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**Department of Energy**

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**RADIATION EDUCATION PROPOSAL FOR THE MARSHALL ISLANDS**

During our September meeting in Honolulu with the RMI, we were asked to comment on the enclosed plan, prepared for RMI by Jerry Knight, a longtime resident of the Marshall Islands and director of the Alele Museum. You will recall that at the meeting, DOE proposed co-funding with RMI for just such a program.

There is no question that a program of this nature, conducted by qualified, impartial persons, is necessary--the sooner the better. While I take exception to the tone and some of the content of the "Background", and suggest it is not appropriate, at least in its current form, as part of the Education Program, there are some valid observations. Notably, as the DOE community is most aware, some basic distrust, as well as separate agendas by a few politicians and attorneys, have served to frustrate what I view to be solid efforts by the U.S. to communicate with the islanders on this very difficult technical and emotional subject. The basic lack of understanding of this subject by a vast majority of Americans, including many in our government, must make clear to any informed observer the difficulty of communicating this to a population with virtually no technical base and with a language that, in most cases, does not handle the words and concepts necessary to convey information of this nature.

I would appreciate your comments/suggestions on the proposal. Please bear in mind that the plan and the implementation thereof should be RMI formulated and directed. While we can and should provide RMI with comments and advice, and under the right circumstances might provide technical assistance, we must not be drawn, as DOE, into a position in the program which might compromise the receptiveness of the Marshallese.

*John Rudolph's Files  
Letter Files  
Letters - Marshall Islands 1988*

Multiple Addressees

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November 2, 1988

Please give me your thoughts by December 15, 1988, so we can get an answer to RMI by the end of the calendar year. Feel free to call on any of your associates whom might also contribute to this review.

Many thanks.



Harry U. Brown  
Deputy Program Manager  
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Enclosures:  
As Stated

cc w/encls:  
Roger Ray, Bethesda, MD

# COMPREHENSIVE RADIATION EDUCATION FOR THE MARSHALL ISLANDS

## A DRAFT PROPOSAL

### INTRODUCTION

The objectives of the program of radiation education proposed below are to reach a state of affairs in the Republic of the Marshall Islands whereby a significant proportion of its citizens are individually prepared to evaluate the radiological circumstances they face as a result of the atomic testing program. It is expected that a solid understanding of current radiological conditions will contribute to the health and general welfare of the Republic by providing the understanding necessary to minimize exposure in areas of higher than normal background conditions. At the same time it is expected that such knowledge will serve to dispel any exaggerated fears which may be contributing to economically unwarranted migrations and settlement patterns resultant in serious under-utilization of land and marine resources.

### BACKGROUND

The chronology of events below provides the historic background for drawing the following conclusions upon which this proposal is premised: 1) The current radiological conditions and radiation related health problems effecting the citizens of the Marshall Islands require a more sophisticated degree of understanding than that heretofore fostered by DOE education initiatives. 2) Despite the considerable expense involved in these initiatives the chronology of historic events demonstrates them to have been too little too late and they are best characterized by their ineffectiveness. 3) The reasons for such ineffectiveness are probably multiple but most likely include the fact that due to the regrettable paranoia towards the Department of Energy precipitated over the years any efforts involving their participation are likely to be disregarded by the communities targeted. 4) The lack of effective education programs may have: a) Left concerned citizens more susceptible to the influence of left-wing environmental and other nuclear-fear groups. b) Led to paranoid social traits exemplified by misinterpretations of humanitarian efforts on the part of dedicated DOE affiliated physicians. c) Lead to an intense paranoid fear of the environment by islanders living in radiation effected areas exemplified by the Rongelap Islanders 1985 migration to Mejeo Island in Kwajalein Atoll. 5) Made the recurrence of such disastrous fears among other communities returning to similar areas of higher than normal background radiation ultimately inevitable unless the type of comprehensive long-term approach proposed below is eventually implemented.

