July, 1996, marked the 50th anniversary of the first US nuclear tests at the Pacific Proving Grounds in the Marshall Islands. Code-named "Able" and "Baker," these tests were conducted as part of "Operation Crossroads" — the nuclear testing program that initiated the US buildup of nuclear weapons throughout the Cold War period. Operation Crossroads required the evacuation of the approximately 160 residents of Bikini atoll and marked the beginning of a long and involuntary exile of many Marshallese from their traditional island homes. In all, the US conducted a total of 66 nuclear tests in the Marshalls between 1946 and 1958, wreaking severe environmental, health, social and economic damage to the land and people of the Marshalls that will last for generations.

In response to the "Openness Initiative," begun by Department of Energy (DOE) Secretary Hazel O'Leary in 1993, the Republic of the Marshall Islands (RMI) petitioned for access to all documentation pertaining to the US tests and their impacts on the lands and people of the Marshall Islands. The Marshallese government received over 50,000 records which have been catalogued and reviewed. In addition, the RMI requested to have its case heard by the Advisory Committee on Human Radiation Experiments during its 1994 and 1995 hearings. Based upon petitions from the RMI government, Senator John Glenn, and other involved parties, the Advisory Committee agreed to include the Marshall Islands as an affected group. Many of the documents obtained by the RMI through the Openness Initiative were used in support of their claims.

The picture that emerges is one of exploitation and flagrant disregard of human rights in the pursuit of scientific knowledge and technological development of nuclear weapons in the Cold War era. Evidence from the documents review and testimony from Marshallese citizens have led the RMI to take an increasingly proactive role in exploring environmental and health issues — both directly with the US government and through appeals to the international community. Through these appeals, the RMI hopes to persuade the US government to provide additional support for health assessments, an expansion of the range of recognized radiogenic illnesses, and an increase in funding available for health care and compensation of Marshallese radiation victims. In addition, the RMI is petitioning for an expansion of environmental monitoring and cleanup, and assistance with continuing health care.

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problems in the Islands' food and water supplies.

The Republic of the Marshall Islands is located within Micronesia about 2,500 miles southwest of the Hawaiian Islands. It consists of 33 atolls — coral reefs and lagoons — and 1,225 islands. RMI covers an area of approximately 750,000 sq. miles, of which only 70,000 sq. miles is land. The Marshalls currently have one of the highest birth rates in the world, with a total population approaching 60,000 people. There is little institutional infrastructure in the Marshalls, and only one major hospital located at the capital Majuro. Additional primary health care is provided at the village level by community health aids, who are equipped only to dispense medicines and treat minor wounds and infections. More serious conditions and emergencies require evacuation to the hospital at Majuro. Individuals with documented radiogenic diseases are also evacuated to Hawaii for treatment, which is a considerable hardship on them and their families.

The Marshall Islands came under joint US and UN control at the end of World War II, following its occupation by the Japanese during most of the war. In 1983, the Compact of Free Association granted the Marshall Islands certain rights of self-government and self-determination. However, it also recognized that the US should maintain a continuing responsibility to the Marshalls because of US contamination of their lands during the Cold War.

Although the US has readily admitted to contamination of Marshall Islands, it has been less willing to accept responsibility for the deliberate radiation exposures experienced by many of the Islands' inhabitants.

However, the records reveal incredible disregard for the rights, safety and well-being of the islanders. For example, the “Able” test of July 1946 released the explosive energy of 23,000 tons of TNT over Bikini atoll. By 1947, the Navy and the Atomic Energy Commission (AEC) determined that Bikini was too contaminated to be useful for additional tests and selected Eniwetok as the second test site. Residents of both Bikini and Eniwetok were evacuated for these tests, but preparations for subsequent tests did not always include this precaution.

In 1949, the Soviets began their own nuclear testing program and US testing in the Marshall Islands accelerated. The Soviets exploded their first hydrogen bomb in 1953 and had made it small enough to be dropped from a plane. The US feared that the Soviets could drop such a bomb on Washington, DC, and that fallout would travel up the Eastern seaboard and over major cities along the way. AEC scientists realized that they had little idea of the human health and environmental consequences of fallout from such a weapon. The 1954 “Bravo” test conducted at Bikini was designed by Edward Teller of the Lawrence Livermore Laboratory to meet this need. Its purpose was to produce maximum radioactive fallout from a hydrogen bomb small enough to be dropped from a plane. To track the expected fallout from the “Bravo” blast,
the AEC established a network of radiological monitoring stations in approximately 50 countries worldwide. In 1957, a meteorologist for the AEC testified before Congress that radioactive strontium, cesium and americium associated with “Bravo” were still falling down to earth.

