

BIOACCUMULATION AND BIOMAGNIFICATION OF RADIOCESIUM IN LITTORAL ZONE BIOTA FROM A COOLING RESERVOIR ON THE SAVANNAH RIVER SITE

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Radiocesium, a long-lived radioactive isotope produced as a byproduct of nuclear fission, occurs in various aquatic ecosystems located on the Savannah River Site (SRS) in Aiken, SC, after past releases of contaminated wastewater into cooling reservoirs. The presence of radiocesium in aquatic systems poses a risk for both animals and humans and could potentially move from aquatic systems to terrestrial. One such system on the SRS, Pond B, is an ideal site for examining radiocesium accumulation in aquatic biota and accessing potential movement through trophic levels. Three locations within Pond B (inflow, Heron Island, outflow) were sampled to examine for potential site-specific differences in accumulation. Sediment samples and biofilm samples were also collected to establish base levels of cesium in the trophic system. Minnow traps and dip-netting were used to collect benthic invertebrates (N=1) and fish species (N=4) from the littoral zone of Pond B. All samples collected were processed in an auto gamma counter for radiocesium levels. Radiocesium levels in sediments in and biofilms were relatively uniform among the 3 sites with only a few exceptions. Similarly, radiocesium levels in biota (Odonate larva, Mosquitofish,

Bluegill, Warmouth, Redfin Pickerel) were relatively consistent among both sites and species. The results did not support the occurrence of site-specific differences in radiocesium accumulation or biomagnification through the system, keeping in mind that our sampling method affected sizes of biota examined. Our findings do indicate the continued accumulation of radiocesium in Pond B biota > 50 years post-release at levels ranging from 0.0530 – 6.0799 Bq/g (dry wt.).



Christina in the lab.