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August 11, 1980

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W. J. BAIR

Note to:

- R. Clusen, ASEV
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- J. Blair, D/HHAD
- T. McCraw, OHER
- S. Gottlieb, OGC
- J. Deal, OES
- R. Ray, NVOO
- V. Bond, BNL
- E. Cronkite, BNL
- H. Pratt, BNL
- W. Robison, LLL
- W. Bair, PNL ←

Subject: Medical Opinion Provided to Copaken and the Government
of the Marshall Islands

Mr. Copaken and Mr. deBrum submitted the attached at a meeting at the Department of Interior on October 6 (which I did not attend) as evidence in support of their position that radiation-related diseases are prevalent throughout the northern Marshall Islands. Presumably, Dr. Merliss was requested to examine the population on Wotje Atoll; although, with a single reference to Utirik, atolls are not named in the letter. The point of Mr. Copaken and Mr. deBrum was that problems exist beyond Likiep, that since the Department of Energy has not sent physicians they have hired on their own, and that past information is questionable.

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Bruce W. Wachholz, Ph.D.
EV/OHER

Attachment

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Reviewed by DJ Kloos Date 5/1/97

REPOSITORY P.N.N.L.

COLLECTION Marshall Islands

BOX No. 5687

FOLDER Marshall Islands Oct.-Aug 1980

time. In preparation for
six months at UCLA, taking courses in radioactive physics
and radiation in general. I used radioisotopes for the
diagnosis and treatment of thyroid disorders up until
about five years ago, when space became crowded and the
large scanner and the devotion of a room in my office was

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on their islands. Since the populations on the islands varied from two hundred to more, often, particularly in the smaller islands, the individuals who spoke to me where able to give me a pretty fair idea of the number of thyroid tumors and visual difficulties that appeared on

able epidemic of thyroid tumors in the Marshall Islands, -- to my knowledge a singular epidemic since I have never seen its like before, -- starting about fifteen years or so after the onset of the atomic explosions, and continuing to the present. Some of the victims apparently were in their teens or pre-teens during the explosions and were most characteristically female but some of the victims were probably not yet born at the time of the explosion, although I do not have such a concise chronology that I can say this with absolute certainty. I recall seeing one patient young enough so that it would be hardly likely that she would have been born during the explosions.

The thyroidectomy scars that I saw on these patients were large scars, and for the most part it seems to me that the entire thyroid had been removed. This was borne

out both by palpation of the glands of some of these people, and also their dose of thyroid replacement drugs. Since some who had run out of thyroid replacement medication clinically appeared thryroprivic therefore I feel usually the entire thyroid was removed, a type of surgery commonly performed for thyroid cancer and not a simple benign adenoma. However I understand from several sources that the Brookhaven Institute under the name of Dr. Conard and his associates reports that in the Marshall Islanders there are only very few cancers of the thyroid found, but that almost all of the lesions of the thyroid were benign adenomas. This creates a conflict in my mind, since of the patients, perhaps eighteen to twenty, who had demonstrated to me thyroid scars, one of them was identified histologically as a papillary adenocarcinoma of the thyroid, (in Guam) and this in a relatively young man; and in case of Cement John, he presented an unduly hard nodule in the lower portion of one of the thyroid lobes, -- so hard, and so well set apart from the thyroid tissue itself, that I fear this also might be a carcinoma. That radiation would produce so many benign adenomas and so relatively few carcinomas as I am led indirectly to believe is difficult for me to accept. I should, were I involved in further study, like to see sections of all the thyroids removed. One should know that there readily arises an honest difference of opinion that occurs between pathologists as to what constitutes malignancy in thyroid tumors and microscopic re-evaluation will be useful. A second opinion based on microscopic re-evaluation of the tissue is justified by the very high incidence of benign tumors compared with malignant tumors, in face of the known effects of radiation in producing malignancy.

There appears to be little doubt that the tumors, benign or malignant, are radiation-induced. There are just too many of them to be anything else. Otherwise one would have to postulate that the Marshallese had a remarkably high incidence racially of tumors of the thyroid, this existing before 1946, and the old people I spoke to denied this. They denied that prior to the bombs there was any particular epidemic of lumps in the neck. I cannot therefore accept the belief that the Marshall Islanders simply by virtue of their heredity have a tendency toward thyroid tumors.

The other thing that struck me was the frequency of

visual difficulties. I am not an ophthalmologist, and brought no instruments to visualize the lenses of these people's eyes. However, I learned that on one island about fifty per cent of the population is losing its vision. This does not come to me from one informant, but comes to me from three or four informants. One informant actually said that most of the adults were losing their vision. Sometimes it was occurring in children. This again does not seem to be concomitant with the blast or follow shortly on it. One would expect the cataract changes sooner if it was due to looking directly at the blasts, and I would not expect it in individuals unborn at the time of the blasts. This appears to be perhaps one of the most disabling disabilities on the island of Utrik, and if not for the apparent willingness of the island to take care of its own there would be many people on this island suffering by reason of their dimming sight. In a colder, crueler society these people would not be able to survive.

The frequency of eye problems is complicated by also the notable frequency of diabetes. Diabetes is an adequate cause of cataracts, and older diabetics may develop cataracts. However I asked very carefully of those patients whom I saw with visual difficulties, -- I assume they had had cataracts some had been operated on and had cataract removal -- whether they were diabetic and I understand that while several were, just as many were not, and the diabetic explanation for all of the cataracts and loss of vision does not seem credible. Again this seems to be a radiation effect.