“Bravo” exploded at a yield of 15 megatons, equivalent in size to 1,200 bombs of the size dropped on Hiroshima in 1945. “Bravo” also unleashed a 20-mile high cloud of lethal radioactive particles which spread over several inhabited islands. The US has long claimed that “accidental wind shifts” were to blame for the irradiation of these islands. Yet there had been alarming reports only six hours before the test indicating that winds at 20,000 feet were heading directly from Bikini for the island of Rongelap. According to Glenn Alcalay, a former Peace Corps volunteer and medical anthropologist with more than 20 years involvement with the Marshallese and their health problems, the residents of Rongelap were seriously exposed to fallout for at least a three-day period following the blast, after which they were evacuated. It has been estimated that they received 190 rads of whole body gamma radiation. Residents have said that the fallout accumulated a greyish yellow powder on the islands that was two or three inches deep.

“They actually walked around and could see their footprints on the island,” Alcalay reports. “They received their radiation by inhaling the fallout, by absorbing the fallout through the skin and ingesting the fallout through the food and the water into the gut. So they received it through all possible modes. They were a dandy experimental group of human beings!”

Some Rongelap residents experienced epilation, a condition where all the hair on the body falls off. This was an early health effect experienced by victims of the Hiroshima and Nagasaki bombings. In addition, the people experienced reduced blood levels which made them particularly susceptible to secondary types of diseases that normal, healthy immune systems can usually resist. Beta burns were also reported by island residents. A biomedical monitoring program was initiated by the US.

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**HHS Research Committee to Add Stakeholder Work Group**

In mid-September, the Centers for Disease Control Center for Environmental Health opened nominations to a new work group within the Dept. of Health and Human Services’ Advisory Committee for Energy-Related Epidemiologic Research (ACERER). This Work Group on Community, Tribal, and Worker Affairs will oversee and make recommendations on public involvement in energy-related health research projects. In addition, the new work group is charged with providing advice on how communities can and should advise federal agencies on how to prioritize and incorporate community-based research.

The impetus for the work group came from participating stakeholders and ACERER members who are seeking to enhance stakeholder involvement in issues that affect community, worker, and Native American people so that they have a greater voice in decisions regarding when and how federally-funded health studies will be conducted. At the urging of these stakeholder groups, the ACERER began drafting guidelines for developing a set of responsibilities and possible activities for the work group. After several delays, CDC/CEH sent out requests for nominations in mid-September to participants in a major 1994 workshop on community, tribal and worker affairs as well as to other interested parties. As of this writing, CDC had closed the nomination process and selected a panel to review applications. The CDC/CEH hopes that final appointments will be made by the end of calendar year 1996, with work group activities beginning in early 1997. For further information contact Ms. Nadine Dickerson, CDC/CEH, at 770/488-7040.

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government to deal with these health issues, and a total of 13 radiogenic diseases are currently recognized.

In the years since the tests, thyroid disease has risen to an alarming rate [See Hamilton, Thomas E., PSR Quarterly, vol. 1(1), March 1991]. By 1992, about 38 years after “Bravo,” more than 200 people have needed to have their thyroids surgically removed. To address this problem, the US Department of Health and Human Services, Centers for Disease Control (DHHS/CDC), initiated a study of thyroid disease in the islands, under a Cooperative Agreement with the Department of Energy.

CDC is now conducting a feasibility study to see whether a full epidemiological study of thyroid disease among RMI citizens is possible. Now in its second year, the study includes development of a protocol for conducting research among residents of all 33 atolls. During the summer of 1996, a team of CDC health researchers field tested two questionnaires that will be used with affected communities. The first is a community lifestyle assessment that will document relocation patterns, traditional agricultural and food gathering activities, and changes in the community environment. The second questionnaire will be used with individual community members to assess their personal relocations, lifestyle and possible exposures. In addition, the CDC team examined the feasibility of conducting health assessments on all 33 atolls. Because most islands lack electricity and health facilities, the study poses certain logistical difficulties which are currently being analyzed.