**Chronology of events which precipitated the social paranoia referenced above and which document the Department of Energy's unsuccessful attempts to educate the Islanders concerning actual health and environmental risks involved.**

- 1946 The Bikini Islanders begin their series of relocations from Bikini which allow the United States to begin its testing program in the Marshall Islands. The Rongelap, Enewetak and Wotho Islanders are temporarily evacuated from their atolls to Kwajalein and Lae atolls as Operation Crossroads begins.
- 1947 The Enewetak Islanders are relocated to uninhabited Ujelang to allow for a second series of explosions over several years.
- 1948 Operation Sandstone begins on Enewetak.
- 1951 Operation Greenhouse begins on Enewetak.
- 1952 Operation Ivy begins on Enewetak. Ujelang (inhabited by the Enewetak Islanders) is contaminated with radioactive fallout from King Test.
- 1954 Operation Castle begins at Bikini and Enewetak. The March Bravo hydrogen test contaminates the atolls of Alinginae, Ailuk, Bikar, Likiep, Rongelap, Rongerik, Taka, Wotho, Utirik, Jemo and Mejit. The Islanders of Rongelap, Alinginae and Utirik, suffer serious radiation exposure and are evacuated to Kwajalein. Operation Castle continues with hydrogen tests Union and Yankee, both of which scatter further contamination over several of above evacuated atolls. It is deemed safe to allow the Utirik Islanders to return to their Atoll after a period of three months. The Rongelap Islanders are relocated to Majuro Atoll.
- 1956 Operation Redwing begins at Enewetak and Bikini.
- 1957 Rongelap is pronounced safe and a much larger group of people return to live there.
- 1958 Operation Hardtack ends the atomic testing program with a series of 32 tests on Enewetak and Bikini. Ujelang, still inhabited by the Enewetak Islanders is again contaminated this time by the Magnolia Test.
- 1959 Rongelap Islanders are warned by scientists from Brookhaven National Laboratory not to eat coconut crabs from their islands because of the crab's radiation levels.
- 1960 Kwajalein becomes an "impact area" for incoming US missiles.
- 1963 The first thyroid tumors were appearing on Rongelap Islanders.

1966 In its Twelve Year Report Brookhaven National Laboratory discloses that 29 (52%) of the Rongelap children who were exposed to the 1954 fallout from the Bravo blast have developed thyroid abnormalities. The US Congress approves an ex-gratia payment of \$950,000 to the exposed Rongelap Islanders.

1968 An Atomic Energy Commission Report states that "The exposures to radiation that would result from the repatriation of the Bikini people do not offer a significant threat to their health and safety." President Lyndon Johnson promises the 500 Bikini Islanders living on Kili and other islands a permanent return to Bikini.

1969 The Bikini cleanup and resettlement is planned to extend over a period of eight years to allow for maturation of coconuts and other crops. The cleanup includes "removal of all test related debris with disposal at sea of all radioactive debris." Following this radiological cleanup Bikini is declared safe for reoccupation.

1971 Replanting of coconuts at Bikini and Eneu Islands is completed. John Anjain, Magistrate of Rongelap at the time of the Bravo Blast, and Ataji Balos, member of the Congress of Micronesia travel to Japan to ask the 26th World Conference Against Atomic and Hydrogen Bombs of the Japan Congress Against Atomic and Hydrogen Bombs to send a medical investigation team to the Marshall Islands.

1972 The AEC announces that coconut crabs can be eaten only in limited numbers. As they grow, the crabs eat their shells which contain radioactive strontium 90. Because of information on the radiological contamination of Bikini supplied by the AEC, the Kili Council votes not to return the entire community to Bikini at this time, but says it will not prevent individuals from returning. Three Bikini families eventually make the move. John Anjain's son Lekojo, one year old when exposed to radiation on Rongelap in 1954, dies of leukemia at the National Cancer Institute in Bethesda, Maryland. (At the age of 13 he was first taken to the US for removal of thyroid nodules; his mother, father, and two brothers have also had thyroid surgery.) Ataji Balos, member of the Congress of Micronesia accuses the United States of purposely exposing the people of Rongelap to gain information concerning radiation effects on population groups. The Congress creates a special Joint Committee to investigate the problems of the people living on Rongelap and Utirik.

