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TO : Dr. John C. Bugher, M.D., Director  
Division of Biology and Medicine

DATE: May 24, 1954

FROM : Gordon M. Dunning, Health Physicist *GMD*  
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410217

SUBJECT: ESTIMATED SR<sup>90</sup> CONTENT IN SOILS FROM THE PACIFIC ISLANDS

SYMBOL: BLBP:GMD

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The attached sheet gives a summary of the data on the Sr<sup>89</sup>-Sr<sup>90</sup> and Sr<sup>90</sup> for soils taken from the Pacific Islands indicated.

The Sr<sup>89</sup>-Sr<sup>90</sup> activity was measured and then the Sr<sup>90</sup> activity was estimated from this by the use of the Hunter and Ballou tables. Likewise, the total activity was measured and the activity of Sr<sup>89</sup>-Sr<sup>90</sup> was estimated from this by the use of Hunter and Ballou tables. One may thus compare the Sr<sup>89</sup>-Sr<sup>90</sup> activity as measured with the estimated amounts calculated from the total activity.

The highest Sr<sup>90</sup> value was 0.5 µc/sq.ft. on the island of Naen. The highest Sr<sup>90</sup> value on Rongelap Island was 1.6x10<sup>-2</sup> µc/sq.ft. It has been estimated\* that if one were to exist entirely on plant life grown in soils with 1,000 lbs. of calcium per acre and containing 45 mc/acre of Sr<sup>90</sup> (about 1 µc/sq.ft.), over a period of years there would be deposited a body burden of 1 µc of Sr<sup>90</sup>. In the case of these soils the following points should be indicated:

- (1) Only a small fraction of the natives' food supply comes from plant life grown on the islands. (Most of their diet consists of fish and food supplies purchased from visiting ships.)
- (2) The calcium content is significantly greater than 1,000 lbs. per acre which will correspondingly reduce the Sr<sup>90</sup> uptake.
- (3) Weathering may be expected to eliminate a small amount of the activity.

These data would indicate that the Sr<sup>90</sup> activity of the soils would not be a deterrent to the return of the natives to their home islands.

\*Private communication from Dr. L.A. Dean, U.S. Dept. of Agriculture, to Dr. Gordon Dunning, dtd 4/23/54.

NON-CCRP

CLASSIFICATION CANCELLED

BY AUTHORITY OF Topic 2.2, EGUF-3

BY *Jane May* DATE 5/14/81

BY *William Brown* DATE 5-15-81

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ESTIMATE OF SR<sup>90</sup> IN SOILS OF PACIFIC ISLANDS

Location	Sr <sup>90</sup> (nc/ft <sup>2</sup> ) (Estimated from Sr <sup>89</sup> -Sr <sup>90</sup> Activity)	Sr <sup>89</sup> -Sr <sup>90</sup> (nc/ft <sup>2</sup> ) (Measured)	Total Activity (uc/ft <sup>2</sup> ) (Measured)	Sr <sup>89</sup> -Sr <sup>90</sup> (nc/ft <sup>2</sup> ) (Estimated from Total Activity)
	Likiep*	1.3x10 <sup>-4</sup>	8.7x10 <sup>-3</sup>	1.2x10 <sup>-1</sup>
Jemo	1.8x10 <sup>-4</sup>	1.2x10 <sup>-2</sup>	3.0x10 <sup>-1</sup>	3.0x10 <sup>-2</sup>
Ailuk	5.7x10 <sup>-4</sup>	3.8x10 <sup>-2</sup>	1.0	1.0x10 <sup>-1</sup>
Mejuit	4.2x10 <sup>-4</sup>	2.8x10 <sup>-2</sup>	1.1	1.1x10 <sup>-1</sup>
Orned	1.6x10 <sup>-4</sup>	1.1x10 <sup>-2</sup>	3.2x10 <sup>-1</sup>	3.2x10 <sup>-2</sup>
Kaven	7.2x10 <sup>-5</sup>	4.8x10 <sup>-3</sup>	1.6x10 <sup>-1</sup>	1.6x10 <sup>-2</sup>
Wotho	2.0x10 <sup>-5</sup>	1.3x10 <sup>-3</sup>	7.8x10 <sup>-2</sup>	7.8x10 <sup>-3</sup>
Rongelap (Northern)	1.6x10 <sup>-2</sup>	1.08	62.0	6.2
(Central)	8.3x10 <sup>-3</sup>	5.5x10 <sup>-1</sup>	40.0	4.0
(1 mi. N. Village)	7.4x10 <sup>-3</sup>	5.3x10 <sup>-1</sup>	5.0	5.0x10 <sup>-1</sup>
(So. Cistern)	1.4x10 <sup>-2</sup>	9.2x10 <sup>-1</sup>	4.5	4.5x10 <sup>-1</sup>
Eriirippu*	3.0x10 <sup>-1</sup>	12.5	230.0	23.0
Eniwetok	1.8x10 <sup>-2</sup>	1.2	50.0	5.0
Kabelle	7.4x10 <sup>-2</sup>	4.9	200.0	20.0
Utirik	1.5x10 <sup>-3</sup>	9.8x10 <sup>-2</sup>	53.0	5.3
Bikar	6.6x10 <sup>-3</sup>	4.4x10 <sup>-1</sup>	3.3	3.3x10 <sup>-1</sup>
Eniwetak	9.9x10 <sup>-3</sup>	6.6x10 <sup>-1</sup>	8.0	8.0x10 <sup>-1</sup>
Sifo	1.4x10 <sup>-3</sup>	9.6x10 <sup>-2</sup>	6.1x10 <sup>-1</sup>	6.1x10 <sup>-2</sup>
Naen**	5.0x10 <sup>-1</sup>			

\*All data as of May 5, 1954, except island of Eriirippu where date is May 20.  
 \*\*Estimated from comparison with dose-rate survey readings with Eriirippu. Highest fallout on any island measured.

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