

and gamma-ray spectrum analysis (Fig. 4). Tritium in air is also collected by ethylene glycol with an efficiency close to 95% (3).

3. Water sample

Various kinds of water samples are generally analyzed for gross beta activity, and sometimes for ^{90}Sr and ^{137}Cs as shown in Table 2.

The $^{141}/^{144}\text{Ce}$ concentration in water samples after nuclear testings are shown in Table 3. The activation products from nuclear power plant No. 1 such as Mn, ^{59}Fe , ^{57}Co , ^{60}Co , ^{64}Cu , ^{65}Zn have not been detected so far. Tritium in drinking water and rainwater varied from 0.88 to 3.2 pCi/ml with a lower limit of detection about 300 pCi/liter(4).

4. Soil

Both surface (0~5 cm) and deep (10~25cm) soil samples are analyzed for gross beta activity (9~36 pCi/g), and for ^{137}Cs (1,218 pCi/kg) and ^{90}Sr (37.7~570.8 pCi/kg).

5. Vegetation

The gross beta activity of vegetation mainly comes from ^{40}K . The fission products such as ^{95}Nb , ^{95}Zr , ^{144}Ce , ^{103}Ru , etc. were also detected after nuclear testings at Lop Nor.

6. Food

TABLE 1. Results of background gamma monitoring from 1977 to 1979

Exposure Period	uR/hr					
	Exposure Area					
	Town and Cities		No.1 Power Plant		No.2 Power Plant	
	Range	Mean	Range	Mean	Range	Mean
1977	4.5-10	8.2	7.3-16.5	10.8		
1978	4.6-10.4	7.5	5.8-10.2	7.8	4.1-10.4	7.1
1979	3.0-12.1	7.9	*6.2-10.8	8.4	3.2-10.3	6.5

*Commercial operation in October 1, 1978

TABLE 2. Concentration of $^{141}/^{144}\text{Ce}$ in Water Samples

Samples	Dec 1976		Mar 1977	
	uCi/liter		uCi/liter	
Drink Water	96.5	54.5	52.8	50.2
Ground Water	63.8	54.8	57.5	55.4
River Water	122.8	61.8	B.K.	
Lake Water	77.1	52.3	B.K.	
Sea Water	112.4	44.9	B.K.	

B.K.: Background

Ten kinds of major food such as rice, pork, fish, egg, powdered milk, potatoes, chicken, duck, flour, and vegetables in Taiwan were analyzed for ^{90}Sr and ^{137}Cs (5,6). The results are listed in Table 4. The tea leaves from nuclear power plant No. 1 were also analyzed for ^{90}Sr and ^{137}Cs .

All data reported in this paper are in good agreement with previous investigations. The estimation of the population dose based on present data is insignificant.

Several new experimental techniques have been developed. For example, the TLD's for environmental monitoring which have been proved to be quite efficient after participating the international intercomparison program, the ion-exchange method for water sample treatment, the chemical analysis of soil samples, wet-ashing method for food samples, and the chemical procedures for activation product analysis in the effluents from the nuclear power plant. Relatively high activity from nuclear testing at Lop Nor during 1974-1979 is indicated with corresponding dates and sequence number of tests in the figures concerned.

TABLE 3. Radioactivity of Various Water Samples during 1974-1979

Sample	uCi/liter								
	Gross beta			^{90}Sr			^{137}Cs		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Drink Water	0.9	2.4	1.7	0.08	0.95	0.4	0.14	0.34	0.3
Ground Water	0.8	3.6	1.6	0.13	1.27	0.6	0.13	0.38	0.3
River Water	1.1	1.8	1.6	0.08	0.48	0.3	0.12	0.44	0.3
Lake Water	1.0	2.3	1.7	0.13	1.88	0.6	0.14	0.6	0.4
Sea Water	1.0	3.9	2.0	0.18	0.51	0.3	0.53	0.6	0.6

