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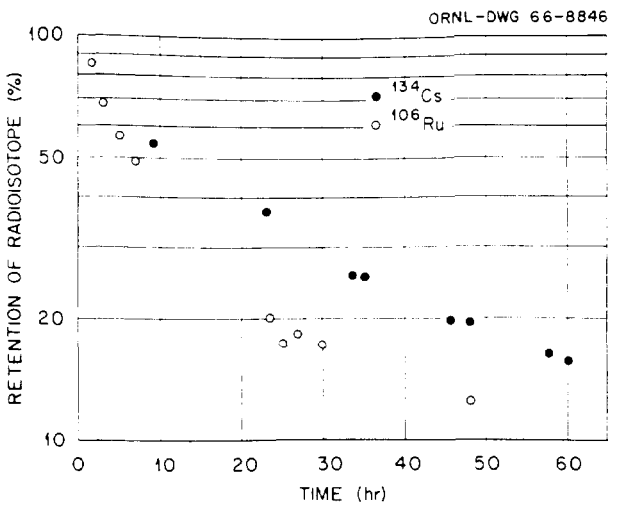

Fig. 9.10. Retention of ^{134}Cs and ^{106}Ru by Crickets (*Acheta domesticus*).

Dissections of crickets in additional experiments confirmed rapid clearance of ^{106}Ru from the crop and gizzard. Mid-gut and hind-gut concentrations decreased at rates similar to the whole-body longer components, probably as a result of elimination of absorbed material from the intestinal walls. Radiocesium also has been shown to concentrate in the intestinal walls of orthopterans.[19] However, radiocesium was also found distributed among muscle, fat body, and other soft tissues of insects, whereas ^{106}Ru concentrates mainly in the intestinal walls and was not detected in samples of fat body of *Acheta*. Neither radionuclide accumulated in the integument.

LOSSES OF ^{137}Cs AND ^{60}Co FROM LEAF LITTER

Martin Witkamp Marilyn L. Frank

Three types of leaf litter (alder, white oak, and sycamore) tagged with ^{137}Cs and ^{60}Co were exposed in natural environments with varied rates of leaching (forest floor, pond, stream) for showing contrasts in isotope solubility, in complexing with organic compounds, and in biological importance. The leaves were contained in nylon mesh bags. Loss rates of ^{137}Cs were from 2 to 12 times higher than for ^{60}Co. First year's loss of ^{137}Cs, ^{60}Co, and weight was greatest in a stream and least in a forest, whereas losses in a pond were intermediate. Microbial densities and activities on the leaves were not significantly correlated with these losses, indicating the dominant effect of leaching over microbial breakdown. Both losses and microbial activities and densities were greatest on sycamore leaves and least on alder leaves, with oak leaves in an intermediate position. Thus it appears that loss rates of nuclides in organic matter exposed to these contrasting environments are primarily determined by rates of leaching, whereas within any one of these environments, microbial breakdown regulates rate of release between leaf species.

^{137}Cs TRANSFER IN TERRESTRIAL MICROCOSMS

Martin Witkamp Marilyn L. Frank

Terrestrial microcosms composed of differing numbers of compartments were leached by simulated rain to evaluate transfer of ^{137}Cs. After six months of leaching, the microflora of decomposing tulip poplar leaves retained more than one-third of the leachable ^{137}Cs. In the presence of millipedes, the microflora retained only 11% of the initial ^{137}Cs. The consumption of microflora by millipedes reduced total amounts that could be retained by microbes. Leaves lost half their weight and 73% of their ^{137}Cs. Most of the initial ^{137}Cs was held by the soil (51%), while 21% was in the organic fraction. Loss from the entire system amounted to only 8%. Results show that the microflora is the major biological ^{137}Cs accumulator, and that the soil after only six months retained more than half of the ^{137}Cs input.

ACCUMULATION AND PRODUCTION IN A PIONEER ECOSYSTEM OF KUDZU VINE AT COPPERHILL, TENNESSEE

Martin Witkamp Marilyn L. Frank

Development of biota and matter was measured during the fifth, seventh, and ninth years of succession of kudzu vine (*Pueraria lobata*) planted on cultivated and fertilized strips of a [illegible]ded

[19] D. A. Crossley, Jr., and M. E. Pryor, *Health Phys.* 4, 16–20 (1960).

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