1973 Brookhaven National Laboratory stations physician Knude Knudsen on Kwajalein to conduct quarterly visits to Rongelap. The Joint Committee report to the Congress of Micronesia states, "Time and again the committee found that the people did not understand anything about their exposure, the possible effects on themselves and to their children and on their environment." Runit Island in Enewetak Atoll is quarantined. High concentrations of plutonium on this island mean habitation will not be possible for 240,000 years.

1974 The AEC releases the "Draft Environmental Impact Statement on the Cleanup, Rehabilitation and Resettlement of Enewetak Atoll, Marshall Islands". The EIS states that radioactivity is much greater in the northern islands because a majority of the 43 announced blasts were conducted near these islands. Therefore, the EIS suggests no habitation in the north, although about half of the people wish to return to the northern island of Enjebi, their ancestral home. The EIS proposes dumping radioactive soil and debris from the other islands in Enewetak into an atomic bomb crater on Runit Island. The radioactive material would then be mixed with cement to form a massive concrete dome.

1975 Nelson Anjain of Rongelap Atoll participates in the first Conference for a Nuclear Free Pacific held in Suva, Fiji, seeking international support for the plight of his people. The 93 representatives of 22 Pacific and Pacific rim countries at the conference strongly endorse the Rongelap people's attempt to gain independent medical aid. During regular monitoring of Bikini, radiological tests discover "higher levels of radioactivity than originally thought". Ground water from wells, as well as pandanus, breadfruit, coconuts and crabs are suspected as causes of increasing levels of body burden's of those living there. The US agrees to conduct an aerial radiation survey of the northern Marshalls as a result of the Bikini Islanders' law suit.

1976 The U.S. Congress approves funding for the Enewetak cleanup, to be coordinated by the Defense Nuclear Agency. Congress authorizes \$20 million and military logistic support for a massive cleanup, scheduled to take three years. A Brookhaven report shows that 14 out of 20, or 69% of the Rongelap children who were 10 years old in 1954 have developed thyroid tumors. Of the total Rongelap population of 36, exposed in 1954, 10% have developed thyroid tumors; at Utirik, 10 out of 125, or 6% of the people who were exposed in 1954 have developed thyroid tumors. The Utirik Islanders refuse to submit to quarterly examination by Dr. Knudsen. Distressed over the fact that they have

developed a higher rate of thyroid cancer than the people of Rongelap who were exposed to a higher initial dose, they publish an obviously paranoid letter in the Marshall Islands Micronitor accusing Dr. Hudaen of treating them no better than guinea pigs. Brookhaven's 22 year summary of medical findings points out the reason for a higher amount of thyroid cancers in the people exposed to low doses. "...The thyroid doses in the Rongelap children (700 - 1,400 rads) were high enough to cause many cells to die...and thus reduce the number of cells at risk for malignant transformation. At lower doses, as in the adult group, a greater number of cells would be spared for malignant transformation."

1977 The U.S. Congress approves more than \$1 million in compensation for the inhabitants of Rongelap and Utirik who were exposed to radiation in 1954. A payment of \$25,000 will be made to anyone who has had a thyroid removed or has developed hypothyroidism or to anyone who develops a radiation related malignancy such as leukemia and \$100,000 to the survivors of an exposed person who dies. \$100,000 each is set aside for Rongelap, Utirik and Bikini for construction of community facilities. \$1,000 is to be provided to each of the original 157 Utirik Islanders exposed to radiation in 1954.