There are also serious concerns about other radiogenic cancers and the overall reproductive health of the Marshallese. RMI representatives have requested that US health agencies include community information in designing health studies, and have recommended a number of additional research needs as well. Holly Barker, Chief Advisor for International Economic and Political Affairs at the RMI Embassy in Washington, DC, is especially concerned about women’s reproductive health problems. “For years, women hid these problems from their men and from each other, so very little information made it to the government for inclusion in negotiations with the United States. In addition, when women did report miscarriages and birth defects, they were told it had nothing to do with the tests.”

This situation is changing, however, as Marshallese women participate in efforts to address these problems. For example, Mrs. Lijon Eknilang, a native of Rongelap, testified before the International Court of Justice in November 1995 about the effects of the Bravo test on the people of Rongelap. She spoke of the evacuation of the island two-and-one-half days after the test, and of the Islanders’ return some three years later. “When we did return, we saw changes on our island. Some of our food crops, such as arrowroot, completely disappeared. Makmok, or tapioca plant,
Since the beginning of the Manhattan Project, the Atomic Energy Commission (later to become the Energy Department) possessed sole statutory authority and responsibility to investigate the health impacts of chemical and ionizing radiation exposures resulting from nuclear weapons production and testing. By 1992, in response to an increasing erosion of scientific credibility and public trust in the DOE health research program, a lawsuit to release worker health data to independent health investigators, and pending legislation that would have transferred weapons complex health research activities from the DOE to the Department of Health and Human Services (HHS), the DOE signed an agreement to transfer most of its responsibilities to HHS.

Under the agreement, which was renewed in 1996, DOE continues to collect health-related data and provide funding for the work, while HHS agencies analyze exposure and health outcome information on both workers and off-site populations. In addition, several state health agencies and the federal Agency for Toxic Substances and Disease Registry conduct health impacts investigations through separate agreements with DOE.

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stopped bearing fruit. What we did eat gave us blisters on our lips and in our mouths and we suffered terrible stomach problems and nausea. Some of the fish we caught had the same problems. These were things that had not happened before 1954." The US government finally admitted that the Rongelap natives had been returned prematurely, and re-evacuated them three years later. Leukemia, brain tumors, breast cancer, and other forms of cysts and nodules also increased.

"Women have experienced many reproductive cancers and abnormal births. Marshallese women suffer silently and ... our culture and religion teaches us that reproductive abnormalities are a sign that women have been unfaithful to their husbands," Mrs. Ekniling testified. "For this reason, many of my friends kept quiet about the strange births they had. In privacy, they gave birth, not to children as we like to think of them, but to things we could only describe as 'octopuses,' 'apples,' 'turtles,' and other things in our experience. We do not have Marshallese words for these kinds of babies, because they were never born before the radiation came."

The most common birth defects on Rongelap and nearby islands have been "jellyfish babies," babies born with no bones and with transparent skin. These infants live for a day or two before death. In addition, the Marshalls report that many women die from abnormal pregnancies, and those who survive give birth to what resembles a strand of purple grapes.

This information is currently being collected and analyzed by researchers who have explored the connection between radiation exposure and the health problems of the Marshalls for some time. Between 1975 and 1992, Glenn Alcalay interviewed over 1,200 Marshallese women to document their reproductive health problems. His findings are particularly startling because they reveal that reproductive health problems occur among women who resided on atolls and islands beyond the four recognized as exposed by the US government.

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The RMI is taking an increased interest in these issues and continues to explore community health assessment and education as a means of providing support to the Marshallese who were among the earliest and least recognized radiation victims. The RMI also hopes to bring the plight of its people to the attention of the world community. “We believe,” commented Ms. Barker, “that wherever there is a focus on human rights and environmental degradation, we have an opportunity to affect future policy. We have been encouraged that the Clinton Administration is more open to talking with us about these issues, and we are hopeful that we can obtain additional assistance for our people.”

As Mrs. Ekniliang noted, “The story of the Marshallese people since the nuclear weapons tests has been sad and painful. Allow our experience to save others such sadness and pain.”

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