

The people of Rongelap Atoll wrote a letter, dated October, 1976, to Dr. J. L. Liverman of ERDA containing a series of comments and questions about the medical program on their island. A copy of this letter is attached. The following comments concerning the letter were prepared by the staff of Brookhaven National Laboratory and ERDA.

The first comment is with regard to travel of Marshallese patients to the United States. Since only very few Americans know the Marshallese language, it is indeed necessary to accompany patients that come to the U.S. for treatment by Marshallese attendants. Unfortunately, on or about two occasions, this did not occur for various reasons. Every effort will be made in the future to have all patients accompanied by English-speaking Marshallese attendants. Also when traveling outside the Trust Territory, they will be provided with adequate traveling funds. In addition, the Trust Territory officials will be urged to arrange necessary papers such as passports well in advance.

Whenever the Brookhaven doctors are at Rongelap, they give anyone with sickness the best treatment available under the circumstances. As in the past, any disease in an exposed person that appears to be caused by radiation exposure will be taken to the U.S. for treatment if necessary. In the case that adequate facilities are available locally, patients that require hospitalization will be treated in the Trust Territory hospitals. Dr. Knudsen will assist in the treatment of the patients at these hospitals. Medicines needed for treatment at Rongelap that are not available from the Trust Territory Department of Health Services will, if possible, be provided by ERDA doctors.

We are sorry that there have been conflicting reports about the future health of the exposed people of Rongelap. Specifically, we strongly disagree with the Japanese newspaper report that it is necessary to leave Rongelap

because of the radiation levels on the atoll. There have been many tests of soil, plants, whater on the island, and measurements of urine and radiation in the people living on Rongelap. These tests show that the levels are low and they are getting less and less. The little bit of radiation left on the island would not be expected to cause any health effects. We are pleased that Dr. Naidu was able to visit you and explain about radiation and its effects. We hope to have other scientists, possibly some from other countries, visit Rongelap in the future to continue this educational program.

At the time of the fallout in 1954 the radiation dose to the thyroid glands was higher than the dose to the rest of the body because of selective absorption by the thyroid of radioiodines inhaled and ingested from contaminated food and water at the time of the fallout (see Table I). The radiation dose to the thyroid glands of the Rongelap people was estimated to be about 335 rads for adults and up to 700-1400 rads for children. By the time the people returned to Rongelap the radioiodines had virtually disappeared so that no further significant thyroid exposure was possible to anyone living on the island since that time. There has been a false belief among the people that thyroid nodules that develop in unexposed people living on Rongelap are caused by lingering radiation. The dose from the lingering radiation is too small to produce thyroid effects. Thyroid nodules occur in people living throughout the Marshall Islands which are, of course, not due to radiation exposure.

TABLE I  
1954 FALLOUT DOSE (RADS) \*

	<u>Utirik</u>	Rongelap
(a) Whole Body	14	175
(b) Thyroid Adult	30	335
Children	30 - 95	335 - 1400

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We are pleased about the remarks made in your letter about the Brookhaven medical team. ERDA has a great deal of confidence in Drs. Conard and Knudsen and the other fine doctors that have taken part in the medical program. We are sure they always had your welfare at heart.

We are convinced that the medical examinations of the Rongelap people have been very thorough and complete with many tests on the people and on their blood, urine, etc. Some of the most skillful doctors in the U.S. and from other countries have taken part in these examinations. They have used the best equipment possible that can be taken to the island. You can be sure that the examination program ensures early diagnosis and treatment of all diseases.

Currently, arrangements are being discussed to permit all the people living on Rongelap, including children, to have an examination at least once a year by the Brookhaven doctors. We have plans with the Trust Territory to provide further education for the Health Aides in the diagnosis and treatment of radiation effects.

We realize that at the time of the annual examinations, there is sufficient disruption of life and that the team should provide additional food. Therefore a sufficient amount of food will be furnished by the team during the period of the examination.

Members of our staffs have had several discussions with Dr. Conard regarding the past and future medical care of the Rongelap people. From these discussions, it has become clear that effective medical care can only be proficed if the doctors can spend enough time with the people of Rongelap to talk to them and answer their questions. Dr. Conard and the other doctors are making arrangements to stay on at Rongelap for as long as necessary to make sure that all people get a chance to talk to them.

