

RADIOLOGICAL QUALITY OF THE ENVIRONMENT



NUCLEAR REGULATORY COMMISSION

Docket No. 50-352/353 Official Exh. No. 159
In the matter of PECO - Limerick 1A2
Staff _____ IDENTIFIED ✓
Applicant ✓ RECEIVED _____
Intervenor _____ REJECTED _____
Cont'g Off'r _____ DATE 6/19/84
Contractor _____ Witness _____
Other _____
for Mary Simon

MAY 1976

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Radiation Programs
Washington, D.C. 20460

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PDR ADDCK 05000352
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To determine worldwide deposition, HASL assumes that within the 10 degree latitude band, that HASL sampling sites, on the average, are representative of fallout in that area. Hence, multiplying the average monthly ^{90}Sr deposition (mCi/km^2) by the area of the latitude band (km^2) gives the total deposition in that band. For poleward areas beyond 80°N and 70°S , values of deposition are obtained by extrapolating smoothly decreasing ^{90}Sr deposition to zero at the poles. Summing all the derived deposition in each latitude band yields the total worldwide deposition. The total deposition of ^{90}Sr fallout on the earth's surface in 1973 was found to be 63 kCi. This is the lowest value since the program began in 1958. The seasonal and latitudinal variations in fallout have remained as before (4.1).

Table 4-1 and figures 4-1 and 4-2 show the annual cumulative worldwide ^{90}Sr deposition, monthly ^{90}Sr deposition and cumulative ^{90}Sr deposition since 1958. From these tables and figures, it is evident that the total ^{90}Sr burden is decreasing as radioactive decay exceeds fallout.

Strontium-90 in diet

Estimates of intake via the total diet in New York City and San Francisco have been made since 1960 based upon concentrations found in quarterly food samples. The dietary intakes of ^{90}Sr have decreased from maximum levels attained in 1963-64, but the decline has become more gradual in recent years due to the continuing small amounts of ^{90}Sr deposition and the little changing cumulative deposit in the soil. The annual intake in New York City in 1973 was 9.7 pCi/day which is a 9 percent decrease from 1972. The 1973 estimate of intake for San Francisco was 3.2 pCi/day compared to 3.6 pCi/day in 1972. Lower intakes occurred in San Francisco due to the fact that less deposition occurs in the San Francisco food-producing region (4.2).

Table 4-2 shows ^{90}Sr concentrations found in the diet for some 19 food products in San Francisco and New York City. Figure 4-3 shows the trend in ^{90}Sr concentration in these cities since 1960. The rapid decline in ^{90}Sr intakes after 1963-1964 became more gradual after 1966-67 as the uptake from the little changing cumulative deposit of ^{90}Sr on soil became the dominant factor contributing to ^{90}Sr concentrations in food (4.2).

Resumption of atmospheric testing by the French and Chinese in 1966, resulting in a relatively constant low fallout rate of ^{90}Sr , has been a factor in maintaining the dietary intakes of ^{90}Sr at about constant levels since 1968.