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# WATER POLLUTION IN CHAMTA RIVER AND ITS IMPACT ON SILIGURI CITY.

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**ABSTRACT**: Pollution has a drastic effect on the nature in the present world. Biodegradable and non-biodegradable pollutants are its major sources. Though biodegradable pollutants get minimise with time, non-biodegradable don't. They create serious ramification with the natural cycle of the ecosystem and disrupts its completely. Pollution can be natural and man-made. It can occur in any ecosystem, be it, air, water, soil, or surrounding. Among all these, water pollution is on the most threatening. Without water, none can survive and if it gets contaminated, it may turn fatal for both aquatic and terrestrial beings. Now, to understand the actual condition of a particular affected site, here for instance a water body, Chamta river, beside City Centre located in Matigara, Siliguri has been selected. The methodological principles adopted for the present study is based on both primary and secondary sources of data. To find out the water pollution in river is not useable for domestic purpose, agriculture sector and another sector. It has been suggested that water pollution is the leading worldwide causes of deaths and diseases and major changes of river water quality and ecological status of water.

**KEYWORDS**: Water pollution, Environmental degradation, River Ecosystem, Drainage pattern, Bio diversity, Sustainable development.

INTRODUCTION: **The World Health Organisation (WHO) says that polluted water is water whose composition has been changed to the extent that it is unusable.**

In every urban human society rivers play a crucial role for serving fresh water. So, to check the quality of river water is an unavoidable at the same time strenuous job. Though it is detectable that the condition of river water is continuously degraded in the contemporary decades. Therefore river water is vulnerable to pollutants from natural as well as man-made sources like industrial sewages, disposed domestic waste and irrigation drainage water (Parween et al).

Polluted water is major concern facing India in the present situation. It is noticeable that unprocessed garbage is the main source of water pollution in India. The condition is worsen day by day as most of the rivers are fully or partially polluted. As a matter of fact that probably 80 percent of the river water is highly polluted. Water Pollution negatively effects the plants and water living in the rivers also influence human and ecosystem (Swain et al).

