The Fate of Chlороacetanilide Herbicides and Their Degradation Products in the Nzoia Basin, Kenya

Odipo Osano, Daniel Nzyuko, Mwakio Tole, and Wim Admiraal

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Abstract

Alachlor, metolachlor and their respective environmentally stable aniline degradation products, 2,6-diethylaniline and 2-ethyl-6-methylaniline were analyzed in water and sediment samples from 9 sites along River Nzoia, Kenya using gas chromatography. The degradation products were detected in > 90% of the sediment and water samples, while the parent compounds occurred in < 14% of the water samples. Much higher concentrations of the pesticides and their degradation products occurred in the sediment than in the water (1.4 up to 10 800-fold), indicating an accumulation of the compounds in the sediment. The constant occurrence of the degradation products in the sediment during the study period infers a persistence of these compounds. It is hypothesized that the prevailing tropical climatic conditions favor a quick breakdown of the pesticides to their environmentally stable degradation products, thereby making the latter more important pollutants than their parent products in the study area.