

Cesium-137 and Americium-241 in Vegetation and Soil on Enewetak Atoll: A Former U.S. Nuclear Test Site in the Marshall Islands.

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Abstract

Enewetak Atoll was one of two sites in the northern Marshall Islands that was used by United States (U.S.) for testing of nuclear weapons. Initial cleanup of Enewetak Atoll commenced in May 1977. This was followed by partial resettlement of the southern end of the atoll in 1980. Nuclear testing and the subsequent cleanup operations left many of the islands devoid of vegetation and subsistence foodcrops. Conditions slowly stabilized with limited re-vegetation of islands over the next 10 to 15 years. Locally grown foods became more available as newly established trees began bearing fruit. Food gathering practices on northern islands raised concerns about the potential for increased levels of ^{137}Cs exposure in the diet of the resident population. As a consequence, scientists from the Lawrence Livermore National Laboratory (LLNL) conducted a series of detailed characterization studies of islands on Enewetak Atoll through the 1990s.

Soil and vegetation samples were collected on a 50 or 100 meter increment grid. Coconuts were collected at each grid point unless unavailable, and were classified as either drinking or copra coconuts depending on the maturity of the nut. Other food crops of *Pandanus*, breadfruit, squash, banana, taro and morinda were collected wherever they could be located, some of which were at the grid sampling sites. A limited number of indicator species (native foliage) of coconut fronds and leaves of *Messerschmidia*, *Scaevola* and *Guettarda* were also collected for comparative purposes.

The Republic of the Marshall Islands are seeking nuclear test compensation through a recent petition to the US Congress. This petition includes an award for \$341-million to Enewetak Atoll. This paper will discuss the results of environmental characterization studies on Enewetak Atoll with implications for assessing the need for additional cleanup of the islands.

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