW	2nd June 1969	21.0	0.25	0.10
"	"	TW	2nd June 1969	19.5	0.17	0.07
"	"	SW	26th Aug. 1969	22.5	0.31	0.11
"	"	TW	26th Aug. 1969	27.0	0.25	0.09
"	"	SW	24th Oct. 1969	17.5	0.34	0.07
"	"	TW	24th Oct. 1969	18.0	0.17	0.05
"	"	SW	23rd Dec. 1969	21.5	0.39	0.15
"	"	TW	23rd Dec. 1969	25.7	0.38	0.09
"	"	SW	27th Feb. 1969	35.3	0.15	0.03
"	"	TW	27th Feb. 1969	37.5	0.15	0.01
Moriguchi OSAKA	Yodo River	SW	21st Feb. 1969	12.0	0.36	0.07
"	"	TW	25th Feb. 1969	14.0	0.34	0.03
"	"	SW	8th Apr. 1969	20.0	0.39	0.05
"	"	TW	10th Apr. 1969	14.0	0.31	0.05
"	"	SW	9th June 1969	12.5	0.32	0.08
"	"	TW	9th June 1969	12.5	0.24	0.02
"	"	SW	19th Aug. 1969	25.5	0.43	0.08
"	"	TW	19th Aug. 1969	22.0	0.37	0.07
"	"	SW	9th Oct. 1969	16.5	0.28	0.11
"	"	TW	29th Oct. 1969	27.5	0.15	0.04
"	"	SW	1st Dec. 1969	28.4	0.28	0.08
"	"	TW	1st Dec. 1969	22.3	0.21	0.04
"	"	SW	6th Feb. 1970	33.8	0.26	0.02
"	"	TW	7th Feb. 1970	32.0	0.23	0.01

Dietaly Date

Strontium-90 and Cesium-137 in Standard Diet

(National Institute of Radiological Sciences)

Scince May 1966, National Institute of Radiological Sciences has conducted analyses of individual foodstuff samples from four prefectures (Hokkaido, Niigata, Tokyo and Kagoshima). The samplings 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 on the following diet components, indicated by 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 vegetables: 144g, root vegetables: 96g.

Collected foodstuffs were ashed and analyzed separately.

Results obtained during the period May and November, 1969 are shown in Table 6.

Figure4. Sampling Locations of Standard Diet

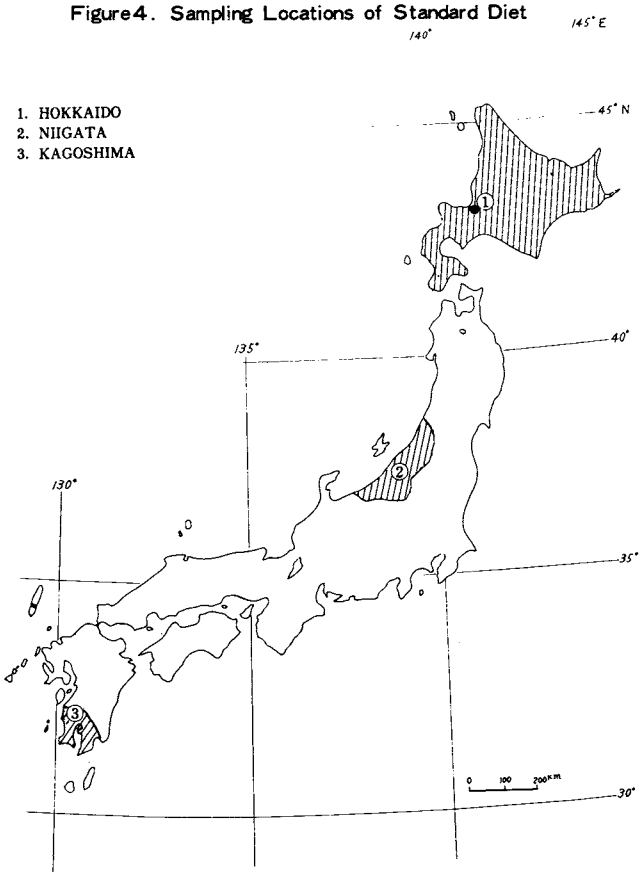


Table 6. ^{90}Sr and ^{137}Cs in Standard Diet — May and November, 1969 —

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

(National Institute of Radiological Sciences)

(Continued from Table 6, Issue No. 28 of this Publication)

