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Impact of Human Activities and vice versa on Ranikhola River, Sikkim India

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Ranikhola River, rising in the Sikkim Himalaya (the Lesser Himalaya) is one of the multitudes of south-west flowing Himalayan Rivers of rain fed characteristics. Several developmental activities such as construction of road (NH31A), bridges, mega hydroelectric project, agricultural activities, industries (pharmaceuticals factories) become main threat of Ranikhola River. The prime objective of the present study is to find out the pollution status in terms of metals and chemicals into the river by Jhoras and analysis the impact of human activities on the river and vice versa.. For such study, 6 sample sites have been taken from the lower portion of the Ranikhola river: i) Adampool near STP, ii) under Ranipool bridge, iii) Namli, iv) Martam khola, v) Marchak near dumping yard, vi) Singtham near the confluence of river Tista and Ranikhola. A comparative field study was conducted in pre monsoon season of 2016 and post monsoon season of 2017 to find out the water quality of the river. Questionnaire modules were used to find out the abundance of water for domestic use on various scales. BOD-COD ratio is an indicator of biodegradability. But the ratio of BOD-COD of the above mentioned sample sites are less than 0.2 in pre monsoon time, which is not biodegradable. The highest Most Probable Number (MPN) is found in Martam khola (6/100ml) water, moderate MPN is found in Namli and STP (Adampool) area (2/100ml) water and the lowest MPN is found in Singtham, Marchak and Ranipool area (<2/100ml) water in pre monsoon time. In post monsoon time the number of bacterial colonies is TNTC (Too numerous to count) in Martamkhola, Ranipool and Namli area. The results clearly show that the water of Martam khola and Namli area is much more pathogenically contaminated in both the seasons than other sites. In monsoon time, some areas due to mercy water presence the local villagers are not able to get the fresh water. In the dry season all the construction work goes on full-fledged and again the water has been contaminated with the soil. The local people are suffering from different waterborne diseases due to unpurified drinking water, water shortage in dry season, and lack of proper awareness program by the Government.