1978 A Department of Energy report reveals that in addition to Bikini, Enewetak, Rongelap and Utirik, ten other atolls or single islands "received intermediate range fallout from one or more of the megaton range tests," including Ailinginae, Ailuk, Bikar, Jemo, Likiep, Mejit, Rongerik, Taka, Ujelang, and Wotho. This suggests the possibility that at least 1,600 more Marshall Islanders were contaminated during the atomic testing program than originally announced. A radiological survey of the northern Marshall Islands spurred by the Bikini Islanders' 1975 lawsuit, begins. Officials of the Marshall Islands Government learn during a Defense Department briefing in Washington D.C. that missiles fired into Kwajalein lagoon contain small amounts of radioactive uranium. Due to absorption of radioactive cesium 137 in excess of internationally accepted levels. Interior Department Officials decide to re-evacuate the 139 people who have returned to Bikini as part of the resettlement program.

1980 John Anjain and Julian Rillon from Rongelap participate in the first Citizens Hearings for Radiation Victims in Washington D.C.. Five other Marshall Islanders take part in the Nuclear Free Pacific Conference in Hawaii. Public Law

96-803 is enacted. The act authorizes appropriations under Section 106 (a) for 1) an integrated, comprehensive health care program; 2) periodic comprehensive survey and analysis of environmental radiological status; 3) an education and information program to enable the people of radiation effected atolls to "more fully understand nuclear radiation and its effects." The act states that these comprehensive and ongoing programs are to be for the benefit of the people of the atolls of Bikini, Eniwetok, Rongelap and Ujae and for the people of such other atolls as may be found to have or to have been exposed to radiation from the nuclear weapons testing program...". The Department of Energy prepares a ten year, 5 million dollar "Radiation Education and Information Program Plan" in response to Section 106 (a) above. The Plan's introduction states: To date "...only a few deliberate attempts have been made to convey information to help the Marshallese understand radiation and its possible health effects or to help them cope with the fact that the environment of their home atolls still contains products of the nuclear weapons tests." This DOE plan was never implemented.

1981 The Marshall Islands Atomic Testing Litigation project, a consortium of U.S. law firms announces the filing of multi-million dollar personal injury claims against the U.S. government on behalf of more than 500 Marshall Islanders. Senator Jeton Anjain, a member of the Marshall Islands Nitijela (Legislature) attends the Radiation Victims Hearings in Salt Lake City, Utah.

1982 Three comprehensive reports intended as education materials concerning the radiological conditions in the northern Marshall Islands which are translated into Marshallese are distributed in a series of DOE requested public hearings. Several scientists and a professional translator are on hand to answer questions concerning risk factors related to habitation on the northern atolls.

1983 The Marshall Islands Nitijela (Legislature) passes a resolution supporting a relocation request to the U.S. Congress by the Rongelap Islanders. Both the request and the supporting resolution demonstrate total failure of the DOE produced education materials presented the year before which attempted to present in scientific terms that living on Rongelap is clearly within the bounds of acceptable risk.

1985 Frustrated by a lack of response from the U.S. Congress in support of their relocation and an independent scientific assessment of the radiological conditions of Rongelap, the Islanders dismantle their entire village and abandon their Atoll with the assistance of the Greenpeace crew of the Rainbow Warrior. The Rongelap Islanders relocate to Nejeto, a very small island of limited resources on Makajin Atoll. Five years after the enactment of P.L. 96-205 the Secretary of Interior contracts John Short Associates to begin the Four Atoll Health Care Program.

1986 Problems prevent the delivery of health care under the Four Atoll Program for one year. The radiation education component consists of a 3 day workshop held in Nejeto and attended by eight Marshall Islanders, two from each of the four Atolls targeted by the program.