Foodstuff Samples	Daily Intake /Person					
	^{90}Sr (pCi)	Ca (mg)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	K (mg)	^{127}Cs (pCi/gk)
	HOKKAIDO — May 1969 —					
Cereals	0.81	23	35.8	3.5	213	16.5
Beans	0.56	30	18.7	1.7	101	16.6
Potatos	0.43	6	70.5	4.3	642	6.7
Milk	2.24	168	13.4	4.9	282	17.4
Eggs	0.03	17	1.8	0.3	43	6.5
Meat	0.01	8	1.3	2.0	66	30.5
Fish and shellfish	0.05	42	1.2	0.3	207	1.5
Leafy Vegetables	1.70	75	22.6	1.0	320	3.1
Root Vegetables	1.58	18	88.3	1.4	348	4.0

Foodstuff Samples	Daily Intake/Person					
	^{90}Sr (pCi)	Ca (mg)	^{90}Sr (pCi/gCa)	^{137}Cs (pCi)	K (mg)	^{127}Cs (pCi/gk)
		HOKKAIDO — Nov. 1969 —				
Cereals	0.78	53	14.7	5.1	714	7.1
Beans	0.49	32	15.6	0.9	99	9.1
Potatos	0.40	8	51.9	1.9	353	5.4
Milk	1.21	189	6.4	6.1	290	21.0
Eggs	0.01	3	3.7	0.3	40	7.6
Meat	0.00_3	13	0.2	0.5	70	7.1
Fish and shellfish	0.05	41	1.2	0.5	259	1.9
Leafy Vegetables	1.29	39	32.7	3.5	418	8.4
Root Vegetables	1.34	17	77.9	1.2	208	5.8
		NIIGATA — May 1969 —				
Cereals	1.15	25	45.6	3.1	308	10.1
Beans	0.31	25	12.4	0.1	369	0.2
Potatos	0.72	13	56.3	4.6	293	15.7
Milk	0.79	151	5.2	1.9	307	6.2
Eggs	0.13	14	9.0	0.1	29	3.5
Meat	0.03	20	1.5	0.5	51	9.7
Fish and shellfish	0.02	30	0.7	0.8	195	4.1
Leafy Vegetables	1.56	98	16.0	0.1	348	0.3
Root Vegetables	1.95	15	126.6	1.4	268	5.2
		NIIGATA — Nov. 1969 —				
Cereals	0.85	36	23.4	3.3	392	8.4
Beans	0.45	29	15.7	0.5	100	5.0
Potatos	0.55	10	55.6	4.6	327	14.1
Milk	1.04	182	5.7	7.1	277	25.6
Eggs	0.01	17	0.6	0.3	41	7.3
Meat	0.01	3	3.8	0.5	59	8.5
Fish and shellfish	0.03	77	0.4	0.3	189	1.6
Leafy Vegetables	1.23	40	31.1	0.2	258	0.8
Root Vegetables	1.64	18	90.1	1.2	224	5.3
		KAGOSHIMA — May 1969 —				
Cereals	0.86	22	38.7	4.1	380	10.8
Beans	0.33	22	15.3	1.3	119	11.5
Potatos	0.62	8	74.7	2.0	368	5.4
Milk	0.63	190	3.3	1.4	294	4.8
Eggs	0.03	16	1.9	0.4	44	9.1
Meat	0.17	8	22.4	0.9	72	12.6
Fish and shellfish	0.04	37	1.1	0.8	259	3.1
Leafy Vegetables	1.99	82	24.4	2.2	380	5.8
Root Vegetables	3.57	28	128.9	3.4	331	10.3
		KAGOSHIMA — Nov. 1969 —				
Cereals	0.76	38	20.2	5.4	342	15.8
Beans	0.24	86	2.8	0.1	91	1.1
Potatos	0.43	11	38.7	2.2	320	6.9
Milk	0.85	178	4.8	0.6	269	2.2
Eggs	0.02	16	1.2	0.3	42	7.1
Meat	0.04	3	14.3	0.3	62	4.9
Fish and shellfish	0.00_6	41	0.1	0.5	256	2.0
Leafy Vegetables	1.42	27	52.6	0.4	340	1.2
Root Vegetables	2.26	44	51.6	0.8	276	2.9

Strontium-90 and Cesium-137 in Total Diet

(National Institute of Radio logical Sciences)

Since June 1963, National Institute of Radiological Sciences has conducted analyses of total diet samples collected from 6 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 Sept., 1969 to Feb., 1970 are shown in Table 7.

