

**Testimony of:
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**House Foreign Affairs Committee
Subcommittee on Asia, Pacific, and the Global Environment**

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Oversight on the Compact of Free Association with the Republic of the Marshall Islands (RMI): Medical Treatment of the Marshallese People, US Nuclear Testing, Nuclear Claims Tribunal, Forced Resettlement, Use of Kwajalein Atoll for Missile Programs, and Land Use Development

Introduction:

Honorable Berman, Honorable Faleomavaega, and Congressional Members of the Committee: I have been requested by this committee to provide a personal assessment of the medical treatment of the Marshallese people affected by US nuclear testing. I would like to thank the Chairman for taking the time to hear and understand the complex relationship between the US and the Republic of the Marshall Islands as it relates to health care over the past five decades. This testimony is drawn from my experience as one of the physician founders of the Four Atoll Health Program in the Marshall Islands , as the principal investigator of the Department of Energy Program caring for Marshallese between 1999 and 2009, as the principal investigator of US Center for Disease Control or US National Cancer Institute funded cancer programs in the Marshall Islands and the US Pacific, and serving as a physician with the US Public Health

Service in the Marshall Islands for 9 years. Currently I am Professor and Chair of the Department of Family Medicine and Community Health at the John A. Burns School of Medicine, University of Hawaii. My statement is not the opinions of the institutions with whom I work.

My testimony will discuss three related medical themes: (I) The health consequences of the US Nuclear Weapons Testing Program (USNWTP) in the Republic of the Marshall Islands, (II) the historical US medical response to the health consequences of nuclear testing , and (III) what the appropriate medical response and health care responsibility of the US government should be under the current situation.

I. Health Consequences of the US Nuclear Weapons Testing Program:

The Marshall Islands was the thermonuclear weapons testing site for the United States from 1946 to 1958. During this period, 67 thermonuclear devices were detonated which had an explosive power equivalent to 7,200 Hiroshima atomic bombs.. The vast majority of the nuclear testing was above ground or atmospheric.

The health consequences (health related problems) of the US Nuclear testing in the Pacific were a result of: A) acute exposure of Marshallese people to high dose radiation B). chronic or long term exposure to low levels of ionizing radiation of Marshallese people C) . destruction of ancestral lands , cultural / social disruption, and dislocation of Marshallese communities

A. Health Effects from Acute Exposure

Acute radiation illness results from sudden exposure to high doses of radiation. The Rongelap community suffered acute radiation illness in 1954 when they were dusted by the nuclear debris from the Bravo hydrogen bomb test. The people suffered severe nausea, vomiting, burns, hair loss, fetal death, hypothyroidism (thyroid not functioning), and bone marrow shutdown.

Thyroid cancer followed several years after to exposure to high doses of I-131. According to a 2004 National Cancer Institute (NCI) report, thyroid cancers would likely increase by 200 percent above baseline because of the nuclear testing.

B. Health Effects from chronic, long term exposure:

Chronic low dose radiation exposure can have significant accumulative biological effects. After the testing period chronic low dose exposure resulted from environmental background radiation relating to isotopes with long half-lives. Internal radiation doses resulted from inhalation of plutonium or by ingestion of Ce-131 concentrated in plants, animals, and fruit.

The cumulative effect of ionizing radiation in the environment and food chain is known to be responsible for at least 24 types of cancer including leukemia, multiple myeloma, lung, intestine, stomach, kidney, liver, bone, thyroid and brain cancers (National Academy of Sciences Biologic Effects of Ionizing Radiation (BEIR) VII report). These cancers may be latent (i.e., an individual exposed to chronic low doses as a child may develop a radiation related cancer 40 years or more after the initial exposure). All of these types of cancers are currently prevalent in the Marshallese population.

The 2004 NCI report, prepared for the Senate Committee on Energy and Natural Resources, estimated 530 excess cancers from the nuclear weapons testing in the Marshall Islands. Half of the excess cancers have yet to manifest in the Marshall Islands population because of the latency period following the deleterious effects of ionizing radiation.

The NCI report notes that most excess cancers will occur in Marshallese exposed in the northern atolls however ionizing radiation exposure from the testing extended throughout all atolls in the Marshall Islands. Marshall islands populations previously considered not exposed are at increased risk of cancer from nuclear testing.

Ionizing radiation at high doses is now associated with illnesses other than cancer. BEIR VII also noted that intergenerational (hereditary) genetic effects may be possible in humans. BEIR VII further noted that a dose response relationship with mortality from non-neoplastic (non-cancer) disease has been demonstrated with statistically significant associations with heart disease, stroke, digestive, respiratory, and hematopoietic disorders.