As another radiation effect there was a period of time when there were an unusual number of stillbirths or the birth of monstrosities. I have heard this called the year of the animal, although I understand this phrase to be offensive to those women who bore such offspring and I heard the particular phrase only from men and not commonly used. It was the time when children were born with incompletely formed bodies, incompletely formed arms or legs, or deformed heads. This occurred late, and not in the nine months after a near-by explosion when one would expect radiation effects. Moreover it occurred in islands distant enough so that direct radiation effects governed

by the universe square ration rule, emanating immediately from the bomb would be highly unlikely.

I think the ill effects still persisting on these islands is not only due to soil contamination but is also due to entry of the radioactive elements with a longer half life into the food, where it has been biologically concentrated, and is eaten by the people. Whether the material that contains the radioisotopes is in one particular vegetable or several or whether it is in the fish or birds, I simply do not know. One would think, that if the lagoon fish were involved, the food-chain exposure would involve only a few islands since I am told that lagoon fish usually stay in their lagoon. If the large fish on the seaside that swim between atolls are involved and carry radioactivity in their flesh, these fish also being eaten by the islanders, one would expect a wider diffusion of the effects of the radioactivity, -- which is what has happened. There certainly would be diffusion by birds and actual transfer from one atoll to another of radioactive material in the excrement of birds flying between the attols.

The wide diffusion of radioactive effects among the islands of the Marshalls, strongly suggests entry into the food chain with transportation between islands. This is as yet only an opinion. Yet otherwise one must assume that the fallout just simply was so high, and has spread so far beyond that estimated by our finest nuclear scientists that distant islands and distant atolls in the Marshalls were involved, bringing about the radiation effects that I have described.

To my knowledge, two cases of leukemia were found, one in a high government officer, and the other in a boy. There may be others. I am suspicious also that radiation plays a part here also because of the frequency of leukemia in the Nagasaki-Hiroshima survivors.

I think that these three: the tumors of the thyroid

powdery fallout after the explosion called Bravo, which
was effected by metereologic or inadvertence. There were

MISCALCULATION

point came at which the arrowroot has almost been lost on some of the islands and no longer serves as a staple in the diet. The Marshallese describe to me the tubers shrinking to two to three on a bush, and then to small tubers, and then to the plant just not growing at all, or growing in a deformed manner. Similar effects occurred in the coconut trees. The tops of the coconut trees turned red or brown after the blasts, and many coconut trees have not borne as well since. The breadfruit trees have borne smaller fruit and often deformed fruit. Some of the trees themselves have become deformed.

I am also struck by the high incidence of hypertension in the people of the Marshall Islands. The incidence of hypertension in the average white American male goes up to about five per cent depending on age. The frequency of hypertension however among the Marshallese far outnumbers that, and judging from the hospital records that I looked

into large cages where they are free to move about, there is no particular increase in hypertension. If one puts them in small cages where they are crowded a good deal, and particularly puts them in positions where, because of inadequate space or, inadequate food, competition between them for sustenance and living space develops, then the incidence of experimental hypertension increases very greatly. It has increased in western peoples in time of stress. A study in Texas City in our own nation some fifteen years ago found that when a ship blew up in the harbor, the ship carrying ammonium nitrate, and much of the seaward portion of the city was destroyed, the incidence of hypertension in the town rose greatly. It has been found also that when people with no particular ethnic hypertension are moved to areas of substantial stress in which they have to accommodate to new problems, hypertension emerges as a disease. For example, Easter Islanders, an island off the coast of Chile, have no hypertension when they remain in their ethnic niche. When these men travel to Chile and enter the competitive economic world there, they develop the same amount of hypertension as do the Chileans. In developed societies breaking of social patterns by individuals or by groups does lead to hypertension. Captain James Graham some forty years ago found that the soldiers of the British Fifth Army after defeating with Rommel's forces in North Africa developed a substantial frequency of hypertension which could not be always relieved by simple rest. Even after keeping the soldiers in a rest zone for months, some of them left with fixed hypertension which they did not have before the start of this battle. Consequently I believe that the high incidence of hypertension is in part due to the cultural upheaval that has been induced in these islands by the results, direct or indirect, of the atomic bombs. There very likely are other forces here that have induced

4. I recommend a horticultural expert who should study the effects of the radiation on the vegetable foodstuffs and a marine biologist to consider the question of concentration of radioisotopes in the bodies of the larger fish. That some of these studies have been done before should not discourage similar studies by experts of your designation.

vision some five or six years ago on Utric, probably due to an increased incidence of cataracts. None of the people from Utric that I spoke to told me that any physician examined their eyes in such a way as to be able to recognize cataracts. Instead I was told that two boxes of eyeglasses were shipped to the island being of various models and frames, and the people were to come in and choose whichever eyeglass seemed to help them. And this was the sum of the investigation and treatment of the eye problems, -- of what I think is a unique epidemic of cataracts.

basic rights of a patient have been in large part ignored in the Marshall Islands, and I found very few Marshallese who were acquainted with the nature of their pathology. I reject firmly the thought that the people were too primitive or uneducated, to absorb such information, since I have found this not to be true. Among them are educated and intelligent leaders who would be able to digest such information and form their own conclusions about what the islands, its vegetation, its people, and its culture has suffered.

I have planned conversations with Americans in this area of various expertise who would be useful in understanding the course of food-chain radiation and its injuries, as well as the complex picture of fallout injury. Some of these conversations have been started, and some of the correspondence is already under way.

I am writing to you instead of delivering an oral report so that you may use this written report to demon-

occurs, and ultimate result in better protection from
prophylaxis of one type of another against the development
of such disease, -- for example, the prophylactic use of
inorganic iodine, lessening further absorption by radio-
active iodine from food by blocking iodine uptake.

Very sincerely yours,



R.R. Merliss, M.D.

RRM:ls
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