Figure5. Total Diet Sampling Location

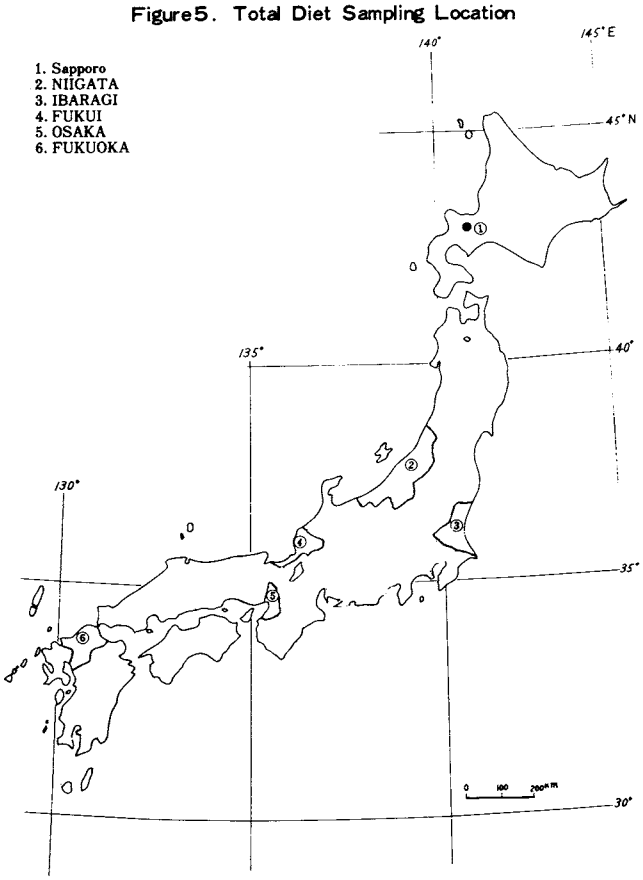


Table 7. ^{90}Sr and ^{137}Cs in Total Diet — Sept., 1969 to Feb., 1970 —

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

(Continued from Table 7, Issue No. 28 of this Publication)

Location	Daily Intake				^{90}Sr	^{137}Cs
	Ca (mg)	K (mg)	^{90}Sr (pCi)	^{137}Cs (pCi)	(pCi/gCa)	(pCi/gK)
			URBAN ADULT DIET			
Sept. – Nov. 1969						
Sapporo HOKKAIDO	502	2036	4.8	14.2	9.6	7.0
Niigata NIIGATA	627	2327	9.4	15.0	15.0	6.4
Fukui FUKUI	370	1741	11.7	6.0	31.6	3.4
Mito IBARAGI	320	1971	3.1	4.9	9.6	2.5
Osaka OSAKA	308	1720	2.4	5.5	7.8	3.2
Fukuoka FUKUOKA	855	1652	5.5	8.2	6.4	5.0
			RURAL ADULT DIET			
Sapporo HOKKAIDO	599	2508	8.2	15.3	13.6	6.1
Niigata NIIGATA	646	2516	14.8	13.5	22.9	5.4
Fukui FUKUI	385	1624	10.7	7.0	27.8	4.3
Mito IBARAGI	257	2029	5.4	8.7	21.2	4.3
Osaka OSAKA	451	1596	2.4	3.8	5.3	2.4
Fukuoka FUKUOKA	450	1631	9.0	4.3	20.0	2.6
			URBAN ADULT DIET			
Feb. 1970						
Sapporo HOKKAIDO	332	1899	3.9	6.3	11.9	3.3
Niigata NIIGATA	550	4242	8.4	13.4	15.2	3.2
Fukui FUKUI	395	1567	3.3	5.3	8.4	3.4
Fukushima FUKUSHIMA	508	1526	13.0	7.7	25.6	5.0
Osaka OSAKA	560	1591	2.4	7.9	4.3	5.0
Fukuoka FUKUOKA	676	1755	4.0	8.3	5.9	4.7
			RURAL ADULT DIET			
Sapporo HOKKAIDO	428	1999	6.2	10.2	14.6	5.1
Niigata NIIGATA	695	3850	10.4	11.9	14.9	3.1
Fukui FUKUI	389	1533	6.2	7.1	16.0	4.6
Fukushima FUKUSHIMA	701	2504	12.1	4.9	17.3	2.0
Osaka OSAKA	598	1669	4.4	7.0	7.3	4.2
Fukuoka FUKUOKA	493	1611	2.4	3.8	4.8	2.4

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

Meteorogical Date

Gross Beta-radioactivity in Rain and Dry Fallout

(Japan Meteorological Agency)

Survey of gross beta-activity in rain and dry fallout has been conducted using the data from 13 stations of Japan Meteorological Agency shown in Figure 6.

