ASSESSMENT OF MICRO PLASTICS POLLUTANTS IN RIVER SWAT

Abstract

Plastic pollution in aquatic ecosystems is terrible threat to the aquatic life form. Toxic effects of these ugly plastics and their additives have been observed and reported in aquatic organisms. The presence of microplastics (MPs) are ubiquitous and has been described in almost every part of the environment, and struggles are being made to find ways and methods to control their explosion and potential sources. The aim of this study was to expose the spatial distribution, richness and types of MPs in water, sediments and fish across River Swat in KP-Pakistan. Samples were taken from eight (8) different sites in river Swat and upstream and downstream to river Swat mouth from Kabul river. Highest concentrations of MPs were observed consisting 753.71 ± 330.08 MPs/ m^3 in the water samples at Mingora site and 834.0 ± 367.21 MPs/kg in the sediment samples at Mingora site while 17.08 ±8.27 MPs/individual in *Shizothorax plagiostomus* . Lowest concentrations were detected with 57.64 ± 31.98 MPs/ m^3 in the water samples at downstream to river Swat mouth at Kabul river and 215.0 ± 20.0MPs/kg in the sediment samples at Chakdara while 5.0 ±2.36 MPs/individual in *Wallago attu* species of fish. MPs concentration in River Swat were calculated to be 588.29 ± 253.95 MPs/kg in sediment and 305.79 ± 289.66 MPs/m^3 in the water samples while in fish samples 12.54 ±8.02 as expressed in the terms of Mean ± SD. The percentage of fibers in overall samples was highest across the sampling sites corresponding to 92% in the sediments, 80% in water, and85% fish samples. While the second abundant MPs type were different in different types of samples ,in sediments it was fragment 6% and water it was foam 12% while in fish the second abundant types of MPs were sheet with a proportion 10%. Majority of the MPs were produced from the secondary sources and their potential sources were the fish netting, household and commercial activities near the river within the Swat region. This study was aimed to highlight the mismanagement of plastic wastes in Pakistan, and to report urgent need of policies to control productions, usage and recycling of plastics to control plastic cancer in aquatic ecosystems.