C. Health Effects associated with destruction of ancestral lands and social disruption

In addition to the direct radiation effects, cultural and social disruptions from the Marshall Islands nuclear testing are associated with adverse health outcomes and illness. Alienation from the land and critical natural resources through radioactive contamination or forced evacuation destroyed the physical and cultural means of sustaining and reproducing a self-sufficient way of

life. A forced change in dietary patterns and lifestyle prematurely induces heart disease, diabetes, and obesity,

Community integrity, traditional health practices, and sociopolitical relationships were adversely affected. Furthermore, community history and knowledge was destroyed as there was no lineage land upon which their culture was built.

II. Medical Monitoring and Surveillance, Medical Care, and Medical Inquiry (A Historical Perspective):

What was the US medical response to the health consequences of the US Nuclear Weapons Testing Program in the RMI?

US Medical teams including physicians, nurses, and health care technicians were involved with the Marshallese people because of the nuclear testing. There were several distinct functions that medical personnel may have performed. (The distinctions of function are important to understand the role of the medical team and what transpired with medical intervention during this era).

The purpose of US medical personnel in the RMI nuclear testing can be categorized as, to (1) provide health care, (2) to perform medical surveillance and monitoring regarding health trends, and (3) to gain medical and scientific information about the human response to ionizing radiation. Provision of health care services by US Medical teams was dependent on the US government emphasis at the time and the priority given to the respective medical functions.

There is a great deal of evidence that persists to the present day, and it is my opinion that the major emphasis in during and in the post nuclear testing era was NOT on medical care provision. Instead, the emphasis of the medical team was on surveillance, monitoring, and scientific inquiry. Medical care was provided in an acute, as needed function, without much forethought to developing a systematic health system to meet the ongoing health needs of the affected populations. While the expectation of the Marshallese people was appropriately a high level of health care intervention, the actual medical care received was limited. Indeed the Atomic Energy Commission (AEC) and the Department of Energy (DOE) overseeing these medical programs did not have and do not have the expertise or background to develop or implement the necessary health care systems overseas.

The current 177 Health Care Program for the Four Atolls was originally designed to be a comprehensive health care program, and not a monitoring or surveillance program. The 177 Health Care Program for the Four Atolls has been crippled because of funding restraints. This severely underfunded program sends a message from the US Government that a comprehensive health system response to the legacy of nuclear exposure in the Republic of the Marshall Islands is not a priority.

The emphasis of the US medical response to this day, in spite of evidence of harm to the Marshall Islanders, is piecemeal, poorly contrived, poorly funded, and does not address the known health care needs of the affected population. It is not apparent that the US agencies which

provide health care to the Marshallese peoples have the health of the Marshallese people as a primary and central concern.

III. Current Medical Response; What Should it Be?:

The fact that Marshallese people were directly touched by US nuclear fallout is a tragic accident. The fact that today, knowing that there are latent cancers caused by US nuclear testing, after 60 years of US oversight, a Marshallese person living in the Marshall Islands does not have access to routine cancer screening, or there is not systematic mammography screening for breast cancer, or that cancer treatment is not readily available - is not an accident. The issues surrounding the US Pacific nuclear weapons testing program are about a disconnect of science and policy, and about disparity in health care access and treatment.

Unnecessary and unfair suffering has continued in the RMI for the past 60 years because the U.S. government has not taken a proactive stance on healthcare issues resulting from the nuclear testing program. US Congress 1980 - PL 96-205 regarding the Bravo test states, "a program for medical care and treatment...for any injury, illness, or condition which may result directly or indirectly of such nuclear weapons testing program" will be created and maintained. The present US policy regarding the number of people who were affected is arrogant rather than taking a conservative stance to advocate to protect and care for potential victims of nuclear testing. Limiting the health care services and medical response is not supported by the current scientific or medical evidence and is not in the Marshallese health interest. To the contrary, this action of withholding healthcare for known consequences of nuclear testing is a true social injustice. While a political debate ensues regarding responsibility and costs, Marshallese are developing and dying from treatable illnesses associated with the US Marshall Islands Thermo Nuclear Weapons Testing Program.

