

Applying river pollution index and QUAL2K model for water quality assessment and management in Ke-Ya river, Taiwan

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Waste water from hundreds of factories in Hsiang-Shan industrial park, Hsinchu Science Park, animal husbandry, metal surface electroplating industries, and domestic sewage are discharged into Keiya River HsinChu, Taiwan. In this study, monitoring data of the Keya River was collected, the river pollution index (RPI) and QUAL2K models were utilized for analysis and assessment of water quality. The divide of pollution collection area and evaluation of the assimilative capacity were also discussed.

The results indicated that the main pollutant in the water quality of Keiya River was ammonia nitrogen, which was contained in wastewater discharged from residential areas and Hsinchu Science Park etc., the second was biochemical oxygen demand (BOD). In order to improve the problem of ammonia nitrogen in the rivers, the Taiwan Environmental Protection Agency has tightened the emission limits of ammonia and nitrogen concentrations in wastewater discharges from 2012. The ammonia nitrogen wastewater treatment modules were also installed in the Hsinchu Science Park to reduce ammonia nitrogen emissions into rivers. In addition, the Hsinchu City Environmental Protection Bureau has strengthened the control of the copper standard for discharge water upto 1.5mg/L from 2017, so that the copper concentration in the current river water was maintained at <0.001-0.03mg/L, which was compliance with the environmental standards related to human health protection.

Keywords: river pollution index, assimilative capacity, ammonia nitrogen