

REVIEW ARTICLE

Assessment of Water Quality using Physicochemical Parameters: A review

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ABSTRACT

Water is the most important in shaping the land and regulating the climate. The quality of water is described according to its physical, chemical and biological characteristic. Extreme industrialization and use of fertilizers and pesticides in agriculture are responsible for varied pollution in aquatic environment which ultimately leads to deterioration of quality of water and depletion of aquatic life. Because of use of contaminated water, human being suffers from many severe water borne diseases. It is there for necessary to check the quality of water at regular interval of time. The parameters that may be tested includes pH, Conductivity, BOD, COD, DO, Chloride, Sulphate, Phosphate, Nitrates Turbidity and Heavy Metals such as Pb, Cr, Hg, Cu and Cd.

Key Words - Water quality, pH, BOD, COD, Heavy Metals.

INTRODUCTION

Water plays an essential role in human life. WHO reports that approximately 36% urban and 65% rural Indian was without access to safe drinking water [1]. Fresh water is one of the important parts for the mankind. Ground water plugs a vital role in human life. The consequence of urbanization and industrialization leads to spoil the ground water quality which includes sources of water like river, dam, ocean and lakes. During last few decades it is observed that ground water is get polluted because of human activities. The quality of water is greatly concerns with the good health of human being. The water problem is become a global issue. Human being truly depends on renewable fresh water for drinking, irrigation, recreation and many more. The change in water quality also varies due to change in chemical composition. It is our prime responsibility to maintain good quality of water. Water is undoubtedly the most precious natural resource that exists on earth

planet. Without water life on earth would be nonexistent. It is essential for everything on our planet to grow and prosper. Although we as human recognize the fact, we are polluting rivers, lakes and oceans. The contamination and pollution of water is of great concern for developing countries. In India many researchers have worked on many physicochemical parameters and biological statistic of water resource. The water quality index (WQI) has been calculated by using the standards of drinking water quality recommended by the World Health Organization (WHO). The water quality index and status of water quality is as bellow.[2]

Water quality Index Level	Water quality status
0-25	Very poor quality water
26-50	Bad quality water
51-70	Medium water quality
71-90	Good quality water
91-100	Excellent water quality

Various research papers on water quality have been presented at different year. The major works carried out by different researches are summarized below.

Mane *et al.* [3] studied "Water quality and sediment analysis at selected locations of Pavana river of Pune district, Maharashtra". Water pollution is increasing and becoming a severe issue day by day and posing a great risk to living organism. There is a deterioration of ground water quality due to anthropogenic and geogenic activities. The present investigation aims at incite about the level of contaminants of ground water of selected locations of pavana river. An attempt has-been made to access the water quality of the samples. A higher value of TDS was observed at ground water. DO content of samples was observed with lower values. The COD was observed with lowest sites. Ground water sample shows higher values of hardness. It means that there is a need for more representative sample for assessment of ware quality in the present study for proper recommendations.

Pradhan *et al.* [4] studied different parameters of Chilika Lake in the month of January 2012. It was seen that all the studied parameters are above permissible limit.

Nagamani *et al.* [5] determined phisico chemical parameters of water samples. The samples were

collected from different places in the morning hour between 9 to 11 am in polythene bottles. The samples were prepared and analyzed for pH, TDS, Electrical Conductivity, Sulphate, Chloride, Calcium, Zinc, Sodium, Nitrate and Magnesium. The water pollution indicates this parameter were higher than the prescribed by the WHO and BIS standard.

Singh [6] have studied, the present work on physicochemical properties like pH Nitrate, dissolved Oxygen and Chlorophyll pigment. Results of the study are observed that an increase in the temperature causes a two to three fold increase in bacterial activity and decrease in DO concentration.

Sharma *et al.* [7] have studied the essential parameters of water samples like pH (7.7 - 8.9), Electrical Conductivity (373 - 462), Turbidity (12 -13), Calcium (330 - 353mg/l), Magnesium (185 - 316 mg/l), Chloride(270 - 289 mg/l), Nitrate (0.063 - 0.093 mg/l), Sulphate (325 - 449 mg/l), Phosphate (0.16 - 0.19 mg/l). It was seen that the ground water get polluted as maximum parameter are not in permissible limit. This condition arises due to the local antropogenic activity, Agricultural runoff and due to industrial effluent.

Jain *et al.* [8] have studied the "Comparative Review of Physicochemical Assessment of Pavana River". They studied the water quality from 2005 to 2013 and the physicochemical parameter such as pH, dissolve oxygen, chemical oxygen demand and biological oxygen demand. It was observed that the water is highly polluted at many places. There was decrease in COD, BOD contents in the water.

Sheikh *et al.* [9] has evaluated physical, chemical, ionic and biological studies in Maharashtra of Nagzari dam situated at Nagzari village. They analyzed physical and chemical parameter of water sample. They observed that water quality is quite normal and within the permissible limit. The catchment area of the dam covers the remote and tribal region where minimum pollution is observed because there is no industrial pollution in this area.

Patil *et al* [10] have studied Physicochemical Parameter for testing of water. Due to population explosion, industrialization, excess use of fertilizers and much manmade activity water is highly polluted with different harmful contaminants. It is necessary that the quality of water should be checked at regular time interval,

because the use of polluted water, human being suffers from different water born diseases. Heavy metals such as lead, chromium, cadmium, mercury, copper etc these produce chronic poisoning in aquatic animals. It is necessary to study details about various physiochemical parameters such as temperature, pH, hardness, sulphate, chloride, and alkalinity, BOD, COD and DO.

CONCLUSION

From the above research papers we have concluded that the water quality is dependent on the type of pollutant added also the area of water resource. There is need of proper analysis and prior treatment of water to maintain good quality of water.

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