

**HEALTH RISK ASSESSMENT OF ORGANOCHLORINE PESTICIDES AND
TRACE METALS IN WATER, SEDIMENT AND *Papilio crataegus* FROM QUA
IBOE RIVER, NIGERIA**

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ABSTRACT

Food consumption is an important route of human exposure to organic chemicals. To assess the health risks associated with these chemicals due to fish consumption, the levels of trace metals (Cd, Cr, Ni, Cu, V, Pb, and Sn) and organochlorine pesticides (OCPs) in water and fish (*Papiloscramus afer*) from Qua Iboe River were assessed using atomic absorption spectrometry (AAS) and gas chromatography-electron capture detector (GC-ECD), respectively. Physicochemical parameters were also determined in water and sediment using standard methods. Levels of the trace metals in water ranged from below detection limit (BDL) to 0.10 mg/L with the trend Cu > Cd > Cr > Ni > V > Sn > Pb. The levels of the trace metals were within WHO and SON acceptable limits. In sediment, the trace metals ranged from 0.01 to 0.21 mg/kg with the same trend. For the fish, the trace metals ranged from BDL to 16.54 mg/kg with the same trend. The GC-ECD analyses of OCPs in the different samples gave variable levels of the OCPs in the investigated samples. The concentrations of the OCPs in the fish ranged from 0.01 to 1.87 ng/g. Significantly, p,p'-DDE in the fish were higher (average 1.87 and 1.82 ng/g for wet and dry seasons respectively) compared with other OCPs. The physicochemical parameters analysis showed variable results in the investigated samples. The estimated risk from trace metals contamination due to consumption of the fish revealed hazard quotient (HQ) values greater than unity, indicating risk in consumption of the fish. The estimated risk in terms of dermal absorption through swimming in the water classified the studied river as unpolluted since HQ values were all less than unity. The estimated risk of OCPs in water and fish revealed the suitability of the water and fish for human consumption at the time of the study. Principal component analysis (PCA) revealed the investigated parameters which exerted influence in the water environment in both seasons. For sustainability of the river for use by the present generation without compromising standard for future generations, routine monitoring of these chemicals in the river is strongly advocated.