Tropentag, October 6-8, 2009, Hamburg

"Biophysical and Socio-economic Frame Conditions
for the Sustainable Management
of Natural Resources"

Study on the Variations of Water Quality of Sikan River Influenced by Agriculture Wastewater

Hossein Sabahi[1], Hadi Veisi[1], Mohammad Faizi[2]

[1] *Shahid Beheshti University, Environmental Science Research Institute, Iran*
[2] *Ministry of Education, Biology, Iran*

Abstract

Sikan river is one of the end branches from Saymareh river. 57 % of agriculture lands in Dareshaher, Ilam province, Iran, exist around of this river. In attention to consume 1343 ton chemical fertilisers per year, the discharge water of these lands can influence the quality of river water. For providing the basic management strategies, the seasonal variations of water quality was evaluated. In this way, quality characteristic of river water was measured in four season of year. Data showed that with progressing in year, NH_3 and followed it, pH decreased. The dissolved oxygen (DO) was minimum in summer. The lower DO and higher COD (chemical oxygen demand) in summer are influenced by various factors. Higher concentration of phosphorus caused higher growth of alga and phytoplankton and therefore organic matter accumulation, which decreases the concentration of dissolved oxygen with biodegradation. The high negative and significant correlation between phosphorus and DO (r =0.92***) confirm this hypothesis. In addition, the increase in temperature causes a decrease in oxygen solubility, which further reduces the DO concentrations. Lower concentration of phosphorus in winter compared to other three seasons was due to less discharge and more precipitation of this nutrient by Fe, Al and Ca ions. After P, organic matter had high correlation with DO (r = 0.80**). The maximum discharge of PO_4 and SO_4 occurred in summer and fall that can be due to application of flood irrigation system. NO_3 had no correlation with DO and COD. The maximum entrance of nitrate to unit of water volume occurred in summer.

Keywords: Pollution source, waste water, water quality

Contact Address: Hossein Sabahi, Shahid Beheshti University, Environmental Science Research Institute, Evin, Tehran, Iran, e-mail: sabahy_h@yahoo.com