DE LA SALLE UNIVERSITY

A Biophysico-chemical Study of a Segment of Chico River Receiving Sugar Processing Waste water

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ABSTRACT

This study was conducted between May and July 1989 in order to assess the polluting effect of the affluents coming from Cagayan Sugar Corporation (CASUCO) to a segment of the Chico River that is directly receiving its effluents. Three sampling stations were chosen over a distance of approximately 5 kilometers. A number of physical, chemical, and biological parameters were analyzed. Statistical tests were used to evaluate water quality variation among stations and sampling periods. The results showed that the effluents of CASUCO discharged in Chico River caused considerable changes in the physico-chemical and biological characteristics of the river ecosystem. The observed changes noted in the station (Station II) that directly received the effluents were: higher water temperature; lower dissolved oxygen (DO); higher biochemical oxygen demand (BOD); acidic pH and higher ortho-P. Since the effluents of CASUCO affected the physical and chemical aspects of the water quality of the segment of Chico River that directly received it, this in turn disrupted the normal equilibrium of the flora and fauna or the biological factors as evidenced by growth of blue-green algae, diatoms and lower algal density in the area. Results of investigation on community similarity showed that the characteristics of Station III which was located below the outfall of CASUCO closely approached the characteristics of the control station (Station I) which was located above the outfall. Such result simply suggests that there was some recovery in the degree of pollution in Station III which can be attributed to the distance that the water travelled coming from Station II and the dilution effect of unpolluted water coming from other tributaries of the Chico River. A number of physical and chemical parameters showed tendency to vary directly and indirectly with each other. Results of thie study also showed that the significant variation in all parameters noted in all stations as sampling progressed (sampling period) can be attributed to the dilution and flushing effect of precipitation.

In conclusion, the effluents of CASUCO altered the area (Station II) that directly received its effluents. This alteration caused this segment of the Chico River to be in its early state of deterioration.

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