

Phycodiversity in tenughat thermal power station at Lalpania District Bokaro, Jharkhand

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Asian Journal of Environmental Science, Vol. 3 No. 2 : 169-173 (Dec., 2008 to May, 2009)

SUMMARY

The present communication deals with the diversity of phytoplanktons and analysis of water to assess the impact of waste disposal of TTPS (Tenughat Thermal Power Station) on plankton community in different seasons. The river Damodar and its tributaries provide sufficient amount of water to support different types of industries along its basin. The Tenughat thermal power station under Jharkhand Government was designed with the objectives to supply an assured quantum of 25 to 47 cumecs of water throughout the year for industrial use in the basin area. The Tenughat dam is on Damodar river which is one of the largest dam in Jharkhand. Tenughat thermal power plant releases effluents in the form of total suspended solid, ash content coal as well as oils and grease which is directly added to the river. Three sampling sites were selected from the study area. Phytoplanktons were collected from the three different sites in different seasons during May 2007 to May 2008 and arranged class wise in tabular form. Average of the ash concentration and load data of river Damodar was also compared with dominance of phytoplankton. Altogether 56 phytoplankton taxa of four different classes viz. Cyanophyceae, Chlorophyceae, Euglenophyceae and Bacillariophyceae were recorded from the above three sites. Higher abundance of Cyanophyceae and Bacillariophyceae due to the presence of higher ash content and suspended particulate matters at all the sites indicated the pollution status and organic enrichment.

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Key words : Ash content, Phytoplankton, Seasonal variation, Species diversity index.

Jharkhand state being rich in mineral resources in the country is an ideal place for industrial settlement. Damodar river and its tributaries provide sufficient amount of water to support different types of industries. It has accelerated the growth of electric power and so, most of the thermal power stations are along its basin. Tenughat thermal power station is one of the super power station along Damodar river basin.

Tenughat Vidut Nigam Limited (TVNL) is the major contributor of power to Jharkhand state which is registered under 1956 companies act fully owned by state of Jharkhand. TVNL solely supplies about 400 MW power to the state. Tenughat thermal power station is the only unit under TVNL sprawling over 1800 acre surrounded by Lugu mountain (The second highest peak of Jharkhand), full of lakes, falls and dam on Damodar river. It is worth seeing and also a reputed tourist place. The targeted installed capacity of 3690 MW is to be completed in four phases. The first phase is of 2*210 MW capacity. Second phase is of 3*210MW, third phase is of 2*660MW and phase four is of 3*660 MW capacity.

The river Damodar receive effluents from

thermal power plant in the form of ash content coal, suspended particulates and oils and grease in several tones per day (TPD). They usually meet the river in untreated form. The addition of these effluents not only influences the micro flora of fresh water but also favors the development of variety of new biota, reducing it unfit for human consumption.

The phytoplankton communities have been studied in some of the Indian rivers e.g Ganga, Yamuna, Hooghly, Cauvery, Gomati and Sone (Krishnan and Venkatraman 2006), but phycodiversity of Damodar river related to its species diversity index (H') has not been explored earlier.

Phytoplankton is the fundamental components of aquatic ecosystem as they are major sources of biologically important and liable organic carbon located at the base of food chain. Investigation on plankton in relation of hydrography has been carried out by several authors in India (Nandan, 2005).

Present study focuses attention on a comprehensive study of phytoplankton with reference to their species diversity index and percentage contribution during different seasons at three different sites.

Accepted :
November, 2008