IMPACTS OF SAND MINING ON THE WATER QUALITY OF KALU GANGA

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ABSTRACT

Kalu Ganga which is originated from "Sripada" and drain 2688 km^2 including Ratnapura and Kalutara districts opening into the sea at Kalutara.

The lower banks of Kalu ganga are densely populated and the people are heavily dependent on Kalu ganga for personal use, agriculture and for industry.

The main industry associated with Kalu ganga at lower reaches is mining of sand. Due to lack of employment and the low level of education the sand mining industry established itself as a traditional source of employment.

However the impact of mining operations on environment has only recently been recognized. River sand mining activities will have impact upon the river's water quality. Impact of river sand mining on the quality of water is analyzed in this research. Water quality of the study area was compared with the reference site that is located on the upper stream of that study area. Water sampling at each site was done in once a month. As physical parameters conductivity and turbidity were measured. As chemical parameters pH, alkalinity, hardness, concentrations of fluoride, chloride, nitrate, total iron, phosphate, dissolved oxygen and COD were measured. As biological parameter BOD was measured.

According to the data obtained, water quality conditions in conductivity, alkalinity, concentrations of nitrate, total iron, dissolved oxygen and COD are influenced by the sand mining activities and turbidity, pH, hardness, concentrations of fluoride, chloride, phosphate and BOD are not influenced by the sand mining activities.

To ensure the data obtained from the physical, chemical and biological analysis of water, microscopic identification of biological pollution indicators were carried out. Pollution indicator blue green algae *Oscillatoria and Microcystis* were found in water samples but pollution indicating macrophytes were not found.

A survey has been done to collect qualitative data in order to evaluate the social aspects of sand mining in the area. The relevant data collected through questioners, interviews and own observations. The analysis of data is carried out in accordance with research questioner and objectives of the study, according to the 2 sets of questioners which comprising answers of sand miners and dwellers.

According to the qualitative data obtained there is an increased tendency of health problems such as ear infections, deafness and respiratory problems among miners.

Also though the miners' educational level is low and the majority of them are young, their daily income is high if compared with the other unskilled labor. Young been employed without having a good education and having good income with leisure during afternoons tend to increase the unwanted / uncivilized / vulnerable activities in the society.