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INVESTIGATION OF CHEMICAL OXYGEN DEMAND IN DAWARWADI LAKE PAITHAN

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Abstract: -

Chemical oxygen demand (COD) is one of the most important parameters to use for determining the degree of pollution of domestic and industrial waste water. COD is one of the most commonly used parameters in studying environmental pollution. Chemical oxygen demand (COD) is defined as the amount of a specified oxidant that reacts with the sample under controlled conditions In present study COD from Dawarwadi lake had been assessed for the pollution status. The concentration of COD was found highest in May-2021 94mg/ and lowest in the month of November 2021 47mg/L.

Key words: Chemical oxygen Demand, Industrial, Waste water, Pollution, Parameter.

Introduction: Water resources are dynamically influenced by several factors such as human, agricultural, and industrial activities. For this reason, waterbodies show poor water quality [1]. The assessment of water quality is obtained through the study of physical, chemical, and biological components, which are related to natural phenomena, human effects, and their possible uses. The reservoirs play a fundamental role from the ecological point of view. Therefore, poor water quality puts at risk the sustainability and survival of ecosystems and their species [2,3]. Contamination of waterbodies is commonly affected due to an increase in contaminant concentrations as a consequence of agrochemical abuse, upstream mining leachates, the use of herbicides in anti-narcotics campaigns, domestic waste, and discharge of wastewaters, as well as the presence of species of aquatic lily produced by eutrophication in reservoirs [4,5]. Contaminants entering a water body naturally or anthropogenically are retained in sediments and deposited at the bottom of these aquatic ecosystems, causing toxic effects on aquatic systems. These deposits are of a great scientific value since they retain a historical record of the type of pollution that has taken place in the surrounding area. Human health is inextricably related to water quality [6].

The ecosystem's metabolism and helps to understand the hydro-biological relationship [7] faecal contamination of drinking water induces water-borne diseases, which have resulted in the deaths of millions of people [8]

Dawarwadi is lake which is surrounded by agricultural land. Today agriculture is using heavy fertilizers and pesticides for heavy production. This use is causing threat to soil quality and water quality alongwith the residues on agricultural production and it is a serious concern. COD often is used as a measurement of pollutants in wastewater and natural waters.

Material and Methods: -

Dawarwadi lake has been distributed in four regions as per the direction East Site1, West site2, North site3 and South site 4. From each region samples were collected monthly in polyethylene bottles of capacity one litre. The COD reflux method (Potassium dichromate) of three hours was used[9]

Study area:

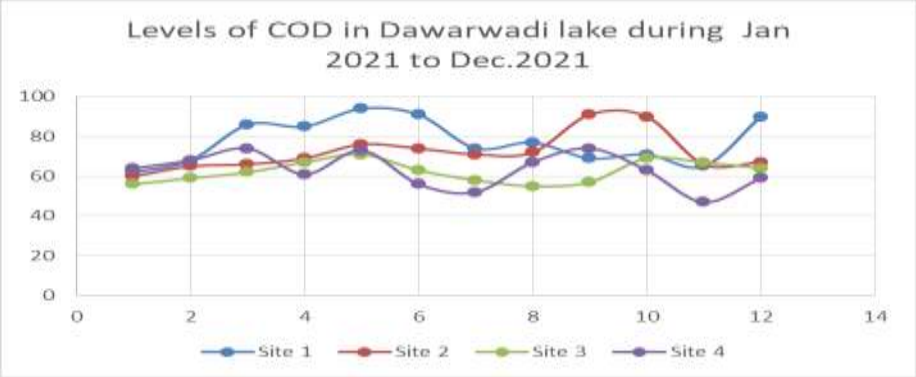
All the peoples are dependent on the surface water in the form of lakes or the ground water. Dawarwadi is a village in paithan taluka of Aurangabad district, having the population of 10000. In the catchment area of this lake 55000 peoples are dependent on this lake for drinking and irrigation in monsoon season. Aurangabad is one of the highly industrialized area in the Marathwada region. So the consumption of water is also high. In the summer season the level of water is very low or nil as compare to the other season.

Tables and Graphs

Table1. Concentration of COD during January 2021-December 2021

Sr. No	Months	Site 1	Site 2	Site 3	Site 4
01	January	62	60	56	64
02	February	68	65	59	68
03	March	86	66	62	74
04	April	85	69	67	61
05	May	94	76	71	73
06	June	91	74	63	56
07	July	74	71	58	52
08	August	77	72	55	67
09	September	69	91	57	74
10	October	71	90	69	63
11	November	65	66	67	47
12	December	90	67	64	59

Graph1. Showing COD levels in Dawarwadi lake during Jan.2021 to Dec.2021



Results and Discussion:

In the present investigation the levels of COD was found maximum 94 mg/l at site first in the month of May. Minimum levels of COD 47 mg/l was observed in the month of November at site fourth. At first site the levels was found highest in the month of May it was 94mg/L and lowest in the month of January it was 62 mg/l. At site second the levels were found highest in the month of September it was 91 mg/L and lowest was found in the month of January it was 60mg/l. The third site was observed highest concentration of COD in the month of May it was 71mg/l and minimum in the month of January it was 56mg/l. at Fourth site the maximum levels of COD was seen in the month of May it was 73 mg/l and lowest in the month of November it was 47 mg/l.

The levels of COD which are observed in between 94 mg/L and 47mg/l are within the permissible limit of COD. But the fluctuation is due to evaporation and dilution of water in three different seasons. Levels of COD was observed upto 180mg/l. by R.Usha et.al.[9]. In present study the levels are within the permissible levels because there is no industrial belt near by the lake. Similar observations was observed by K. Anuradha and Dr.Nirmala Baburao [10] in their study on freshwater lake of sadashivpet.

Conclusion:

The lake is not having any industrial belt and the catchment area is not having much flow of water into the lake so the levels of COD are under permissible limit. So it can be concluded that the lake is not polluted. So it should be maintained for ever for that steps must be taken.

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