



Title: Traditional Aquaculture Practice at East Calcutta Wetland: The Safety Assessment

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Abstract: The current study is on East Calcutta Wetland (ECW) which is a model for multi-use resource recovery system with activities like pisciculture and agriculture. The entire city's soluble waste is disposed into the raw sewage canals which finally drains into the shallow, flat bottom fish ponds called Bheri. These sewage fed fisheries act simultaneously for the purification process like removal of heavy metals, coliform reduction as well as fish production at a commercial scale. The fishes from these Bheri are analyzed for the extent of metal accumulation in them as compared with those collected from the fresh water ponds around Calcutta. This comparative study was done to access the risk involved, if any, in fish cultivation and its subsequent consumption from these wastewater fed fisheries. Two types of commonly consumed fishes were chosen for the study namely *Labeo rohita* and *Cirrhinus mrigala*. Analysis of elements like P, S, Cl, K, Ca, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Se, Br, Rb, Sr and Pb was done by Energy Dispersive X Ray Fluorescence (EDXRF) in order to quantify the level of accumulation. The analysis inferred that elements like Cr, Cu, Rb, Pb shows accumulation in substantial amount in both type of fishes collected from the sewage fed as well as freshwater sources. The uptake of these fishes by human population thereby causes the consumption of these elements in relatively higher level as compared to the Recommended Dietary Allowance (RDA). Thus consumption of waste water cultivated fishes pose no additional health hazard. The accumulation of these metals in fishes from both Bheri as well as fresh water pond put forth a plausible action of diverse microscopic population and certain geochemical factors acting beneath the phenomenon of sedimentation as well as biomagnification of metal in the fish pond and their subsequent uptake in the aquatic food chain.