

# A Study of Water Quality of Abhayapura Dem in Bundi District (Raj.)

## Abstract

Dem are an important part of water cycle. Dem provide a home drinking water and a hunting ground for many organism. Dem provide irrigation water, transportation hydro-electrical power drainage, food and recreation opportunities. The present study is an attempt to examine the water quality parameters of the Abhayapura dem in Bundi District. The height of Dem was 17.75 meter and length of Dem 1340 meter Abhayapura Dem was made by 1976 on Bhimlat river.

**Keywords:** Abhayapura Dem, Fresh Water TDS.

## Introduction

Water is one of the abundantly available substance in nature. Water is also an essential ingredient of animal and plant life. Water is distributed in nature in different forms. Such as rain water, river water, spring water and mineral water. The quality and quantity of available water are important in the location of a chemical plant. The most important source of surface water are lakes, ponds, rivers and storage reservoirs.

An artificial lake formed by the construction of dam across a valley is known as storage reservoir. The discharge in a river or stream decreases during summer. In order to obtain a continuous supply of water a dam is constructed across the river and the surplus discharge in the river during rain is impounded in the storage reservoirs. The multipurpose reservoirs also make provisions for other uses, in addition to act as water supply for irrigation and power generation. Algae is likely to grow in a reservoir in the top layer and bottom may contain minerals such as Fe, Mn, etc. and gases such as  $\text{CO}_2$ ,  $\text{H}_2\text{S}$  etc.

The water pollution as any concentration of chemical or micro organisms in water above the natural level, because of human activity. Thus water pollution disturbs the normal uses of water for irrigation, agriculture, industries, public water supply and aquatic life. It is now considered not only in terms of public health, but also in terms of conservation, aesthetics and preservation of natural beauty and resources.

Water pollution is mainly caused by natural process in which the decomposed vegetable, animal and weathered products are brought into main water resources. All these processes are interdependent on each other and lead to deterioration of natural environment. If organic waste is added to water, it will not only influence the chemical characteristics, but will also affect colour, odour and biological properties of water. Water pollution is also caused by anthropogenic process such as industrial, agricultural, urban, domestic, radioactive, mining sources, use of pesticides and fertilizers by man etc.

These pollutants are constantly poured in water deteriorating it to such an extent that it becomes unfit for living communities.

## Aim of the Study

Present study is involved analysis of physico-chemical data from Abhayapura dam in Bundi District. Contamination of our water, we are in turn just hurting ourselves. Water pollution is a problem increasing everywhere and needs to be stopped or reduced before it gets out of hand. Pollution is simply the damage caused to the environment due to pollutants. Pollutants are the foreign substance that causes pollution. Pollution possesses a serious threat to our environment by causing instability, discomfort and harm to the eco-system. What are the different government agencies doing about controlling the pollution and what are our duties to protect our surroundings and natural resources from being polluted. Bundi has a lot of beautiful lakes and dams keeping them clean is a collective responsibility of all citizens.

Water pollution causes many problems that affect people and animals in their daily lives and can harm health, as well as cause death. First, about 10 percent of all dredged material, which is chemical waste, is



**Vandana Ankodia**

Lecturer,  
Deptt. of Chemistry,  
Govt. College,  
Bundi, Rajasthan

Polluted with heavy materials and dangerous substances. The present studies indicate that drinking water and contaminants are linked to millions of illness. This shows that by the study was to determine the effects of existing and planned facilities on water quality and to propose some measures for the protection and improvement of water quality in the basin.

#### Experimental

Samples were collected from six different stations during the post monsoon. The physico-chemical parameters like pH, Turbidity, Total Alkalinity, Total hardness, calcium hardness, Magnesium hardness, chloride, Nitrate, fluoride, TDS, and coliform bacteria. pH of the sample were measured by pH meter. Calcium magnesium and total hardness were estimated by EDTA titrimetric method. Chloride was estimated by standard silver nitrate solution.