The procedures of sampling and counting are same as those discribed on page 2 of the report No. 5 of this publication series.

The 11th nuclear test of the People's Republic of China was carried out on 14 October, 1970. It is believed that the test area is in the neighborhood of Lake Lop Nor (40°N, 90°E), about 4000 km west-northwest of Tokyo. The data of gross beta-radioactivity for 14-19 October, 1970 is shown in Table 8 and 9.

Abnormal microbarographic disturbances were also clearly observed at several stations. The data and the result are shown in table 10 and Figure 7, respectively.

It is estimated from the air mass trajectory shown in Figure 8 that the radioactive debris emitted into the tropospheve first passed in an altitude of 10 km (300 mb level) over the northern part of Japan one day after the explosion.

The levels of radioactivity in rain and dry fallout (collected near the ground) during 14–19 October, showed no significant departure from those normal conditions.

Figure 6. Fallout Observation Network of Japan Meteorological Agency

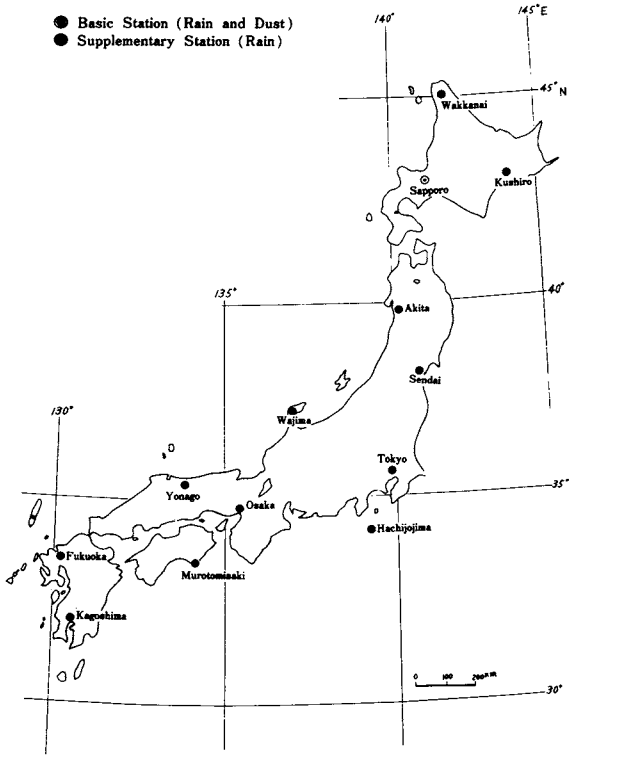


Table 8. Gross β-activity in Rain, Oct. 15 to 19, 1970.
Compiled by T. Nagai, T. Honda, H. Ueno
(Japan Meteorological Agency)

Upper row: Concentration (pCi/cc)
Lower row: Deposition (mCi/km^2)

Station \ Date	Oct. 1970 15	16	17	18	19
Wakkanai				0.1	
"	–	–	–	0.3	–
Sapporo				0.0	
"	–	–	–	0.0	–
Kushiro				0.1	0.0
"	–	–	–	0.2	0.0
Sendai			0.6		
"	–	–	0.1	–	–
Akita					
"	–	–	–	–	–
Tokyo	0.0		0.1	0.0	
"	0.0	–	1.0	0.0	–
Wajima					0.1
"	–	–	–	–	0.1
Hachijojima	0.0		0.0	0.0	
"	0.0	–	0.0	0.0	–
Osaka			0.0	0.0	
"	–	–	0.0	0.0	–
Yonago					0.1
"	–	–	–	–	0.2
Murotomisaki					
"	–	–	–	–	–
Fukuoka		0.1	0.0		
"	–	4.0	0.0	–	–
Kagosima			0.0	0.1	
"	–	–	0.0	0.3	–

Table 9. Gross β-activity in Dust, Oct. 14 to 19, 1970.
Compiled by T. Nagai, T. Honda, H. Ueno
(Japan Meteorological Agency)