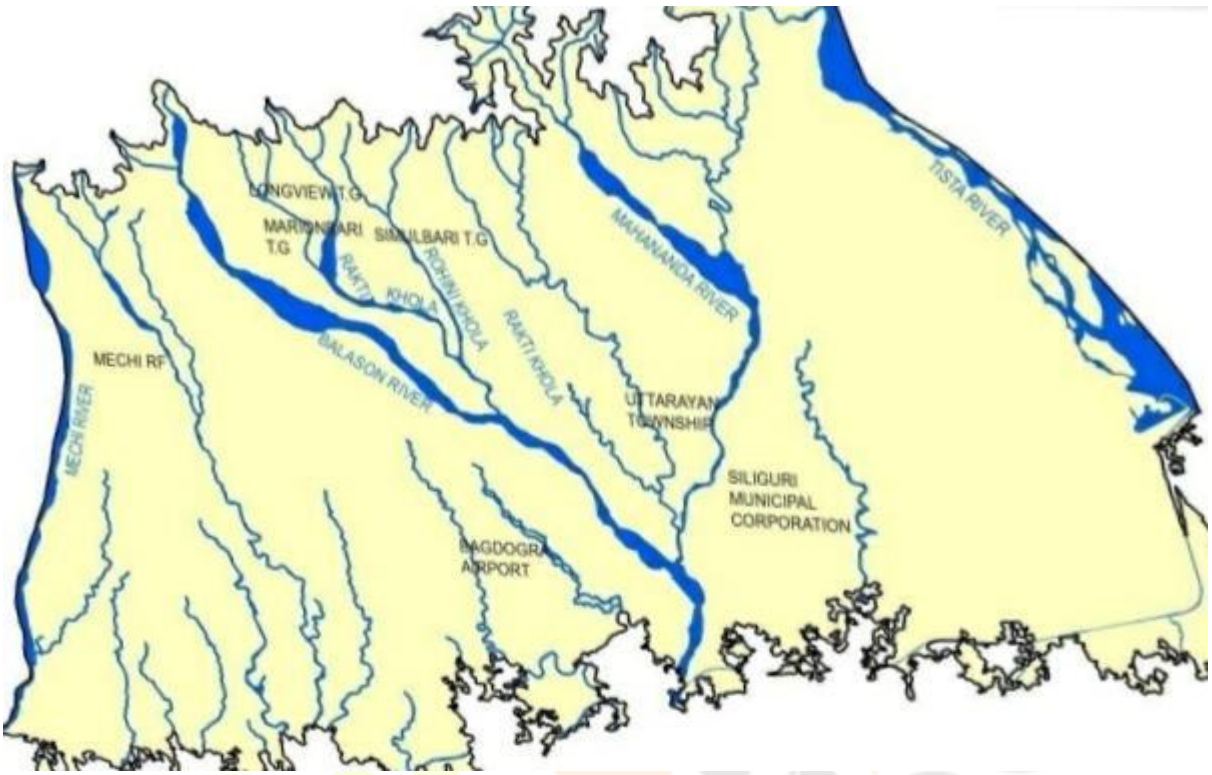
We cant live without water because we use it for drinking, washing our clothes, bathing, crops irrigation and so on. Also we generate energy with the application of Water and use it for navigation purposes. Beginning with the ancient civilization to modern urban settlement all are establish alongside river water. But drinking and uses polluted water is very harmful for our health it causes several stomach, lever and skin diseases according to the Doctors (Mishra et all). Large dams and embankments can directly alter sediment and water flux by disconnecting the rivers from its headwaters as well as floodplains and thus river plan-form will adjust to an irreparable extent. Due to damming, water gets stored in the reservoirs and consequently become sediment free. This water, often termed as hungry water, possesses higher potential energy and after being released from dams it can instantaneously increase the stream power, which may lead to vigorous down cutting. Similarly, as the river channel gets embanked, its lateral movements halt, thus at the time of storm water flux loaded with bed load and sus-pended sediment load, cannot get spilled over the floodplain. Now to reallocate the storm water flux, the channel starts scouring its bed and thus the river starts incising its course.

The Mahananda originates in the Himalayas: Paglajhora Falls on Mahaldiram Hill near Chimli, east of Kurseong in Darjeeling district at an elevation of 2,100 metres (6,900 ft). It flows through Mahananda Wildlife Sanctuary and descends to the plains near Siliguri . Actually Chamta and Balasan are the two rivers that meet together to form Mahananda river in the plain of Siliguri sub-division. The Mahananda River is a trans-boundary river which originates in the Himalayas. The study also tries to establish the relationship between the various responses of the fluvial system to human intervention, through the assess of water pollution and quantification of anthropogenic activities of effective on human health and environmental pollution.

Now-a-days it has become polluted at some Places due to small scale industrial activities and the confluence Of sewage, domestic wastes and industrial effluents of many Large, medium and small enterprises with various types of Organic compounds and heavy metals which are deteriorating Human health and aquatic organisms. Urban areas, farms, Factories and individual households – all contribute to the contamination of this river,the Study of different physical-Chemical parameter revealed that the intensity of pollution Increased as river was subjected to sewage and industrial waste.

**CHAMTA RIVER:**

The study area is blessed with rivers and most of them are perennial. The Tista, the Mahananda, the Balasan,The Chamta,theRakti, theRohini and the Mechi are the major streams flowing along with their tributaries. The pattern of the drainage of the study area is mostly dendritic. The Chamta river is originated Sukna and Sevoke near Mahanda wildlife sanctuary in Jhora .These rivers are flowing from north to south direction maintaining the initial slope of the surface .The Observed in the middle and lower fart of the study area with lateral Erosional features,




flash floods, stream bank erosion, Waste martials, both river bank side are captured by corporate sector and another martials fallen into the Chamta river.

