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WATER POLLUTION CONTROL OF BICHHIYA RIVER: EFFORTS AND RESULTS

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ABSTRACT:- Water is one of the best gifts to all living creature, given by nature. Pollution is caused when a change in the physical, chemical or biological condition in the environment harmfully affect quality of human life including other animal's life and plant. The Bichhiya river is a main source of water for drinking and irrigation purpose. Due to increasing sewage of cities directly discharges to the river without any treatment, the river water pollution increasing continuously year by year. The literature reveals that how many efforts are done by government and non-government bodies to control the water pollution and what are the results of these efforts.

KEYWORDS:- Bichhiya river, Water Pollution, Sewage, Treatment Plant, Natural, Efforts.

INTRODUCTION:-

Water is one of the most important strategic natural resources for mankind throughout history. However, the world's water resources are under pressure and in danger because of potential pollution and contamination risks due to over use and misuse of the resources. People strive to sustain their lives under inappropriate environmental conditions.

India is a large country, where a large number of big and small rivers are present, some of them are travelling long distances and connecting one part of the country with other. Some of these rivers such as Ganga, Yamuna, Saryu, Narmada, Caveri, Mahanadi, Mandakini etc. are considered sacred and worshiped by peoples. Several villages, towns, cities are located on the banks of these rivers from ancient times. The high incidence of severe contamination near urban areas indicates the industrial and domestic sectors contribution to water pollution is much highly than their relative importance implied in the Indian economy. Water as an environmental resource is regenerative and it could absorb pollution loads up to certain levels without affecting its quality, but there could be a problem if pollution loads exceed from the natural regenerative capacity of a water resource. The benefits of the water quality are many such as control of land degradation and development of fishes, and other benefits to save aquatic life and biodiversity.

Bichhiya river is one of the main tributary of Beehar river. It arises from the village Khaira near Kund of Kaimore range and flowing 58 Km. Its location in Rewa district is 24°10' latitude North and 81°15' longitude last. The river originates from Khaira village of Gurh Tehsil and joins in Bihar river behind Rewa fort. The confluence place is known as Rajghat. At the upstream of the Bichhiya river municipal water treatment station is situated after, which it meets with another river called Beehar of Rajghat. Their flows in township, industrial, domestic and municipal discharge merge into it at different points. The water of the river is used by urban and peripheral rural population directly at many stations for domestic and agriculture uses. Presently, the utility of river aeration technology has relatively been mature in many countries. Research and practical applications showed that the artificial aeration can improve water quality effectively. Practically, Aeration systems can be utilized as stand-alone systems or as a support for other treatment facilities.

SOURCES OF POLLUTION:-

One of the important sources of water pollution is domestic effluents and sewage. Man, for his various domestic purposes such as drinking, cooking, bathing, cleaning, cooling, etc., uses on an average 140 liters of water per day. About 70 per cent of this is drained out through drains, which through municipal drains poured into a river. The domestic waste water and sewage is the

main source of the water pollution. This is the inevitable and unfortunate fallout of urbanization. This organic waste decreases the oxygen of water and upsets the natural balance of the aquatic ecosystem. Municipal sewage is considered to be the main pollutant of water. Most of the sewage discharge without treatment in rivers, especially in developing countries like India. The quantity of waste water is increasing continuously with population growth and also the production of large quantities of sewage. Sewage contains decomposable organic matter and exerts an oxygen demand on the receiving waters.

The sewage water contains numerous micro-organisms in the form of pathogenic bacteria and viruses derived from human faces. It also contains organic materials such as soaps, synthetic detergents, fatty acids, and proteineous matters such as amines, amino acids, amides and amino sugars. Untreated waste water is often the carrier of viruses and bacteria and, with poor household sanitation practices, results high infant mortality rates in developing countries like India.

Even where most sewage is treated, as in the developed world, some countries indicate increasing water pollution. Sewage supports the growth of other forms of life that consume oxygen; it is measured in terms of Biochemical Oxygen Demand (BOD). It is the lack of oxygen that kills fish and other aquatic life.

Most of the thermal and electric power plants also discharge considerable quantities (about 66%) of hot water into nearby streams or rivers. This has resulted in thermal pollution of river water. Thermal pollution is undesirable for several reasons. Warm water does not have the same oxygen holding capacity as cold water.