(pCi/m²)

Station \ Date	Oct. 1970 14	15 15	16	17	18	19
Sapporo	0.5	–	0.3	0.3	0.1	0.2
Sendai	0.3	0.2	0.3	0.7	0.4	0.2
Tokyo	0.5	–	0.7	0.7	0.5	0.3
Osaka	0.5	0.5	1.7	1.2	0.5	1.0
Fukuoka	0.2	1.0	0.5	0.7	0.5	0.2

Table 10 The Microbarographic Disturbances due to the 11th Nuclear Test of The People's Republic of China, Oct. 14, 1970.
Compiled by T. Nagai, T. Honda, H. Ueno
(Japan Meteorological Agency)

Station			Time (G.M.T.)	Amplitude (mb)	Period (min)	Duration (min)
Wakkanai	(45°25'N	141°41'E)	11:02	0.2	2	–
Kushiro	(42°59'N	144°24'E)	11:19	0.2	3	20
Akita	(39°43'N	140°06'E)	11:07	0.1	3	27
Wajima	(37°23'N	136°54'E)	10:57	0.1	3	30
Tokyo	(35°41'N	139°46'E)	11:14	0.0	3	20
Yonago	(35°26'N	133°21'E)	10:49	0.1	2	18
Murotomisaki	(33°15'N	134°11'E)	–	–	–	–
Kagoshima	(31°34'N	13C°33'E)	10:43	0.4	4	42

Figure 7. Isochrones of the First Shock Wave
Test Site: the Neighborhood Lake Lop Nor(40 N, 90 E)
Time of Explosion: about 07:30, Oct. 14th, 1970 (G.M.T)

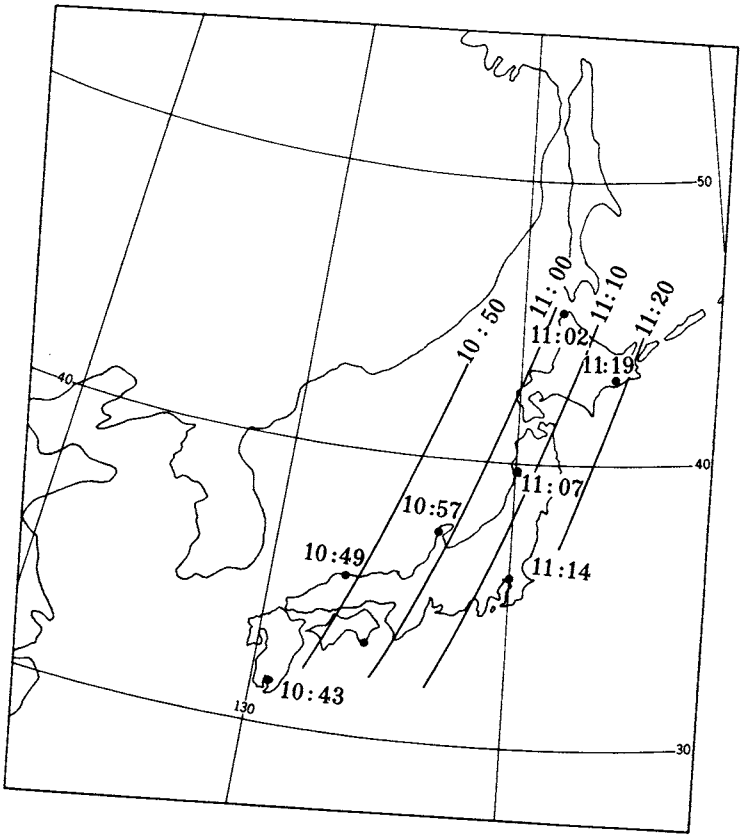
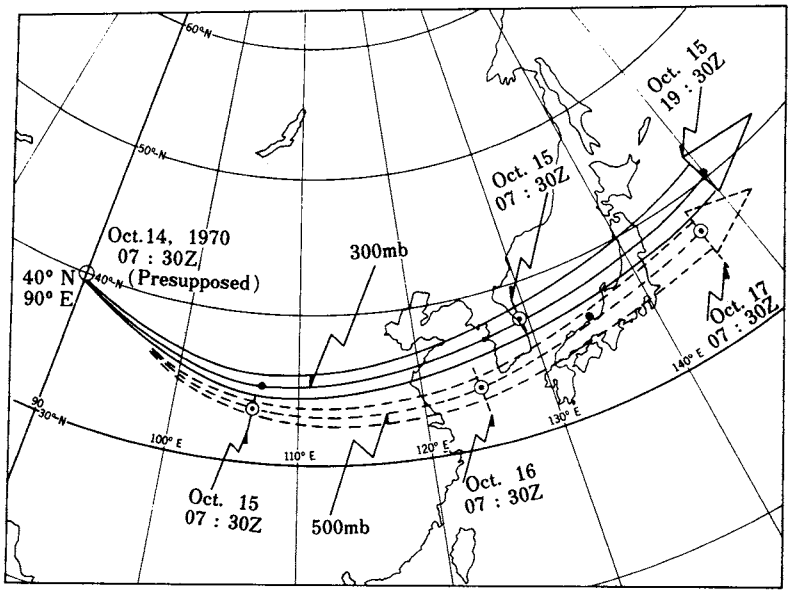