I propose the following four actions:

1. That the standards for health care, screening and treatment for those peoples affected by ionizing radiation from the Nevada test site and Hanover be applied to the people affected by the RMI nuclear weapons testing program. .
2. That US policy makers review the congressional operational definitions regarding the extent of the health consequences caused by the Pacific Nuclear Weapons testing program and support an expanded definition coinciding with current scientific evidence. This definition must include all populations who were adversely affected by the nuclear testing
3. That the spirit and intent of addressing environmental causes of cancer (eg. ionizing radiation from the Nuclear Testing) in the Marshall Islands should be in concert with the Presidents 2009 Cancer Panel report, ie a preventive precautionary approach to potential health issues be utilized instead of a reactionary approach.
- 4.. That further research to understand the health consequences of ionizing radiation, including the effects/ extent of cultural disruption, the health consequences of contamination of land/food sources, intergenerational genetic transmission of illness, and the extent of non-neoplastic illness associated with ionizing radiation (high blood pressure, strokes, cardiovascular illness, and intergenerational genetic transmission of disease) should be supported.
5. To adequately address the health consequences of the US Nuclear Weapons Testing Program, cancer health care (including prevention, screening, diagnosis, and treatment) must be systematically be provided in the Marshall Islands at US standards.

Thank you

Selected References

1. Government of the Republic of the Marshall Islands (RMI), Pursuant to Article IX of the Nuclear Claims Settlement Approved by Congress in Public Law 99-239, Petition presented to the Congress of the USA. September 11, 2000.
2. Anderson I, S., Cregle S, Kamaka M, et al., Indigenous Health in Australia, new Zealand, and the Pacific., *The Lancet*, 367(9524): 1775-1785.
3. Neidenthal, J., A History of the People of Bikini Following Nuclear Weapons Testing in the Marshall Islands: With Recollections and Views of Elders of Bikini Atoll. *Health Physics* 73(1):28-36, July 1997.
4. Cronkite, E.P., Conard, R.A., and Bond, V.P. Historical Events Associated with Fallout from BRAVO Shot – Operation Castle and 25 Y of Medical Findings, *Health Physics* 73(1):176-186, 1997.
5. BNL. Brookhaven National Laboratory. A Twenty –year Review of Medical Findings in a Marshallese Population Accidentally Exposed to Radioactive Fallout. BNL-50424. Upton NY. Brookhaven National Laboratory 1975
6. Lessard ET, Miltenberger RP, Cohn SH , Conard RA. Protracted exposure to fallout: the Rongelap and Utirik experience. *Health Phys* 46(3): 511-527 1984
7. National Cancer Institute (NCI), Division of Cancer Epidemiology and Genetics, Estimation of the Baseline Number of Cancers Among Marshallese and the Number of Cancers Attributable to Exposure to Fallout from Nuclear Weapons Testing Conducted in the Marshall Islands, Prepared for the Senate Committee on Energy and Natural Resources, September 2004.
8. Robison WL, Bogen KT, Conrado CL 2003 The effective and environmental half life of 127Cs at Coral Islands at the Former US Nuclear Test site. *J Environ Radioact* 69 207-223
9. Robison WL., Stome EL, Hamilton TF, Conrado CL Long-term reduction in 137Cs concentration in food crops and coral, *Journal of Environmental Radioactivity*: 88(2006) 251-266
10. Gilbert ES, Land CE, Simon SL. Health effects from fallout, *Health Physics*, May 2002; 82: 726-735
11. Conard RA, Dobyns , BM Sutow WW. Thyroid neoplasia as a late effect of active exposure to radioactive iodine in fallout. *JAMA* 214: 316-324. 1970
12. Palafox NA, Yamada S, Ou AC, Minami JS et al Cancer in Micronesia *Pac Health Dialog* 2004; 11:44-49
13. Kroon E., Cancer in the Republic of the Marshall Islands, *Pac Health Dialog* 2004; 11 70-77

14. National Academy of Science (NAS), National Research Council, Health Risks from Exposure to Low Levels of Ionizing Radiation, (BEIR VII, Phase 2 Report), Washington, DC 2005

15. Hamilton TE, van Belle G, LoGerfo JP. Thyroid neoplasia in Marshall Islanders exposed to nuclear fallout. JAMA 258:629-636 1987

16. Johnston and Barker. "Assessing the Human Environmental Impact of Damage from Radioactive Contamination, Denied Use, and Exile for the Rongelap, Rongerik and Ailinginae Atolls: Anthropological Assistance to the Rongelap Land Valuation/Property Damage Claim." Prepared for the Office of the Public Advocate, Nuclear Claims Tribunal, Majuro: RMI.

17. Palafox NA, Buenconsejo-Lum L, Riklon S et al . Improving Health Outcomes in Diverse Populations: Competency in Cross-Cultural Research with Indigenous Pacific Islander Populations Ethnicity and Health 2002; 7(4) 279-285

18. Pacific Health Research Institute, Annual Program Progress Report under DOE/PHRI Cooperative Agreement, September 1999.

19. Palafox NA, Gunawardane K, Demei Y. Pacific Island partnership: The Pacific Cancer Initiative. J Cancer Educ. 2006; 21 (Suppl) S87-S90