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ESTIMATED Sr⁹⁰ CONTENT IN SOILS FROM THE PACIFIC ISLANDS

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The attached sheet gives a summary of the data on the Sr⁸⁹-Sr⁹⁰ and Sr⁹⁰ for soils taken from the Pacific Islands indicated.

The Sr⁸⁹-Sr⁹⁰ activity was measured and then the Sr⁹⁰ activity was estimated from this by the use of the Hunter and Ballou tables. Likewise, the total activity was measured and the activity of Sr⁸⁹-Sr⁹⁰ was estimated from this by the use of Hunter and Ballou tables. One may thus compare the Sr⁸⁹-Sr⁹⁰ activity as measured with the estimated amounts calculated from the total activity.

The highest Sr⁹⁰ value was 0.5 μ c/sq.ft. on the island of Maen. The highest Sr⁹⁰ value on Rongelap Island was 1.6x10⁻² μ c/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 μ c/acre of Sr⁹⁰ (about 1 μ c/sq.ft.), over a period of years there would be deposited a body burden of 1 μ c of Sr⁹⁰. 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 Sr⁹⁰ uptake.
- (3) Weathering may be expected to eliminate a small amount of the activity.

These data would indicate that the Sr⁹⁰ 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.

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MRA 7-3 Analysis of
Soil From Tests - 1954



ESTIMATE OF SR⁹⁰ IN SOILS OF PACIFIC ISLANDS

<u>Location</u>	<u>Sr⁹⁰</u> <u>(nc/ft²)</u> <u>(Estimated</u> <u>from</u> <u>Sr⁸⁹-Sr⁹⁰</u> <u>Activity)</u>	<u>Sr⁸⁹-Sr⁹⁰</u> <u>(nc/ft²)</u> <u>(Measured)</u>	<u>Total</u> <u>Activity</u> <u>(nc/ft²)</u> <u>(Measured)</u>	<u>Sr⁸⁹-Sr⁹⁰</u> <u>(nc/ft²)</u> <u>(Estimated</u> <u>from</u> <u>Total</u> <u>Activity)</u>
Likiep*	1.3x10 ⁻⁴	3.7x10 ⁻³	1.2x10 ⁻¹	1.2x10 ⁻²
Jeno	1.8x10 ⁻⁴	1.2x10 ⁻²	3.0x10 ⁻¹	3.0x10 ⁻²
Ailuk	5.7x10 ⁻⁴	3.8x10 ⁻²	1.0	1.0x10 ⁻¹
Mejit	4.2x10 ⁻⁴	2.8x10 ⁻²	1.1	1.1x10 ⁻¹
Orned	1.6x10 ⁻⁴	1.1x10 ⁻²	3.2x10 ⁻¹	3.2x10 ⁻²
Kaven	7.2x10 ⁻⁵	4.8x10 ⁻³	1.6x10 ⁻¹	1.6x10 ⁻²
Kotho	2.0x10 ⁻⁵	1.3x10 ⁻³	7.8x10 ⁻²	7.8x10 ⁻³
Rongelap (North side)	1.6x10 ⁻²	1.08	62.0	6.2
(Central)	3.3x10 ⁻³	5.5x10 ⁻¹	10.0	4.0
(1 mi. N. Village)	7.4x10 ⁻³	5.3x10 ⁻¹	5.0	5.0x10 ⁻¹
(So. Eastern)	1.4x10 ⁻²	9.2x10 ⁻¹	4.5	4.5x10 ⁻¹
Friihippu*	3.0x10 ⁻¹	12.5	230.0	23.0
Faiwetok	1.8x10 ⁻²	1.2	50.0	5.0
Kabelle	7.4x10 ⁻²	4.9	200.0	20.0
Utirik	1.5x10 ⁻³	9.8x10 ⁻²	53.0	5.3
Bikar	6.6x10 ⁻³	4.4x10 ⁻¹	3.3	3.3x10 ⁻¹
Faiwetak	9.9x10 ⁻³	6.6x10 ⁻¹	8.0	8.0x10 ⁻¹
Sifo	1.4x10 ⁻³	9.6x10 ⁻²	6.1x10 ⁻¹	6.1x10 ⁻²
Naen**	5.0x10 ⁻¹			

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

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