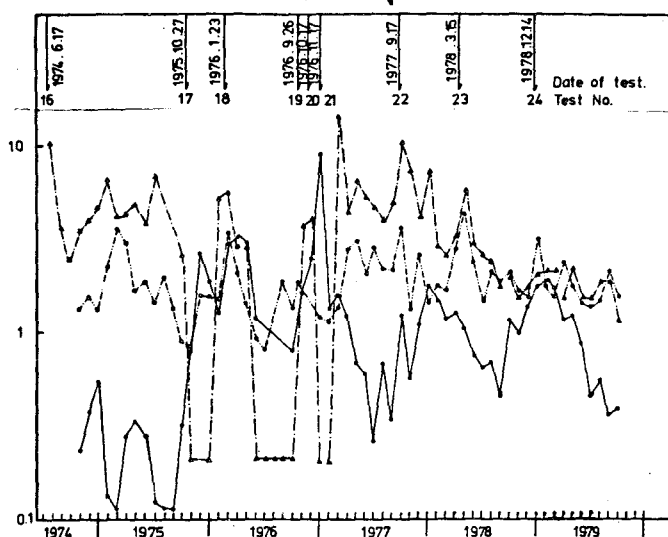


Figure 3. Monthly average beta activity of daily airborne particulates samples in Kaohsiung.

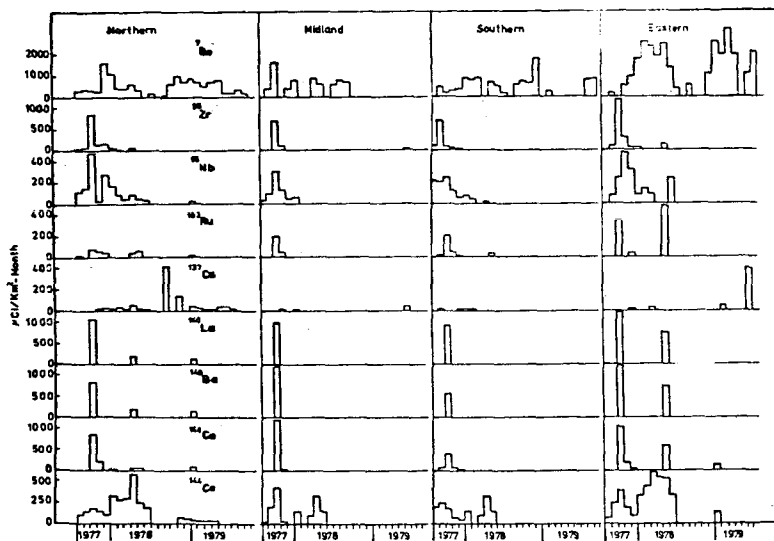


Figure 4. Concentration of fission products in airborne particles during 1977 to 1979.

TABLE 4. Concentration of Strontium 90 and Cesium 137 in ten important foodstuffs, and estimated total daily intake in the average diet.

Food	Personal consumption kg/year	% Ca k		⁹⁰ Sr pCi/kg yearly intake %		¹³⁷ Cs pCi/kg yearly intake %	
		Ca	k	pCi/kg		pCi/kg	
Rice	132.7	0.04	0.3	3.9	43.4	29.1	44.5
Vegetable	98.0	0.01	0.34	3.6	15.6	3.3	3.7
Pork	2.2	0.11	0.18	6.6	3.7	16.3	4.2
Fish	21.9	0.59	0.36	6.5	12.0	6.6	1.7
Eggs	9.5	0.05	0.30	2.7	2.1	2.1	0.2
Milk	9.4	1.29	0.90	19.5	15.4	65.1	42.1
Potato	8.9	0.09	0.15	2.6	1.9	11.8	1.2
Chicken	7.7	0.18	0.16	2.4	1.5	4.3	0.4
Wheat	5.1	0.02	0.26	5.1	2.2	22.4	1.3
Duck	3.6	0.15	0.15	6.9	2.1	15.8	0.6
yearly intake	320 kg	374 g	653 g	1191.7 pCi		8672.3 pCi	
daily intake	890 g	1.02 g	1.79 g	3.18 pCi/g.Ca		23.8 pCi/d	

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