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MEDICAL SURVEY OF THE PEOPLE OF RONGELAP AND UTIRIK ISLANDS THIRTEEN, FOURTEEN, AND FIFTEEN YEARS AFTER EXPOSURE TO FALLOUT RADIATION (MARCH 1967, MARCH 1968, AND MARCH 1969)

Introduction

This report presents in detail the results of medical surveys carried out during the past 3 years (March 1967, 1968, and 1969) on the people of Rongelap and Utirik Atolls who had been exposed to fallout radiation in March 1954. Earlier findings are also reviewed. The last detailed report (BNL 50029)¹¹ covered the surveys of March 1965 and 1966, 11 and 12 years after the accident. In view of the seriousness of recent findings regarding development of thyroid abnormalities, continuation of annual medical examinations and publication of detailed reports is considered important.

These people had been accidentally exposed to fallout radiation following a detonation of a high yield thermonuclear device during experiments at Bikini in the Pacific Proving Grounds in March 1954. An unpredicted shift in winds caused a deposition of significant amounts of fallout on four inhabited Marshall Islands to the east of Bikini (see Figure 1) and also on 23 Japanese fishermen aboard their fishing vessel, the *Lucky Dragon*. Of the inhabitants of the island of Rongelap, 105 nautical miles away from the detonation, 64 received the largest fallout exposure: an estimated dose of 175 rads of whole-body gamma radiation, contamination of the skin sufficient to result in beta burns, and slight internal absorption of radioactive materials through inhalation and ingestion. Another 18 Rongelap people away on a nearby island (Ailingnae), where less fallout occurred, received only an external gamma dose of about 69 rads. There were 28 American servicemen on the island of Rongerik further to the east who received about the same amount of radiation as did the Rongelap people on Ailingnae. Lastly, 157 Marshallese on Utirik Island, about 200 miles further east, received an estimated 14 rads of whole-body radiation. The fallout was not visible

on this island and no skin effects developed. These data are summarized in Table 1.

The exposed people were evacuated from these islands by plane and ship about 2 days after the accident and taken to Kwajalein Naval Base about 150 miles to the south, where they received extensive examinations for the following 3 months. During this period vigorous efforts were necessary to decontaminate the skin completely.

In view of the generally negative findings on the American servicemen, they were later returned to their duty stations. The Utirik people were also allowed to return to their home island, where radioactive contamination was slight enough to allow safe habitation. Because Rongelap Atoll was considered to be too highly contaminated, a temporary village was constructed for the Rongelap people (including the 18 from Ailingnae) on Majuro Atoll several hundred miles to the south, where they lived for the following 3½ years and were examined at yearly intervals by a special medical

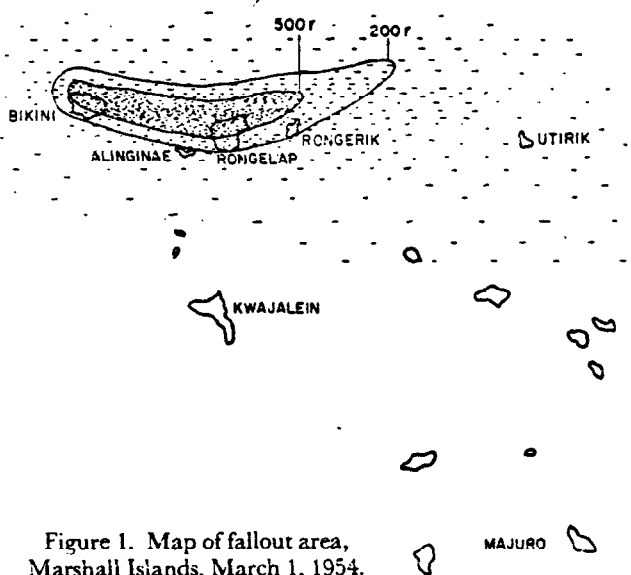


Figure 1. Map of fallout area, Marshall Islands, March 1, 1954.

Table 1
Summary of Fallout Effects

Group	Composition	Fallout observed	Estimated gamma dose, rads	Extent of skin lesions
Rongelap	64 Marshallese	Heavy (snowlike)	175	Extensive
Ailingnae	18 Marshallese	Moderate (mistlike)	69	Less extensive
Rongelap	28 Americans	Moderate (mistlike)	78	Slight
Utirik	157 Marshallese	None	14	No skin lesions or epilation

*Also exposed were 23 Japanese fishermen who received a sublethal dose.

Table 2
Marshallese Populations Examined Since 1954

Group	Original number in group	Number living (1969)	Frequency of exams	Subject-Nos.
<u>Exposed</u>				
Rongelap ^a	67	56	Annual	1-86
Ailingnae ^b	19	14	Annual	1-86
Utirik	157	127	3-4 years	2101-2257
<u>Unexposed</u>				
Rongelap	99	180 ^c	Annual since 1957	801-1104 1500-1540
Rita	57		1955-1956	1000-1082
Majuro	115		1954 only	700-800
<u>Children Conceived After the Fallout</u>				
Of exposed parent(s)		89	Annual	87-181
Of unexposed parents		110	Annual	801-1104 1500-1540

^aIncludes 3 *in utero* children.

^bIncludes 1 *in utero* child.

^cIndividuals have been added since 1957 when this group was first available.

team. In July 1957, after careful evaluation of radioactive contamination, Rongelap Island was considered safe for habitation. A new village was constructed, and the Rongelap people were moved there by Navy ship. (See frontispiece.)

The annual surveys are carried out at Rongelap and also at Kwajalein and Majuro Atolls, where a number of Rongelap and Utirik people now reside. Examinations on Utirik Atoll are carried out about once every 3 years.

A group of more than 100 Rongelap people, who were relatives of the exposed people but had been away from the island at the time of the ac-

cident, moved back with the exposed people to their home island and have served as an ideal comparison population for the studies. The number has since increased to >200.

Since the accumulation of data from these surveys is becoming increasingly voluminous, survey reports published by this Laboratory are made as complete as possible and include a considerable amount of raw data, much of it in appendices, so that others may have access to complete data.

A summary of early and late findings covering the entire 15-year period is presented at the end of this report.