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MEDICAL DEPARTMENT

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403168

November 21, 1975

Dr. James L. Liverman
Assistant Administrator for Environmental Safety
Energy Research and Development Administration
Washington, D.C. 20545

Dear Jim:

The purpose of this letter is to acquaint you with a change in our conclusion regarding radiation etiology of thyroid cancer in the Marshallese population of Utirik who had been exposed to low doses of radiation from fallout. In 1969 one of the Utirik women had a thyroid tumor removed which was malignant. It was believed that this one case could well have been a natural occurrence and since no nodules had been detected in the Utirik children and only a normal incidence of benign nodules had developed in the adults I had advised the Congress of Micronesia, in response to questions submitted, that it was unlikely that any of the thyroid abnormalities noted in the Utirik population (158 people) were related to radiation exposure. As you know the subject of additional compensation for the exposed Marshallese is about to come up before our Congress. The Department of Interior is handling this matter. Of course the Congress of Micronesia is pushing for passage of such a bill and the questions asked me concerning various aspects of our medical findings were related to this.

Last month another thyroid tumor was removed from a 25 year old female exposed on Utirik at 4 years of age, the first tumor to be detected in the younger age group of that population. The diagnosis on this tumor has been controversial among nine outstanding thyroid pathologists - three favoring a diagnosis of cancer, two atypical benign adenoma and four are undecided but willing to call it a premalignant lesion or cancer-in-situ. We have decided to call it cancer-in-situ and for statistical purposes classify it as cancer.

In order to obtain advice on chances that these two cancers in the Utirik group were related to their radiation exposure I visited Drs. Brian MacMahon and George B. Hutchison, at the School of Public Health at Harvard Medical School for review of the Marshallese data. Both of these men are experts in population statistics. They concluded that the "occurrence of 2 cases by chance is extremely unlikely". A summary of their conclusions is attached.

cc: - J. Emiliette

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Dr. James L. Liverman November 21, 1975

Unless you have any objections, I will write to the Department of Interior (Office of Territories) summarizing the above information. I will also send a copy to the Congress of Micronesia. These facts probably should be considered by them in their presentation of the compensation bill to our Congress.

Sincerely,

Robert A. Conard, M.D.

RAC:im
Encs.

Nov. 20, 1975

In the population of Utirik (158 persons, all ages) followed for 21 years, the accumulated person-years of observation are estimated at 3140. In such a group, expection of thyroid cancer would be as follows:

(1) Based on an average for all registries listed in "Cancer Incidence on Five Continents" (2.5/100,000 per year):

.08 cases, upper 95% confidence limit .66

(2) Based on incidence rates in the Marshall Islands, (1952-1962), excluding cases in exposed individuals (2.0/100,000 per year):

.06 cases, upper 95% confidence limit .54

(3) Based on estimates of the risk per rad thyroid dose per year observed in Rongelap and Ailingnae combined (3.9/1,000,000/ rad/year, thyroid dose 50 rads, 157,000 person-rad-years):

.61 cases, upper 95% confidence limit 2.17

Conclusions:

(1) The occurrence of even 1 case of thyroid cancer in Utirik is unlikely to be due to chance at conventional levels of statistical significance - if the rates do not exceed normal population rates. The occurrence of 2 cases by chance is extremely unlikely.

(2) The observed number of thyroid cancers is higher than would be expected on the basis of experience in the exposed populations of Rongelap and Ailingnae, but does not exceed the upper 95% confidence limit of the expected value.

Caveats:

(1) In computing expected values, no account has been taken of age and sex differences between populations. The incorporation of adjustments for these factors is unlikely to change the above conclusions.

(2) The above calculations have ignored the possibility that some unknown proportion of person-years of observation are irrelevant becuase of the latent period between exposure and detection of cancer. Subtraction of these person years would increase the difference between observed and expected values derived from non-exposed populations.

(3) It should be borne in mind that the Marshallese have been more carefully observed for thyroid disease than the general populations from which expected values have been derived.

(4) It is curious that the Utirik population evidences no increase in benign thyroid lesions relative to the unexposed population of Rongelap.

Dr. George B. Hutchison

Dr. Brian MacMahon