IMPORTANCE: Pollution has a drastic effect on the nature in the present world. Biodegradable and Non-biodegradable pollutants are its major sources. Though biodegradable pollutants get minimised with time, non-biodegradable don't. They create serious gamifications with the natural cycle of the ecosystem and disrupts it completely. Ecosystem is very important for our survival. It not only provides basic components like air, water, food to all living beings but also maintains the complex relationship between organisms. Pollution has a negative impact on this and its contamination can have far reaching consequences which are difficult to predict. In this case, water pollution and its effect on the biome surrounding river Chamta. So, to study the harmful impact of the water pollution, the prediction serves as an important tool.

**PROBLEMS**:

Pollution can be the natural and man-made. It can occur in any ecosystem, be it, air, water, soil, land or surroundings. Among all these, water pollution is one of the most threatening. Without water none can survive and if it gets contaminated, it may turn fatal for both aquatic and terrestrial beings.

Now, to understand this actual condition of a particular affected site, here for instance an water body, Chamta river, beside City Center located in Matigara, Siliguri has been selected. It shows severe unhealthy changes in water, soil and air due to several human activities in its vicinity- dumping waste products from local factories,

mall, homes, etc; bathing animals, washing vehicles, defecating in open areas, water logging, etc. This has created a serious threat to the life surrounding it. It needs to be taken care of as soon as possible.

**OBJECTIVES**:

The objectives of the study in regard to water pollution are as follows-

1. To study the harmful effects on humans in everyday life and its causes.
2. To provide an overview of the bioremedian technique - an environmentally, economically and sustainably sound technique to treat industrial effluents.
3. To discuss the importance of organisms living in river Chamta.
4. To provide scientific information about water and soil pollution in the vicinity of river Chamta.

**FIELD OF DATA COLLECTION**:

The field of data collection was river Chamta and its vicinity located beside City Center in Matigara block, Chandmoni tea estate Panchayat area on the outskirts of Siliguri City near Uttarayan Town Block.

River Chamta is a small river with its origins a spring located Mahananda Wildlife Sanctuary which is situated in the region between Sevoke and Sukna. After origination the river flows on the Matigara and than joins Mahananda in Siliguri Junction area.

Even before 20 years, the river was clean and potable but increased an unchecked emission of pollutants from nearby factories, shops, houses, animals, shed, hospitals, malls and township has made the river unfit for use.

**OBSERVATION TECHNIQUES:**

The survey was conducted and the information was gathered by paying a site visit to the banks of river Chamta. The techniques used for observation was First hands observation. The techniques used for observation was first hands observation Method followed by recording data in the Questionnaire prepared for this study. The data Collected were basically related to main causes on sources of water pollution and its effects on the humans, animals and environment living in the vicinity of the river.

**DATA ANALYSIS:**

The data collected clearly states that this is a severe case of water pollution that needs to be addressed as soon as possible. Water Pollution is the introduction of undesirable foreign Particles in aquatic bodies e.g. lakes, rivers, oceans, ponds and streams that leads to the contamination of the water bodies as a results of human activities.

Based on the collected data, We have drawn the following inferences given below-

Table no 1:- observation around the polluted site.

| Main causes/Sources | Probable causes | Effects |
|---|---|---|
| • Domestic Wastes<br>• Manure and Slumy along with sewage.<br>• Industrial Wastes disposal.<br>• Soil Pollution | • Discharged from houses, shops, hospitals.<br>• Discharged from animals sheds and sewage pipes.<br>• Discharged from factories, mills.<br>• Discharged from hospitals, insecticides, faccaas, dead bodies. | • Pathogenic bacteria causes health hazards.<br>• Pathogens causes BOD, Eutrophication ,Algal Bloom and death of aquatic life.<br>• Causes health hazards like typhoid, dysentery.<br>• Destroy aestheticism and causes serious disease outbreaks. |

Table-1- Recorded data infers that the health of living being around the river is being affected due to presence of harmful bacteria in the polluted water. These pathogens come from domestic sewage (acids, alkali, cyanide, heavy metals, salts) and from local factories, malls, hospitals. Apart from these, consumption of river fishes too are creating serious health issues because of presence of poisonous substances in the fish which they intake e.g. diarrhoea, typhoid, hepatitis, etc.