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The people of Utirik Atoll wrote a letter, dated July 1976, to Mr. Roger Ray containing a series of questions about the medical program on their island. A copy of this letter is attached. The following comments concerning this letter were prepared by members of the staff of Brookhaven National Laboratory and ERDA.

Following the accident in 1954 the American physicians and scientists involved, based on knowledge of human radiation effects available at that time, did not believe that the dose estimated to have been received by the Utirik people would lead to diseases caused by radiation. Also, since they had shown no acute effects and only a slight statistical depression of platelet counts, they were returned to their home island. However, it was considered prudent that the Utirik people should be examined at regular intervals and they were given complete physical examinations in 1957, 1959, 1963, 1966, 1969, 1972 and 1975. During the past six years special attention has been paid to thyroid examinations on an annual basis and all of the people on the island have been encouraged to be examined and treated by the BNL physicians at sick call. Since 1973 the BNL resident physician has visited Utirik on a quarterly basis. Dr. Kotrady was employed by Brookhaven National Laboratory to continue and expand the program initiated by Brookhaven and first carried out by Dr. Knudsen.

In conducting the medical examinations on the Marshallese, a comparison (control) group was selected so that the exposed and non-exposed people could be compared. This comparison group was selected in 1958 from the unexposed people of Rongelap. A Separate unexposed group of comparison people from Utirik was not considered necessary since the Rongelap group was considered adequate for comparison with both the peoples of Rongelap and Utirik. The slight genetic difference between the two exposed populations and differences in doses received were not considered sufficient reasons to

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select a separate comparison group for Utirik.

One of the questions concerned the fact that the children of the exposed islanders have not been included in the regular examination list. This was done because large groups of children of radiation-exposed parents have been studied in Japan. Since these studies, including examinations of Marshallese children of exposed parents, revealed no distinct genetic effects, it was felt that regular examinations of the Marshallese children born of exposed parents was not necessary. To quote from a letter from one of the foremost human geneticists, Dr. J. V. Neel, Professor of Human Genetics at the University of Michigan: "... there is not evidence that genetic change was induced in children born of the exposed Marshallese any more than there is unequivocal evidence of damage in the children born of the exposed Japanese." He pointed out, however, that there are some 15-20 dominantly inherited syndromes that might possibly be related to radiation exposure. Even if one of these occurred, it would be impossible to say it was due to radiation. It is most unlikely that any Marshallese child would develop such a syndrome. Nevertheless, if any child or an exposed Marshallese did, they would receive special treatment. A program for examination of all children on Utirik is discussed later in this letter.

Several of your questions suggest that the dose received by the Utirik people might have been higher than calculated. There were marked early effects in the Rongelap people, but the lack of acute symptoms and the minimal blood changes detectable only by statistical means in Utirik individuals is consistent with the smaller dose of 14 rads (see Table I).

In answer to your question about lingering radiation, it is true that there has been a small additional dose to the people living on Utirik and Rongelap from a slight amount of fallout left on the islands. However, this dose is small and would not be expected to produce any observable effects. Radiation from the fallout is getting less and less. The dose estimates

from residual fallout is currently being reevaluated.

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At the time of the fallout in 1954 the radiation dose to the thyroid glands was higher than the dose to the rest of the body because of selective absorption by the thyroid of radioiodines inhaled and ingested from contaminated food and water at the time of the fallout (see Table I). The radiation dose to the thyroid glands of the Utirik people was estimated to be about 30 rads for adults and between 30 and 95 rads for children compared with 335 rads for adults and up to 700-1400 rads for children exposed on Rongelap. By the time the people returned to Utirik the radioiodines had virtually disappeared so that no further significant thyroid exposure was possible to anyone living on the island since that time. There has been a false belief among the people that thyroid nodules that develop in unexposed people living on Utirik are caused by lingering radiation. The dose from the lingering radiation is too small to produce thyroid effects. Thyroid nodules occur in people living throughout the Marshall Islands which, of course, are not due to radiation exposure.

