

◆ Research paper

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Distribution and Risk Assessment of Aldrin, Endrin, Heptachlor, and Heptachlor Epoxide in Some Villages in Hawul River Basin

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Abstract: Aldrin, endrin, heptachlor, and heptachlor epoxide were investigated to assess their distribution in the environmental compartments of the Hawul River basin with emphasis on surface water, sediment, and fish (*clarias gariepinus*). GC-MS was used for the identification and quantification of the pesticide residues after extraction and clean-up of the residues using the QuEChERS method. The results indicated a high concentration of the OCPs analyzed with some locations having concentrations above the recommended MRLs values. Aldrin and endrin are the most abundant of the OCPs analyzed with 0.3mg/L and 0.04mg/L as their lowest concentration in water samples, which is above the 0.01 µg/L MRL recommended by WHO. The total OCPs burden is in the order of Garkida > Kopre > Garkida WB > Daba > Kiri > Dabna. The health risk which was computed using the Hazard Quotient and Hazard Index shows Aldrin and Endrin have HQ greater than 1 in all sampling locations in a range of 1.39 – 9.85, 1.85 – 6.44 while heptachlor and heptachlor epoxide were less than 1 in the range of 0.03 – 0.56 and 0.006 – 0.07 due to fish consumption. The HI which is the cumulative effect of the individual OCPs in fish was in the sequence Garkida (WB) > Kiri > Kopre > Garkida > Dabna > Daba.

Keywords: Pesticides, Assessment, Health risk, Cancer risk



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