Table no.2:- Observation into the Water

| Topic of study | Observed facts | Probable cause |
|---|---|---|
| Nature of water | Polluted | Garbage, Sewage |
| Temperature | 20-25 degree centigrade | Garbage, Chemical wastes |
| Colour of water | Blackish | Chemicals+ Pollution |
| PH of water | Acidic(less than 5) | Chemical properties |
| Organisms present | Insects, Snail | Polluted Water |
| BOD | High | Algal Bloom |
| Presence of chemicals | Soda, Paper, sodium, chemicals from mills | Bio-wastes from hospitals. |

Table-2- The temperature of water was around 20 degree-25 degree centigrade, blackish colour due to presence of pollutants, PH level is less than 5 (acidic) in nature. Algal bloom, Eutrophication has taken place so BOD (Biological Oxygen Demand) is high. Different types of insert levees, tadpols, snails were present. High amount of soda, heavy metals, alcohol, salts, urea, pesticides, insecticides, bio-wastes were detected.

Table no.3:- Observation at nearby polluted site.

| Topic of study | Significance |
|---|---|
| Region | Homogeneous |
| Population | Compact, Linear, High |
| Habitat | |
| Agricultural fields/other | No |
| Topography | Rugged |
| Soil | Blackish with humus presence. |
| Industries | Paper mill, factories |
| Others | Shopping malls, Township, Hospital |

Table-3- The locality is homogenous in nature, population is compact, Linear pattern habitat is observed. Topography is ruffed, soil is blackish due to transformation of the area from the tea estate to urban


agglomeration. The area is surrounded by mall, hospital, factories, animal shed and here with NH10 running over it.

**FINDINGS**: Deteriorating water quality is damaging the environment, health conditions and the global economy.(World Bank)

1. The fact that every human being should be aware, Conscious and knowledgeable about the role on water Resources.
2. There is almost an unbalanced relationship between The knowledge of population and water resource and it will be Checked as soon as possible. Environmental education and Knowledge for sustainable use of water resource may be able to Take appropriate decisions concerning the solution and Prevention of river water pollution.

3. Water pollution depletes aquatic ecosystems and triggers unbridled proliferation of phytoplankton in river eutrophication .
4. To Contamination of the food chain, Fishing in polluted waters and the use of waste water for livestock farming and agriculture can introduce toxins into foods which are harmful to our health when eaten.

**Conclusion**: The survey conducted is very much essential to gather information regarding the harmful effects and causes of air, Water and soil pollution especially in urban areas. To solve this environmental crisis, public needs to be made aware of the problems. It can be done through awareness camps, street plays, cleaning campaigns etc. Only by doing so, we will be able to secure and provide a better environment to our present and future generations.

Increased down cutting fuelled by sediment mining, lateral disconnection of the river channel and increase in impervious area can result in disconnection of river-ground water interchange, and initial tendencies are directing towards this. It may lead to ground water scarcity which can be detrimental for a huge population living on the floodplains and prove to be an enormous social hazard and environmental hazard perspective, it would simply destruct the natural habitat condition which may lead to mass extinction of living inherent biota. Riverbanks and bars must be free from any encroachments and no further concrete embankments shall be built in the upstream. There shall be regulation imposed by local authorities on future urbanisation processes. New settlements or urban amenities should have enough open unpaved surfaces for groundwater recharge and along with that; the riparian zone must be free from any such concretization and should be left in its natural stage. Hence future urbanization as well as restoration management policy should have the inherent resilience to combat further difficulties to come. So,

Avoid water pollution, or there'll be water but not a single drop to drink. A day without water is hard, so don't let it become your future.Save the homes of all the aquatic animals.

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