

WATER POLLUTION AND BIOINDICATORS IN POLLUTED WATER OF DAYANAND COLLEGE AJMER

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ABSTRACT: Bioindicator of soil, water and air pollution provide information for developing suitable idea for biomonitoring and applying biological indicator in environmental monitoring particularly to evaluate the effect of dangerous substance on ecosystem. Natural water contaminates due to pollutants, weathering of rocks etc. It is necessary that the quality of drinking water should be checked at regular time interval, because due to use of contaminated drinking water, human population suffers from various diseases. Studies were done on the quality of water in Dayanand campus. Most of the sites were containing less polluted water whose analysis was done. These analysis were done different in physico-chemical parameters such as temperature, acidity, hardness, pH, chloride, DO, BOD, CO₂, and alkalinity used for testing of water quality. The polluted water sources were compared with the presence of biotic life as bioindicator.

KEYWORDS:-Ecosystem, bioindicator, biomonitoring.

INTRODUCTION:-

Bioindicators are the organism that indicate or monitor the health of the environment. A good bioindicator will indicate the presence of the pollutant and also effort to provide additional information about the amount and intensity of the exposure. Bioindicators are living organisms that respond in an especially clear way to change in the environment. The change can be chemical, physiological and behavioral. Microbes, plants, animal, individual and group population, these can be successfully used as ecological indicators (bioindicator). Bioindicators are used to detect change in the natural environment, presence of pollution and contaminants. These are related to animal and plants and finally affecting on it (Misra and Dinesh 1991). High levels of pollutants mainly organic matter in river water cause an increase in biological oxygen demand (Kulkarni 1997), chemical oxygen demand, total dissolved solids, total

suspended solids and fecal coli form. They make water unsuitable for drinking, irrigation or any other use (Hari 1994). Physico-chemical parameters for testing of water – A review (Patil. P.N, Sawant. D.V, Deshmukh.).

MATERIAL AND METHODS:-

For the further exercise the methods which are used was of sample collection. Water samples were collected from different selected site of college, Fountain pond, Herbal Garden Pond, Open Tank and analyzed in the laboratory for important physico-chemical parameter like temperature, pH, dissolved oxygen, total hardness, alkalinity, TDS, chloride etc. The water sources were compared with the presence of biotic life as bioindicator. Bioindicators are living organisms that respond in an especially clear way to change in the environment. Physico-Chemical Parameters It is very essential and important to test the water before it is used for drinking, domestic, agricultural or industrial purpose. Water must be tested with different physico-chemical parameters. Selection of parameters for testing of water is just depends upon for what purpose we going to use that water and what extent we need its quality and purity. Water does content different types of floating, dissolved, suspended and microbiological as well as bacteriological impurities. Some physical test should be performed for testing of its physical appearance such as temperature, pH, TDS etc, while chemical tests should be perform for its , dissolved oxygen, alkalinity, acidity and other characters.

RESULT AND DISCUSSION:-

The different physico-chemical parameters are tested regularly than studied the biotic life of water.

1. *Chlorella* and lower plants:-

Chlorella was occurred in water of fountain and herbal garden site, where acidity is low as compared to another site. Availability of many plants like Hydrilla and lotus present in pond.

2. Frogs:-

Frogs(African dwarf frog, *Hymenochirus*) are likely to be affected by changes that occur in terrestrial and fresh water habitats. As we compared with another site there were many frogs founds in open tank site, due to the presence of carbonate and bicarbonate,by weathering the rocks.

3. Fish and zooplanktons

In fountain site the availability of good amount of oxygen so there were found many fishes(Gold fish ,Koi) and zooplanktons (*Cladocera*, *Rotifers*), they are bioindicators about less polluted water.

4. Insects:-

Biotic life in all the site were studied and compared the availability of insects which are found more at fountain and open tank. Mostly water strider, Chironoid larvae, Red, Black ,Orange Dragonfly was found as bioindicators.

5. Microorganism and Benthos:-

Many micro organism indicate about polluted water. In water site of open tank and fountain pond found *Clostridium* and *Nitrobacter*.

Table - 1: Water quality of Dayanand College Ajmer.

S. No	Parameter	Fountain site	Herbal garden	Open Tank
1	Temperature	26 ⁰ C	24.4 ⁰ C	24.3 ⁰ C
2	pH	7.4	7.6	6.8
3	Acidity	9.2 mg/L	9.6 mg/L	14.3mg/L
4	Alkalinity	40 mg/L	48.2 mg/L	70 mg/L
5	Dissolved Oxygen (DO)	5.40mg/L	5.64mg/L	8.20mg/L
6	Chloride	18.80mg/L	16.80mg/L	19.88mg/L
7	Total Dissolved Solid(TDS)	1358mg/L	1278mg/L	1200mg/L

CONCLUSION:-

The present study documents the analysis of various physico-chemical parameters of different site in college. It is observed that biotic life available in all three sites which indicate about the changes in environment. Bioindicator have a remarkable potential in forecasting of disaster prevention of pollution, exploration and conservation of natural resources all aiming at a sustainable development with minimum destruction of the biosphere. Bioindicator can be applied in predicting the impact of anthropogenic activities particularly pollutants and predicting environmental changes in a timely manner.

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