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Organochlorine Pesticide Concentrations in Water, Soil and Sediment of the Indian Creek and Huntsville Spring Branch Watersheds

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Abstract:

The persistence of pesticides in terrestrial and aquatic ecosystems of the Indian Creek (ICW) and Huntsville Spring Branch (HSBW) watersheds is a major concern for North Alabama. This particular study entailed the collection of 54 soil and sediment samples from upland, bank and in-stream depositional areas within these two watersheds. Concentrations of 22 pesticides were determined through dual-column analysis using GC-ECD. The most predominant occurrences were observed for DDT (dichlorodiphenyltrichloroethane), DDE, DDD, heptachlor and various endrin compounds. OCP concentrations ranged from undetectable to 5080 $\mu\text{g}/\text{kg-dw}$. An obvious trend was observed for DDT and its metabolites, $\text{DDT} > \text{DDE} > \text{DDD}$, respectively. OCP concentrations tended to be higher at the upland positions and in the HSBW, specifically at site 9.

Impact Statement:

Overall, ICW showed more consistent detections for many of the compounds. Many of the OCPs also exceeded established water and soil quality criteria. These findings were attributed to variations in absorption, volatilization, plant uptake, microbial degradation, land use and other processes affecting the degradation and retention of these pesticides at specified locations.

Category: Watershed Assessment and Restoration

Type of Presentation: Poster Presentation