POLLUTION PROBLEM:-

Bichhiyal River has the confluence place is known as Rajghat. At the upstream of the Bichhiya river municipal water treatment station is situated after, which it meets with another river called Beehar of Rajghat .The downstream section is a nullah having regular water flow only. We have yet to install a sewage treatment plant. Scientists from the Central Pollution Control Board (CPCB) landing in Rewa to investigate the matter. Water samples will be collected at 18 points where the nullahs from the city fall into the Bichhiyal River. Dead fishes can be attributed to stagnation of sewage water with no oxygen supply left. It has been given to understand that sewage treatment plants (STPs) are yet to be fully commissioned and linked with sewage lines.

Water was tested in the downstream section, right bank of Bichhiya River approx 100 metres from Chhoti Bridge and fishes will survive in Class D water though human beings need Class A water for drinking. Three elements\criteria must for the survival of fishes are pH level, dissolved oxygen and free ammonia levels. All these were reported at much lower levels than required. The pH level was reported at 10.15 but for survival pH must be between 6.5 to 8.5. Next important element is dissolved oxygen which is needed between 4mg/l or more while the board found it at 0.77. Free ammonia is must at 1.2 mg/l or less while the report found it at 0.81.

The water is fit for drinking and called Class A water when the pH is between 6.5 and 8.5, dissolved oxygen at 6mg/l or more and biochemical oxygen demand at 2mg/l or less. But, wildlife and fishes will survive in Class D water, with pH between 6.5 to 8.5 having dissolved oxygen between 4mg/l or more and free ammonia 1.2 mg/l or less.

"In a National Green Tribunal (case no. 318\2014 dated October 7, 2015) ruling, the municipal corporation, UIT and the district administration have been asked to clear the MSW which is lying in nullahs. A time period of was given for carrying out a special massive drive for this purpose jointly by all agencies. This case was filed by Babulal Jajoo before the bench of Justice Dalip Singh and Bikram Singh Sajwan, who had deemed it a prosecutable offence along with penalties for each day's delay in accordance with the provisions of the MSW Rules, 2000, and the provisions of the Environment (Protection) Act, 1986, and National Green Tribunal Act, 2010. It was also stated that due to technical reasons, the STP could not be commissioned, but positively the same will be commissioned after some time. This downstream

patch of 17 km is most polluted. Dead fishes too have added to the cesspool created here. Here, a dozen nullahs flow. The water is stagnating and creating a poisonous environment. The hot and humid climate has added to the damage.

EFFORTS TO CONTROL THE POLLUTION:-

The local administration will try to ensure that the nullahs do not dispose their waste into the downstream section of the Bichhiya river. This action plan will be a time-taking process which will involve a network of nullahs being linked to STPs in the future.

NATURAL TREATMENT OF WATER :-

Expenditure of Rewa Nagar Nigam,could not save the life of Bichhiya river then naturally formed wetland save the life of Bichhiya river free of cost. A number of nullahs are falling on the up stream of river. Between these nullahs and river a marshy land of 500 to 700 m distance is formed in which a network of roots of marshy plants formed that works as a natural filter plant for water coming to the river. Even though there are 14 nullahs delivered 349.878 MLD sewerage in Bichhiya river from Rewa city, but the river is not as polluted as other rivers. The reason for this is the natural treatment of water by strong network of roots of marshy plants. The plants like jalkumbhi (eichhornia) floating type, hydrilla verticillata and chara submerged type and kamal, lily, kumudini are of dense root type are developed on the clay coming with flowing water of upstream nullahs deposited between river and nullah. These all prepare a natural water treatment plant.

First of all, the sewerage comes along with nullahs water passes through the different layers of sand and clay deposited and get filtered. Then the dissolved chemicals of water are absorbed by the roots of the plants. The polluted water then passes through the xylem and phloem tissues of plants grow on the developed wetland. This filters the water and gives nutrition's and oxygen to the water .This is a complete natural sewage treatment plant and gives the new life to The Bichhiya river.

RESULTS:-

Approximately 389.87 MLD of sewerage is produced by the city, out of which only 50 MLD is treated daily through 2STP's running in the city. Rest is dumped directly into the Bichhiya River through 14 open drains. The number of open drains are 4 in 2008-10 are now increasing to 14 and quantity of sewerage production now increases from 288 MLD to 389.87 MLD. Hence there is an urgent need for a few new STP's in the city. This study also highlights the fact that parameters viz., pH value and dissolved oxygen quantity of all samples from various locations are alarmingly out than the prescribed limits. These values exceeding above their respective limits may cause heavy damage to aquatic plants and animals.

CONCLUSION:-

The main source of river water pollution is drainage system of city and hot water of nearby industries which are directly discharged to the rivers. Government and local administration take action against this problem when the problem increases very much and situation becomes uncontrollable .Then all the efforts to control the water pollution of the river becoming less and water continuously becoming more and more pollute.

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