

Assessment of Water Quality in Wichita, Kansas, Using an Index of Biotic Integrity and Analysis of Bed Sediment and Fish Tissue for Organochlorine Insecticides

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Abstract. This study investigated water quality of the Arkansas River and its tributaries in the Wichita, Kansas, area. Water quality assessment included an evaluation of urban versus agricultural areas using a twofold approach: (1) assessment of fish community health using an index of biotic integrity (IBI); and (2) analysis of organochlorine (OC) insecticides in fish tissue (*Cyprinus carpio*) and sediment samples via gas chromatography. Results of the IBI analysis indicated that the overall health of the fish community was poor. No significant difference existed among IBI scores at urban sites compared to agricultural sites; however, a pattern was noted with higher IBI scores at the agricultural sites. Total IBI scores and individual metrics were not statistically correlated to either normalized or non-normalized organochlorine concentrations in fish or sediment. Lindane, chlordane, 4,4'-DDT, and 4,4'-DDE were the most commonly detected OCs in sediment and fish tissue and often exceeded federal guidelines. Total OC concentrations and their detection frequency were significantly greater in urban than agricultural areas. In addition, a significant correlation was found among total OC concentrations in fish and sediment. This assessment concluded that overall water quality in the Wichita area was poor and that the urban area has significantly impacted water quality.