Figure 8. The Meteorological Trafectory at the Time when the II th Nuclear Test was carried out by the people's Republic of China



Gross Beta-radioactivity in Upper Air

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

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

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

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

Figure 9 shows three sampling areas of Japan.

As to the 11th nuclear test, aircraft detected little amount of radioactivity over three sampling areas of Japan, except the North area of Hokkaido, Tohoku on the day following the nuclear test. So it is assumed that the radioactive cloud passed fast over the North of Japan.

Results obtained is shown in Table 11.

Figure 10 shows the temporal variation of gross beta-activity in Chubu area at altitudes of 10 km and 6 km in upper air.

Figure 9. Three Sampling Area of Japan

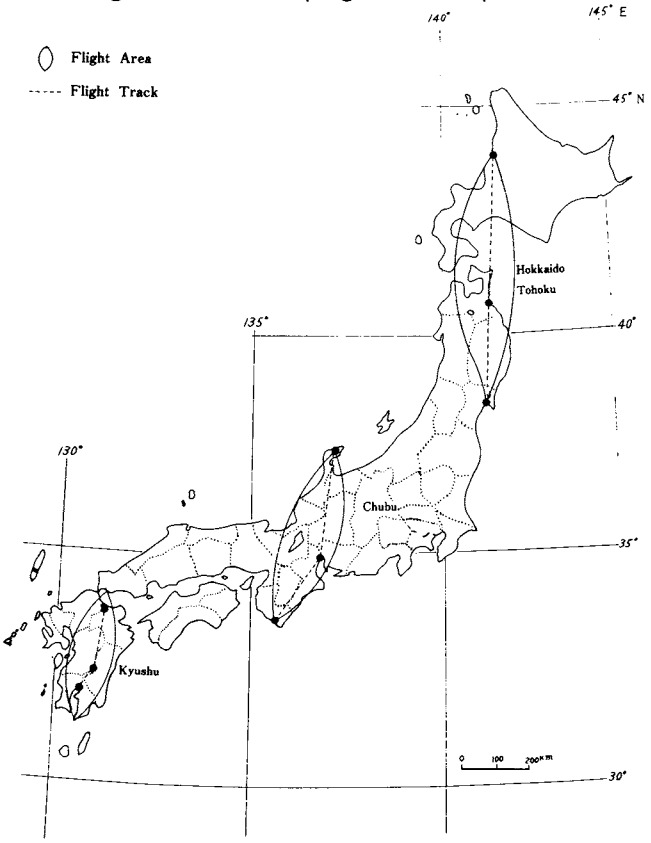


Table 11. Gross β-activity in Upper Air
–Oct. 15th to 16th, 1970–

By K. Kemmochi, T. Akimoto, T. Matsumura, K. Kitazawa
(Research and Development H.Q., Japan Defense Agency)

(PCi/m³)

Sky Area / Date	Hokkaido, Tohoku			Chubu		Kyushu	
	12,000m	10,000m	9,000m	10,000m	9,000m	10,000m	9,000m
Oct. 15th, 1970							
20:30							0.7±0.1
22:01	31.0±1.1						
Oct. 16th, 1970							
02:00		2.4±0.3					
02:25					0.4±0.1		
04:59					0.4±0.1		
06:00			0.6±0.3				
10:30				0.9±0.1			
12:05			0.5±0.1				

Figure 10. Temporal Variation of Gross β–activity in Upper Air