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RESEARCH ARTICLE

"IMPACT ASSESSMENT OF ANTHROPOGENIC EFFLEUENTS ON ASAN RIVER, SELAQUI DEHRADUN, UTTARAKHAND, INDIA"

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ABSTRACT

Study of impact of assessment of anthropogenic effluents on asan river in Dehradun district were taken in two different month of the year, in the winter (feb.) and the summer (june) regarding its physical chemical and biological properties. The fluxing of the natural as well as anthropogenic waste cause disturbance in its composition. The Physico-Chemical Parameters evaluated the deterioration in some parameter, due to the anthropogenic waste as well as natural waste. The Aquatic Diversity is depleting day by day because the abiotic factors have direct affect on the biotic factors. The impact in the physic- chemical parameters results in unsuitability of water for the designated use. The Planktonic Diversity has been affected in past few years due to alarming rate of the toxic pollutants as observed in the planktonic diversity analysis. Many of the common species have been extinct and some are going to be extinct in few years. Due to the habitat loss the disturbance is caused in the ecology of the river and affects the Biodiversity of the River. There tendency of contamination of pollutants or toxicity increases during the summer because the solubility of pollutants increases as the temperature increases. The depth level is affected by rise in temperature, as result habitat loss of the fishes.

Introduction:-

Water is considered as the elixir for existence of life on earth. Water accounts for about 70% of mass of our body. It is an essential compound of all flora and fauna and forms

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75% of matter of the earth crust. Water is distributed in nature in different forms, such as rain water, spring water and mineral water. Rain water is the purest form of naturally occurring water. Therefore, it is necessary to check whether the water quality is in compliance with the standard, and hence, suitable for the designated use, to facilitate the qualitative analysis of the physicochemical parameters of the river water and to check the impact of anthropogenic waste in river on the plankton density.

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Materials and Method:-

The Asan River fed by the streams of the western part of the Doon valley. The northern section of the river is locally known the Tons River, it is much larger and flows into the Yamuna in Jaunsar Bawar region at Kalsi originate from the southern slopes of the Mussorie.

The water samples were analyzed for various parameters in the laboratory of Doon P. G. College of agriculture science and technology, Selaqui, Dehradun, Uttarakhand. The study has been conducted in two different months of the year, in the winter (Feb.) and the summer (June). The deterioration has been observed in the monitored Asan river site.

The weather conditions of the different months give the different parameters of the temperature, pH dissolved oxygen, salinity, hardness etc.

Apparatus used:-

BOD incubators (Remi instruments Ltd, India), Electronics balance (Khera instrument (P) Ltd, India), Hot air oven (Metlex scientific instrument (P) Ltd, India), pH meter(Khera instrument (P) Ltd India),Refrigerators (LG Electronics, India), Plankton net.

Result and Discussion:-

Tabular representation of the physio-chemical parameters of Asan River

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Parameters	In Feb. Month	In June Month
pH	7.3-7.5	7.0-7.3
Dissolved oxygen mg/l	5-6	3-4
Temperature °C	21-23	30-34
Alkalinity mg/l	141-145	133-135
Hardness mg/l	288-305	262-272
Salinity ppt	0.21-0.28	0.33-0.37
Co2 mg/l	0.8-1.2	0
T.D.S mg/l	356-389	395-420
Chloride conc. mg/l	18.0-19.6	20-22

The comparative study of the physic-chemical (e.g. DO, CO2 concentration, pH, temperature, hardness, TDS, Salinity, Alkalinity, Chloride conc. Etc.) and the biological factors e. g. quantative analysis of planktonic density is the basic methodology to check the sustainability of water. The Asan River is the most polluted river in Dehradun, being polluted alarmingly by the natural as well as anthropogenic wastes that cause a disturbance in its composition. It has been observed that the Asan River is contaminated by the numbers of the highly polluted wastes canals in the city, peoples are contaminated water of the river by throwing the domestic waste into the river. The monitored site includes the numbers of the industries viz. Dixon Industries , excretes metallic wastes , Lotus Pvt. Limited, excretes the huge amount of waste. These all sources of the pollutants deteriorate the water quality parameters. The physicochemical parameters are analyzed by the following BIS (Bureau of Indian Standard) and WHO. The pH analysis reveals the range of the pH in the February is (7.3-7.5) and in the month of june it changes (7.0-7.3), it changes seasonally. Similar results were observed in the River Yamuna by Khanna et el. (2012). The D.O. analysis evaluates that the temperature is inversely proportional to the dissolved oxygen. The site show the range of D.O. water of winter (feb.) is 5-6 mg/l and felled to 3-4 mg/l in the month of summer (june). The temperature measurement has been done which shows the range (21°C-23 °C) in the month of (feb.) and (30°C- 34 °C) in the month of the summer (june). The variation of the alkalinity collected from the site

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Volume:1 Issue: 2
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Impact Factor: 6.3
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in the month of feb. range (141-145 mg/l) and in the month of june it decrease (133-135 mg/l), similarly obvserved by (Tewari. A. et al.) in the river Ganga (2016). This result in fluctuation of the pH as acidic character increases and harms the aquatic organisms).

The hardness analysis of the site revels the range of the month of the feb.(288-305 mg/l) and month of the june it ranges (262-272 mg/l).

The Asan river evaluates the salinity ranges by monitoring which are (0.21-0.28ppt) in the month of the feb. and (0.33-0.37 ppt) in june month. The salinity is quite normal. The carbon dioxide concentration of the study site evaluates the range of (0.8-1.2 mg/l) in the month of feb. and it decline to zero (o) in the summer. That means there is no free co2present in the site ,it might be present in the carbonate form and other compounds. The plankton density in the month feb was 926 individuals per liter but it rise in the month of june to 1610 individuals per liter. The summer month (june) shows the higher density of the planktons due to increase in the day length exhibit a required photosynthetic process.

The deterioration in the physic-chemical parameters and the biological parameters of Asan River gave a serious expression regarding to the water quality. If the pollution is not controlled yet, the consequences would be catastrophic for upcoming generation.

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Volume:1 Issue: 2
February 2022
Impact Factor: 6.3
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