1987 The first compensation payments to the Peoples of Bikini, Enewetak, Utirik and Rongelap as outlined in the Section 177 subsidiary agreement to the Compact of Free Association are made. Rather than being utilized to develop viable marine or other types of productive industries on their ancestral homelands, nearly all compensation dispensed to date is being frittered away in travel and further misguided migrations. Dr. Thomas Hamilton, (University of Washington), publishes the results of his two years of intensive research into potentially radiation related thyroid abnormalities among the people of the Marshall Islands. The results of his study published in the Journal of the American Medical Association shows previous estimates of health effects of the Atomic Testing program underestimated by as much as 1/3, with thyroid abnormalities found throughout the Marshalls among certain age groups in direct proportion to distance from testing area.

#### PROPOSED STRATEGIES

- \* To provide a program of public information which places radiation related health concepts in the context of other science and health education curriculum
- \* To establish a National Council on Health Education which would oversee the implementation of the Radiation Education Program herein proposed within the context of responsibilities outlined in the final report of the 1985 Task Force on Health

- \* To contract the curriculum development phase of the Radiation Education Program to Marshall Islands based governmental divisions, agencies or non-profit institutions or private contractors in accordance with experience, timely submittal of credible proposals and competitive bidding practices as determined by the National Council on Health Education and it's professional consultants
- \* To identify the most promising primary, secondary and adult education methods and systems now functioning in the Republic
- \* To determine how to best strengthen and coordinate such education methods and systems in order to determine the most effective means of implementing the proposed Radiation Education Program
- \* To provide for an ongoing review process whereby outside professionals assess the impact of the program from baseline, process and outcome data and report their findings to the Health Education Council in order to activate ongoing modifications

#### TEN YEAR OUTLINE OF ACTIVITIES

##### YEAR ONE

##### MONTH 10-12

Council on Health Education is appointed by the Cabinet (if not already formed). The Council functions and is appointed along the lines suggested by the 1965 Task Force on Health including a representative from Alele Museum Corporation which is a non-profit sector organization which may be able to assist in translating and developing video programs. The Council begins an extensive review of current radiation education needs and takes into account public testimony on this matter.

##### MONTH 1-3

The Council identifies consultants in the following areas:

- 1) Social Science -- specializing in the social effects of radiation exposure. Such consultant must be able to gather baseline information from target populations regard to: A) current knowledge about radiation B) environment related fears connected to the atomic testing program C) health related fears connected to the atomic testing program.

2) Health Education -- specializing in the analysis and implementation of science and health education programs. Such consultant must be able to assess current health education programs and related education methods and devise a comprehensive plan which will address any identified problems, strengthen the most effective programs and coordinate radiation education activities realistically and effectively.

MONTH 4-6

Professionals begin field evaluation and develop plans for baseline data collection. Health education professional meets with Council on Health Education, Four Atoll Program staff, officials and staff from Health, Social Services and Education Ministries, NCA, Alele Museum and any other agency or organization active in developing education programs. Social Scientist meets with staff of Four Atoll Program and utilizes Alele Museum staff in overcoming language problems and developing culturally appropriate plans for retrieval of baseline data.

MONTH 7-9

Professionals draft evaluations including social scientist's baseline data are completed and reviewed by the Council on Health Education.

YEAR TWO

MONTH 10-12

A completed Radiation Education Plan with three year budget, which will incorporate the input of a professional health physicist and directs emphasis in accordance to the findings of the social scientist's baseline data and incorporates any Council on Health Education directives is presented by the health education professional to the Council for its authorization. A health physicist is identified and contracted by the Council on Health Education. The consultant reviews all existing radiological and radiation related health data and is apprised of his/her role in implementing the developed plan.

MONTH 1-6

The health physicist comes to Majuro and begins a variety of activities as outlined in the authorized plan. Such activities will involve the education of elementary school teachers and

science and health education curriculum developers at both primary, secondary, post secondary and non-classroom adult education levels. Every attempt shall be made to co-ordinate such education courses through the College of Micronesia or other education institutions for bonafide college credit whenever possible. The various activities of this consultant will be reviewed by the Council on Health Education and coordinated by whoever the plan designates.

