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RESIDUAL CONTAMINATION OF PLANTS, ANIMALS, SOIL, AND WATER OF THE MARSHALL ISLANDS TWO YEARS FOLLOWING OPERATION CASTLE FALLOUT

Research and Development Report USNRDL-455
NS 081-001

#9 FC

15 August 1956

by

H. V. Weiss
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U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

SAN FRANCISCO 24 · CALIFORNIA

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Special Distribution

Technical Objective
AW-7

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ABSTRACT

The amount and distribution of radioactive material remaining on several atolls and incorporated into plants and animals of the Marshall Islands was determined two years after their contamination by fallout from the March 1, 1954 nuclear detonation of Operation CASTLE.

Readily detectable amounts of radioactive contamination were found in animals, plants and soil. Most of the activity in the edible portion of plant specimens was contributed by cesium-137

The major radionuclides found in the tissues of fish was zinc-65, and that in clams, cobalt-60.

Residual soil contamination remained confined to the surface.

SUMMARY

The Problem

To determine the amount and distribution of radioactive material remaining on several atolls and incorporated into plants and animals two years after their contamination by fallout from the 1 March 1954 nuclear detonation of Operation CASTLE.

Findings

Readily detectable amounts of radioactive contamination were found in Marshall Island animals, plants, water and soil samples.

An increase was observed in the activity of coconuts, compared with the results of a survey made one year ago (about one year post-detonation).

Some samples of portulaca, coconut husks, pandanus keys, pandanus air roots, a clam, and certain potable water contained levels of strontium-90 which exceeded the maximum permissible concentration.

The gamma radiations over the atolls decreased by 80 per cent over the past year. This loss of activity was attributed to radioactive decay rather than the migration of nuclides to deeper layers or their erosion into the surrounding water.

The activity in fish was almost 25 per cent of that determined at the one-year post-detonation survey.

ADMINISTRATIVE INFORMATION

This is the second report of the atoll Resurvey Project. The resurvey was made under the joint sponsorship of the Bureau of Ships and the Atomic Energy Commission, Bureau of Ships Project Number NS 081-001, Technical Objective AW-7, as described in U.S. Naval Radiological Defense Laboratory Annual Progress Report to the Bureau of Ships, DD form 613, of 6 October 1955.

The work was done jointly by the Chemical Technology Division and the Biological and Medical Sciences Division of this laboratory.

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