Thyroid cancer in the exposed Utirik people (which developed in the past few years) was unexpected. Statistical comparison of thyroid cancer incidence at Utirik with the larger experience of the United States indicates that radiation very likely was involved. Accordingly Dr. Conard recommended to the Department of Interior that all Utirik people who have thyroid operations be considered for compensation similarly to the Rongelap people. Compared with limited data on the unexposed Marshallese populations there has been

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only a very slight increase, if any, in non-cancer thyroid nodules in the Utirik people. The three cases of thyroid cancer in the Utirik people compared with four in the Rongelap people is definitely higher than expected based on the estimated dose. The reason for this discrepancy is not known. However, we have reviewed the data and have found no reason to change the estimates of the dose to the thyroids of the Utirik people. The number of cases observed may vary above or below the average number expected - the variation being larger as the population size decreases. In a small population such as Utirik the difference between the predicted and observed number of cases may be substantial. Of course, thyroid cancer occurs in populations not exposed to radiation above the natural background. The incidences of radiation induced thyroid cancer varies with different population groups. For example, in children the risk rate (in number of cases per million people per rad per year) varies from 0.5 to 1.5 reported by the United Nations to 5.5 for a group of Americans in New York. It is essential to know the natural incidence in the Marshallese and larger studies of such incidence have been initiated.

Even though it was known that the dose to the thyroid glands was higher than to the rest of the body, what was not known during the earlier years was the degree of sensitivity of the thyroid gland to radiation. Even today, there are many facts about radiation that are not known, despite the large number of scientists that have studied this subject for the past twenty or thirty years. Even less was known about radiation in 1954 at the time of the exposure to the people on Rongelap and Utirik. Only relatively recently has the degree of sensitivity of the thyroid for developing tumors from radiation exposure been appreciated. Therefore, the physicians examining you in past years, based on the best possible medical information available at that time, were justified in saying that they did not expect radiation effects to develop in the Utirik people.

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At this time it is impossible to predict whether more thyroid nodules will develop in the Utirik population. It is therefore of the greatest importance that the regular medical examinations be continued in the future. By having regular medical examinations, signs of thyroid disease can be detected early, with prompt treatment.

The medical team has been studying diabetes in the Utirik people and other Marshallese people. Though a study of this disease was not considered a responsibility of the medical team since the disease is not related to radiation exposure, it was considered important to help the Trust Territory with this disease which is such a serious problem in the Marshall Islands. With regard to the use of Diabenase in the treatment of this disease Dr. James Field, an expert on diabetes from the University of Pittsburgh who had been studying diabetes in the Marshall Islands with the medical team, states that "there would be inherent risks in the use of the drug Diabenase in treating diabetes on Utirik or other outer islands in the Marshalls since long-term medical supervision and laboratory tests are necessary to insure its safe and effective use."

With regard to your comment about the reduced size of arrowroot plants on Utirik, we can state that the results of studies of radiation effects on plants would not support radiation exposure as being responsible for a reduction in size of arrowroot or of any other plants growing on Utirik Atoll. Numerous studies of radiation on Utirik show the levels have been too low to result in such effects.

We believe Drs. Conard, Kotrady, and Knudsen to be very capable and conscientious physicians who are deeply committed to the health and welfare of the people of Utirik. Moreover, the report by the Special Committee on Rongelap and Utirik, which was formed by the Congress of Micronesia, was

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favorable with regard to the examinations. In view of the above, we were greatly surprised to learn about the apparent displeasure on the part of the people of Utirik as expressed in your letter. One possible explanation for this difference in sentiment with regard to Drs. Conard and Knudsen, as expressed in your letter, could possibly be a misunderstanding as to their role and reasons to come to the islands. I would like to repeat that it is my firm conviction that the principal concern of Drs. Conard and Knudsen is the welfare and well-being of the Utirik people. It is possible that such a misunderstanding could easily result from the difference in language. Again, I would appeal to the Chiefs of Utirik to impress upon their people the importance of the medical examinations and the necessity to trust and cooperate with the American physicians.

We would like to inform the Utirik people that ERDA is cooperating with the Trust Territory in an expanded health care program for people living on Utirik and Rongelap. Such a program would include annual examinations by the physicians of everyone living on Utirik island, including unexposed people and children, and the opportunity to be seen at sick call during the quarterly visits of the physician. The people would then have the assurance that all of them are entitled to be part of the examination program. The exposed Rongelap and Utirik people and the unexposed Rongelap control group, as in the past, would receive special examinations for radiation effects and this group (which does not include children of exposed or other unexposed people) would be entitled to the benefits of Congress of Micronesia's PL 5-52 as outlined in the agreement between the AEC and Trust Territory.

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