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Effect of Eutrophication in Lotic Body of Jabalpur (M.P) in Relation to Water Quality

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Abstract:- Limnology in modern concept in that area of science which deals with various characteristic features - physical, chemical, biological and geological along with their interrelationship in inland water body.

The river Narmada fulfils the water requirement of the Jabalpur city and also has thickly populated area surrounding it as a result receives the water from land drainage, contaminated with domestic sewage, also human activities add lot of impurities to water body directly or indirectly and make the river eutrophicated. This results in deterioration the quality of water and poses a major problem for the aquatic organisms.

Keywords:- *Eutrophication, Water Quality.*

I. INTRODUCTION

Limnology in modern concept in that area of science which deals with various characteristic features viz- physical, chemical, biological and geological along with their interrelationship in inland water body. The inland waters which includes mainly fresh water bodies through only a small fraction of total available water but have its direct relevance to mankind, since it is utilized directly and indirectly for various human needs and also harbor aquatic animals.

The increasing population coupled with unplanned urbanization and industrialization have seriously destroyed the water bodies to the extent that they are unfit for the use and are getting extinct by silting.

The lakes and rivers in thickly populated areas receive water from land drainage usually are contaminated with domestic sewage and get eutrophicated besides badly deteriorating their quality.

Accumulation of large amount of plant nutrient are called 'Eutrophic'(from Greek word ' eu' means 'well' and 'trophe' means 'nourishment'. Eutrophication can be defined as the sum of effect of the excessive growth of phytoplanktons leading to imbalanced primary and secondary productivity and faster rate of succession from existence of higher serial stage caused by nutrient enrichment through factors like fertilizers, discharged human waste etc.

Because the influence of human activities, excessive nitrogen, phosphorus and other nutrients are loaded into water body which could cause negative ecological consequences on aquatic ecosystem structures, processes and functions and results in fast growth of algae and other planktons and deteriorates the water quality.

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II. MATERIALS AND METHODS

In Madhya Pradesh the main source of river water is Narmada River, where it flows 39 kms. To study the various physico- chemical parameters of river Narmada, the study is done at five stations at Jabalpur city of M. P.

Water samples were collected and from five station of the river Narmada at Jabalpur for physic- chemical biological analysis.

The water samples were collected and analyzed according to standard methods (APHA, 1985)

The physical and chemical evaluation parameters were used to assess water eutrophication, mainly N & P, algal chlorophyll, water transparency and dissolved oxygen of water body.

III. RESULT AND DISSUSSION

The various parameters assessed to study the water eutrophication and the quality of water revels that the variation in pH, D.O., high values of N &P (Table 1 and 2) and variable and high values of ca hardness in river water. These observation were co-related with the effect of human activities and drainage of' Nallas' containing organic and inorganic waste results in formation of algal growth at places.

Algal blooms are invariably caused by unicellular and filamentous algae. The group of algae which are responsible for the development of blooms includes chlorophyceae, bacillariophyceae, Euglenophyceae and myxophyceae.

The zooplankton population seen to be reduced and the major carp species were occasionally observed at the places of blooms. Mortality of fishes is due to choking of the gills, depletion of oxygen and liberation of toxic substances.

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These findings indicates that due to inflow of untreated domestic sewage loaded with nutrients , the human activity in river water as the river is the major source of water supply in a large number of population is living in nearby areas of river, the eutrophic condition is developing due to which the fish population is affecting directly or indirectly.

Total Phosphorous and Nitrate concentration during study period of two years at sampling stations of river Narmada

Table 1 Showing Phosphorous and Nitrate(mg/l)s concentration in oct 06- sept 07

Stations	Total Phosphorous	Total Nitrate
KALIGHAT	0.713	14.625
JILHARIGHAT	0.85	18.54
LALPUR	1.0	14.615
TILWARAGHAT	1.12	21.34
LAMHETAGHAT	0.87	21.16

Table 2 Showing Phosphorous and Nitrate (mg/l)concentration in oct 07- sept 08

Stations	Total Phosphorous	Total Nitrate
KALIGHAT	0.94	15.33
JILHARIGHAT	1.14	19.12
LALPUR	1.18	15.44
TILWARAGHAT	1.44	22.50
LAMHETAGHAT	1.06	21.72

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