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Dr. J. H. Harley and Mr. I. B. Whitney DATE: March 27, 1956

FROM: E. P. Hardy

SUBJECT: NRDL PACIFIC SURVEY - 1956 URINE SAMPLES

On March 22, 1956 HASL received 24 urine samples sent by Dr. S. H. Cohn of NRDL*. Volumes ranged from 135 ml to 1 liter so it was assumed that these samples did not all represent twenty-four hour collections as previously supposed.

The total urine sample received was wet ashed using 70% HNO_3 and H_2O_2 added finally to hasten removal of organic material. The remaining salts were dissolved and diluted to a specific volume from which a known aliquot (equivalent to 25 ml of urine) was taken and evaporated to dryness in a one inch glass planchet. This residue was beta counted for 60 minutes and standardized against 200 mg of K_2CO_3 prepared and mounted in a similar manner.

All data obtained to date are shown in Table 1 and summarized by island in Table 2. The highest value obtained from a pooled control sample collected at HASL was used for comparison.

The following conclusions are tentatively drawn on the basis of these total activity results:

1. Total activity of these urine samples varies from ~0.5 to 2 times a presumed normal control.

2. The average and pooled data of samples collected at both Uterik and Likiep are higher than the control. In addition, the average total activity of urine samples collected at Likiep is higher than Uterik.

3. The individual data and average results of urines collected on Majuro are significantly lower than results from Uterik or Likiep and below control and expected values as well.

Moreover, it may be noted that per 25 ml of urine the residue weights averaged 370 mg with a spread of 135 mg. There is no correlation whatsoever among age, activity, and residue weight.

* Letter of March 16, 1956

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It will now be necessary to decide whether values above the control represent fission product body uptake or variation in natural activity due to dietary and metabolic differences. Consequently analyses for Sr-90 are being held up until an agreement is reached.

Table 1

HASL #	NRDL #	Name	Age	Total Activity d/m/liter
Uterik 2-11-56				
3399	6	Tonika	4	4800 ± 240
3400	1	Milton	2	3600 ± 280
3401	4	Izao	12	3360 ± 320
3402	9	Kramer	27	3320 ± 300
3403	10	Elas	22	7600 ± 240
3404	7	Deodor	5	4400 ± 280
3405	2	Allick	16	8200 ± 360
3406	3	Kai	6	2200 ± 320
3407	8	Jamul	16	3480 ± 240
3408	11	pooled		7600 ± 320
Likiep 2-11-56				
3409	4	Likimeto		4400 ± 320
3410	1	Matilna	3	4400 ± 320
3411	8	Alma	8	4800 ± 320
3412	9	Nele	1	4000 ± 240
3413	5	Nerok	26	4800 ± 320
3414	3	Jodeñ	13	9800 ± 360
3415	2	Klara	35	2920 ± 280
3416	7	Wine	45	8800 ± 320
3417	10	pooled		9200 ± 360
Majuro 2-29-56				
3418	9	Billiet	24	2600 ± 240
3419	40	John	31	2400 ± 240
3420	36	Jekras	8	1160 ± 200
3421	26	Iroji	13	2200 ± 240
3422	76	Norrio	11	1360 ± 280

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TABLE 2

Island	Total Activity - - - - - d/m/liter Range	Average	Spread	Pool	% Above Control
Utirik	2200-8400	4830	2230	7600	40
Likiep	2760-9800	6000	2820	9200	55
Rongelap	1160-3040	2030	773	none	0
Pooled Control	4000-4400	4250	200		
Individual Control	3120				
Expected	2600-3500*				

* Lange - Handbook of Chemistry
Assuming that all the natural radioactivity in urine is derived from K-40, one would expect 2600-3500 d/m/24 hour sample.

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MARSHALL ISLANDS URINES

Received 4/7/54

NAME	SAMPLE NO.	d/m/l 4/9/54
Abia	325- 1	620
Bejja	- 7	2200
Billet	- 9	2100
Boas	-10	1700
Antak	-11	1900
Almira	-12	840
Bekine	-13	1600
Buje	-14	1400
Bol	-16	880
Elen	-18	4000
Ere	-20	3800
Etri	-22	2500
Iroje	-26	1700
Jabwe	-27	4400
Jabakia	-28	600
Jaukein	-29	600
Janet	-30	5600
Janor	-31	920
Jeban	-32	4000
Jerlock	-33	2500
Jera	-34	1300
Jerman	-35	2100
Jerreas	-36	2200
Jia	-37	2600
John	-40	2600
Jojia	-41	560
Jueon	-43	640
Kaban	-44	320
Kajim	-45	1800
Kanene	-46	720
Katar	-47	3100
Kiosan	-49	600
Kotaeo	-50	600
Lamon	-51	600
Lanjar	-52	2000
Lejon	-53	720
Leman	-55	3900
Lewetak	-56	5400
Leoar	-57	3000
Lewojje	-58	2200
Lisa	-59	430

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