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REEVALUATION OF ASSESSMENT OF RADIATION HEALTH EFFECTS OF THE RESETTLEMENT OF ENEWETAK ATOLL

STATEMENT ON BEHALF OF

THE PEOPLE OF ENEWETAK

to

SUBCOMMITTEE ON INTERIOR AND RELATED AGENCIES

by

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we have examined these changes and revised our numerical health effects estimates for the resettlement of Enewetak Atoll accordingly. In summary, though there are increases in both the dose estimates and the cancer risk coefficients, they are relatively small. The resulting changes in our numerical health effects estimates in no way affect our earlier conclusions regarding the safety of the Enewetak People upon return.

Radiation Doses. The refined dose estimates given in "Reassessment of Potential Radiological Doses for Residents

mrem per year to a revised estimate of 76 mrem per year (page 5). For the case of a child born eight years after the return to Enjebi, the situation expected to cause the largest risk of genetic effects, the former calculated 4.9 rem 30 year whole body dose is revised to 6.1 rem, or from about 163 to about 204 mrem per year.

Cancer Risk Coefficients. The 1980 BEIR III Report contains substantially revised cancer risk estimates. We have incorporated these in our reevaluation. Thus the coefficients

given in Table 1 of our 1979 Assessment (page 30) for the linear-quadratic dose-response model become 2.81 and 7.70 for the absolute and relative risk projection models and those for the linear dose response model become 6.58 and 18.19 under the absolute and the relative projections respectively. These are not large changes (indeed one constitutes a small decrease), but the largest is roughly two fold.

Genetic Risk Estimates. The dose estimate revisions make very little difference in the numerical genetic effects estimates given in our 1979 Assessment (page 25). For example, the first generation increased risk estimate upper bound estimate is changed from 177 to 218 cases per million live births or, more meanfully perhaps, from about 0.08 to about 0.1 cases among the roughly 49 cases expected from other causes in the next Enewetak generation if the population just replaces itself. Similarly, the absolute upper limit of credible risk of genetic ill health (page 26) for a child born on Enjebi eight years from now who has a child at age 30 is increased only from roughly 3 to 4.5 chances in 10,000, which must still be compared with the roughly one chance in ten normal risk, a very small increment indeed.

Cancer Risk Estimates. The effect of the newer dose and cancer risk coefficients is also small. A comparison of the new with the old estimates is shown as Table I. It

may be seen that the earlier upper bound estimate for the people returning to the souther islands of 0.05 added cancers above the 41 cases expected from other causes (page 30) is increased only to 0.09 added cases. Similarly, the upper bound estimate for the people returning to Enjebi of 0.66 case added to the normally expected 27 cases is changed to 0.99 case. We emphasize, however, that these are upper bound estimates, that the actual risk is probably smaller, and may actually be zero.

Conclusion. We have reexamined our earlier Enewetak health effects estimates in the light of more recent dose and cancer risk coefficient estimates, find the risks still small. We note that our revised estimates remain in remarkably good agreement with those provided by the DOE. We still conclude that it is entirely possible that the radiation exposures of the Enewetak people resulting from return of the dri-Enewetak to the southern islands and the dri-Enjebi to their home "will never result in even a single case of disease among either the returning population of their descendents."

Table 1. Comparison of Pertinent 1979 and 1981 Whole Body Dose Estimates

		Dose (rem)		Average Dose (mrem/yr)	
		30 yr.	50 yr.	30 yr.	50 yr.
Southern Islands	New	0.38	0.55	13	11
	Old	0.23	0.33	8	7
Enjebi-Northern Islands	New	6.8	10.1	226	201
	Old	5.6	8.0	186	159
Average (total population)	New	2.9	4.3	98	87
	Old	2.4	3.4	79	68

Table 2. Comparison of No. of added Cancer Deaths Due to Lifetime Exposure (50 years) - Enewetak Atoll Linear-Quadratic (best) and Linear (Highest) Models

Group		Absolute Risk		Relative Risk	
		LQ	Lin	LQ	Lin
Southern Island	New	.02	.03	.04	.09
	Old	.01	.02	.01	.04
Enjebi-Northern Islands	New	.15	.36	.42	.99
	Old	.09	.30	.17	.62
Total Group	New	.17	.39	.46	1.08
	Old	.10	.32	.18	.66

REPOSITORY PNNL

COLLECTION Marshall Islands

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Reviewed by R Schuetz Date 5/1/97