**Table**

**Physico – Chemical Parameters of the Abhayapura Dam**

1.	pH	7.1
2.	Turbidity	4.6 mg/l.
3.	Total Alkalinity (as $\text{CaCO}_3$ )	80 mg/l.
4.	Total Hardness (as $\text{CaCO}_3$ )	90 mg/l.
5.	Calcium Hardness (as $\text{CaCO}_3$ )	50 mg/l.
6.	Magnesium hardness (mg/l.)	40 mg/l.
7.	Chloride	30 mg/l.
8.	Nitrate	2 mg/l.
9.	Fluoride	0.67 mg/l.
10.	Total dissolved solid	160 mg/l.
11	Coiliform organism (MPN)	2400

#### Result and Discussion

In examining the table. It is observed that the pH was 7.1. Turbidity in water was 4.6 mg/l. Turbidity in water mainly arises from colloidal matter, fine suspended particles and soil erosions. The chloride concentration were obtained 30 mg/l and fluoride level was found in 0.67 mg/l. that much lower than the maximum range and low level of fluoride may be attributed to the absence of fluoride bearing minerals.

Alkalinity is a measure of the acid-neutralizing capacity of water. Alkalinity is basically a measure of how much an acid is dissolved in the water. Alkalinity value of Abhayapura dem were found 80 mg/l. Calcium and magnesium ions are the most common factors that comprises hardness. It is usually determines both ions in the form of total hardness. Hardness should be expressed as a concentration of divalent ions in mg/l. (ppm). The value of total hardness were 90 mg/l., calcium hardness were 50 mg/l. and Magnesium hardness were 40 mg/l. found. The observed hardness of dem water was within the permissible limit of 300 mg/l. Water may contain bacteria which are very small organisms. Some bacteria are harmful and called pathogenic bacteria. While some other are harmless and are known as non-pathogenic bacteria. Pathogenic bacteria present

in water are responsible for causing diseases like cholera, typhoid, dysenteries etc. The isolation of pathogenic bacteria is time consuming as well as difficult, simple tests are performed to determine the possible presence of intestinal organisms which are known as coliform group of bacteria, some of which may also be non-pathogenic. The presence of intestinal bacteria also indicates the presence of pathogenic bacteria, coliforms are good indicators of pollution. In Abhaypur Dem we also found coliform bacteria in a large value.

#### Conclusion

The Major sources of pollution in the study area are coliform bacteria. E. coli is the most common bacteria in the coliform group. These bacteria are harmless but their presence indicates that pathogenic bacteria may also be present. E. coli germs are discharged in very large numbers with the faeces. A significant waste water quantity from domestic sewage that enters into the various water bodies located in the city. Effective treatment plant should be installed to treat municipal bodies. Environmental and water department should introduce a fresh water bodies monitoring system. So continuously monitor water quality so that problem can be recognized.

#### References

1. R.K. Trivedy and P.K. Goel, *Chemical and Biological Methods of Water Pollution Studies*, Env.Publ. Karad (1986).
2. B.Dimacija, *Water Quality Control in toward of Quality Management*, Novi Sad (2000).
3. V. Subramanian, *water Quantity- Quality Perspective in South Asia*. Kingston International Publishers Surrey, U.K. (2000) pp.134-136.
4. K.S.A. Kumary, P.K.A. Azis and P. Natarajan, *Ind. J. Marine Sci.* 30, (2001)
5. A Smecka-Cymerman and A.J. Kempers, *Concentration of Heavy Metals and Plant Nutrients in water, Sediment and Aquatic Macrophytes of Anthropogenic lakes [Former Open Cut Brown Coal Mines]. Differing in stage Acidification*, *J. Sci. Total Environ.*, 281, 87-98 (2001)
6. J.G. Winter and P.J. Dillon, *Environ. Pollut.*, 133, 243 (2005).
7. K.K. Beg and S.Ali, *chemical contaminat and Toxicity of Ganga River Sediment from Up and Down Stream Area at Kanpur*, *Am.J. Environ. Sci.*, 4(4), 362-366 (2008).
8. A.Saravana Kumar, M.Raj Kumar, J.S. Serebiah and G.A. Thivakaran, "Seasonal variations in Physico-chemical characteristics of water, Sediment and soil". *Tenture in Aride Zone Mangrove of Kachchh- Gujarat*. *J.Environ. Biol.*, 29, 725-732 (2008).
9. R.Sharma, R.Singh and V.K.Swami, "Study of water quality parameters of canals in Shri Ganga Nagar District" *Int. J. Chem. Sci.*, 10(3), 1335-1340(2012).