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400227

November 21, 1960

Dr. I. E. Wallen
Aquatic Biologist
Environmental Sciences Branch
Division of Biology and Medicine
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Gene:

The composition of and results of radiochemical analyses of twenty-four hour rations of nine adult males at Rongelap Island in September 1959 are given in the attached tables. Determinations of Co^{60}, Zn^{65}, Cs^{137}, and Mn^{54} were made by gamma ray spectroscopy using a three inch solid sodium iodide crystal in conjunction with a 256 channel analyzer. Sr^{90} analyses were done by a combination of nitric acid precipitation and ion exchange procedures. Counting of the Y^{90} daughter was with a low level beta counter having a background of less than 1 c/m and an efficiency of 48%. Potassium determinations were made by flame spectrometry. Calcium analyses were made by a permanganate titration method and confirmed by flame spectrometry using an internal standard technique.

As was pointed out in a letter from Held to Seymour on September 13, 1958, caution must be used in collecting such daily rations to be reasonably sure that they are a true representation. Misunderstanding and a misquided desire to please on the part of some individual Rongelapese can easily lead to merely a collection of miscellaneous food items rather than actual daily rations of prepared food. Niel Morriss, Trust Territory Resident Agriculturalist at Rongelap Atoll, and Bwio Soap, former village secretary were invaluable in assisting in the collection of these samples. It was felt that a few samples which were witnessed to be composed of the items and portions actually being consumed were preferable to many samples of uncertain origin. Consequently, some samples proferred by individuals were discarded.

In spite of the care used there are obvious discrepancies, Sample #3, for example, appears to be ridiculously low in total amount of food consumed.

There can be little doubt that there must have been some "snacking" for which there is no accounting.

NMTB 7

The eating habits of the Rongelapese are irregular and it was impractical to follow each individual around throughout the day. Therefore, all of these samples should probably be considered as erring toward the low side for total consumption. However, there does appear to be a reasonable agreement with quantities listed by Murai (Nutrition Study in Micronesia, Atoll Research Bulletin, No. 27, 1953) from a study at Majuro Atoll. Catala (Report on the Gilbert Islands: Some Aspects of Human Ecology, Atoll Research Bulletin, No. 59, 1957) has pointed out the difficulties of obtaining quantitative data in these areas.

Dr. Chakravarti, who has been responsible for the chemical analyses, expects to complete futher analyses on these samples in the near future. It is hoped that he will have a report ready for publication early next year.

Sincerely,

Edward E. Held
Research Associate Professor

EEH:srl

P.S. Aliquots of the ash of these samples have been sent to Dr. Stanton Cohn at Brookhaven for interlaboratory check.

Composition of Food Rations Collected
at Rongelap Island September, 1959.
(Each sample is a 24 hr. ration)

Sample number	Contributor	Description of food items	Wet wt. grams	Total wt.dry
1	Berberin	a) Pandanus paste, boiled rice and baked fish(mixed)	253	374.68
		b) Partly baked bread dough with bully beef	252	
		c) Bully beef sandwiches	195	
2	Paul	a) Coconut meat (green)	30	175.85
		b) Pandanus "pie"	16	
		c) Baked fish	23	
		d) Sardines, canned	20	
		e) Boiled rice w/coconut milk	249	
3	No name	a) Breadfruit, baked	41	87.12
		b) Coconut and bread dough, baked	24	
		c) Bread	31	
		d) Bully beef	17	
		e) Ship's biscuit	13	
		f) Rice w/coconut milk, boiled	49	
4	Bwio	a) Coconut, ripe	72	321.69
		b) 1/2 Papaya	57	
		c) Rice and fish (mixed)	306	
		d) Bread, local (coconut milk, not saved)	81	
5	Atha	a) Rice and Fish mixed	243	203.16
		b) Bread, local	80	
		c) Rice	197	

Rpngelap food samples (continued)

Sample number	Contributor	Description of food items	Wet wt. grams	Total wt.dry
6	Mellelon	a) Breadfruit, baked	203	484.10
		b) Coconut w/baked dough	203	
		c) Fish, baked	126	
		d) Bread, local	75	
		e) Coconut, entire	50	
		f) Rice, boiled	291	
		g) Sardines, canned	154	
7	Menana	a) Pandanus Keys, raw	115	314.90
		b) Goatfish, baked	26	
		c) Sardines, canned	101	
		d) Rice, boiled	721	
8	Lisie	a) Fish, baked	155	440.50
		b) Bread, local	145	
		c) Bully beef	66	
		d) Sardines, canned	94	
		e) Rice, boiled	622	
9	Kaser	a) Rice and fish mixed	421	262.30
		b) Rice and fish mixed	64	

Radioisotopes and Potassium and Calcium in Food Rations Collected at Rongelap Island, September 1959.

Sample number	Co^{60} 10^{-5} µc	95% counting error	Zn^{65} 10^{-4} µc	95% counting error	Cs^{137} 10^{-4} µc	95% counting error	K grams	Sr^{90} 10^{-5} µc	95% counting error	µµc/gmCa	Error
1	5.9	2.0	0.67	0.49	100	1.0	0.175	14.2	1.18	497.0	41.4
2	4.2	2.0	*		11	0.40	0.193	12.9	1.27	1239.0	121.6
3	*		*		8.3	0.34	0.212	4.90	0.98	612.7	122.5
4	3.3	1.9	*		26	0.55	0.200	6.20	0.87	339.2	47.3
5	3.9	2.0	*		3.3	0.26	0.246	1.92	0.82	248.4	106.5
6	20.0	4.8	3.7	0.65	35	0.63	0.403	14.4	1.31	139.7	12.7
7	7.9	2.0	1.2	0.50	28	0.54	0.570	12.2	1.14	300.1	27.9
8	24.0	3.0	5.0	0.82	5.9	0.34	0.258	4.36	0.99	158.8	36.1
9	3.9	1.9	*		3.1	0.25	0.359	3.78	0.95	331.1	82.8

Each sample number represents one days ration for one adult male. Values given are per total ration.

*indicates values less than, or not different than background (see d/m/g tabulation).

Radioisotopes in Food Rations Collected at
Rongelap Island, September, 1959.

Sample number	Co^{60} d/m/g	Co^{60} 95% counting error	Zn^{65} d/m/g	Zn^{65} 95% counting error	Mn^{54} d/m/g	Mn^{54} 95% counting error	Cs^{137} d/m/g	Cs^{137} 95% counting error	Sr^{90} d/m/g	Sr^{90} 95% counting error
1	0.35	0.12	0.40	0.29	-0.04	0.09	61.4	0.60	0.84	0.07
2	0.52	0.25	-1.03	0.53	0.11	0.20	14.1	0.50	1.63	0.16
3	0.12	0.52	-2.40	1.0	-0.49	0.39	21.1	0.87	1.25	0.25
4	0.23	0.13	-0.76	0.28	-0.07	0.10	17.6	0.38	0.43	0.06
5	0.43	0.22	-0.67	0.45	-0.11	0.16	3.6	0.28	0.21	0.09
6	0.90	0.13	1.70	0.30	-0.23	0.09	16.1	0.29	0.66	0.06
7	0.56	0.14	0.87	0.35	-0.19	0.10	20.0	0.38	0.86	0.08
8	1.20	0.15	2.50	0.41	-0.21	0.11	3.0	0.17	0.22	0.05
9	0.33	0.16	0.05	0.36	-0.003	0.13	2.6	0.21	0.32	0.08

BATE NUMBER

5002244

NOT USED