**MONTH 7-9**

Above activities ongoing. Radiation education curriculum development proposals targeted to Adult, secondary and elementary levels are submitted to the Council on Health Education and reviewed in consultation with Health Education and Health physicist professionals.

**YEAR THREE**

**MONTH 10-05**

The curriculum development phase begins. Health physicist professional continues with activities as outlined in authorized program and remains available to advise curriculum developers as needed and reports on the credibility of all completed curriculum to the Council on Health Education.

**MONTH 06-09**

The first phase of completed curriculum is presented to elementary school teachers in accordance with authorized plan and they are trained to incorporate such materials as part of overall health education courses taught during upcoming year. Full-time participation of health physicist ends.

**YEAR FOUR**

**MONTH 10-05**

Curriculum implementation phase begun in accordance with authorized plan at all levels throughout the Marshalls.

**MONTH 03-06**

Process data collection and review completed by Health Education and Social Science professionals. Process reports which include an analysis of program shortcomings and suggested improvements to the revised plan (including two year budget) are submitted to the Council on Health Education.

MONTH 07-09

Council on Health Education authorizes revised Radiation Education Plan and begins accepting proposals for second round of curriculum development. Proposals are evaluated based on past performance, outcome data evaluation and revised plan priorities.

YEAR FIVE

MONTH 10-08

Second round of curriculum development begins.

MONTH 04-05

Curriculum reviewed by Radiation Physicist and Health Education professionals and revisions made accordingly

MONTH 06-09

The second phase of completed curriculum is presented to elementary school teachers in accordance with revised authorized plan and they are trained to incorporate such materials as part of overall health education courses taught during upcoming year.

YEAR SIX

MONTH 10-05

Curriculum implementation phase begun in accordance with authorized plan at all levels throughout the Marshalls.

MONTH 03-06

Process data collection and review completed by Health Education and Social Science professionals. Process reports which include an analysis of program shortcomings and suggested improvements to the revised plan (including two year budget) are submitted to the Council on Health Education.

MONTH 07-09

Council on Health Education authorizes revised Radiation Education Plan and begins accepting proposals for third round of curriculum development. Proposals are evaluated based on past performance, outcome data evaluation and revised plan priorities.

## YEAR SEVEN

MONTH 10-03 Third round of curriculum development begins.

MONTH 04-05 Curriculum reviewed by Radiation Physicist and Health Education professionals and revisions made accordingly.

MONTH 06-09 The third phase of completed curriculum is presented to elementary school teachers in accordance with revised authorized plan and they are trained to incorporate such materials as part of overall health education courses taught during upcoming year.

## YEAR EIGHT

MONTH 10-05 Curriculum implementation phase begun in accordance with authorized plan at all levels throughout the Marshalls.

MONTH 03-06 Process data collection and review completed by Health Education and Social Science professionals. Process reports which include an analysis of program shortcomings and suggested improvements to the revised plan (including two year budget) are submitted to the Council on Health Education.

MONTH 07-09 Council on Health Education authorizes revised Radiation Education Plan and begins accepting proposals for third round of curriculum development. Proposals are evaluated based on past performance, outcome data evaluation and revised plan priorities.

## YEAR NINE

MONTH 10-03 Final round of curriculum development begins.

MONTH 04-05 Curriculum reviewed by Radiation Physicist and Health Education professionals and revisions made accordingly.

MONTH 06-09

The final phase of completed curriculum is presented to elementary school teachers in accordance with revised authorized plan and they are trained to incorporate such materials as part of overall health education courses taught during upcoming year.

YEAR TEN

MONTH 10-05

Curriculum implementation phase begins in accordance with authorized plan at all levels throughout the Marshalls.

MONTH 03-06

Outcome data collection and review completed by Health Education and Social Science professionals. Outcome reports which include an analysis of program shortcomings and successes as well as future recommendations are submitted to the Council on Health Education.