



Physico-chemical Evaluation of Narmada River Water at Khalghat MP, India

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Abstract

Narmada River is the key source for drinking, domestic and irrigation purposes in the Madhya Pradesh. In the present study water sample of narmada river from Khalghat has been assessed physico-chemically to evaluate its suitability for drinking, domestic and irrigation purposes. The important parameters taken into consideration are Temperature, turbidity, pH, Conductivity, T.D.S, Suspended Solid, Alkalinity, Total hardness, Calcium hardness, Magnesium hardness, Chloride, Fluoride, Dissolve Oxygen, B.O.D., C.O.D. and Nitrate were determined in the laboratory. The Physico- Chemical parameters were determined as per standard methods of APHA (2002). Obtained results regarding the Narmad River water quality status shows that the overall water quality is suitable and safe for domestic and irrigation purposes.

Keywords: Narmada River, Khalghat, Dhar, physico-chemical parameters, quality of water.

Introduction

Khalghat is a town and a municipality in Dhar district in the state of Madhya Pradesh, India. It is located at 22.15734 N 75.446055°E and on the banks of Narmada River and National Highway 3 Agra-Indore-Dhule-Mumbai.

Narmada River is one of the most important rivers in Madhya Pradesh. It is known as "Life Line of Madhya Pradesh". It provides the clean water for domestic and irrigation purposes to Madhya Pradesh¹⁻³. Narmada river water is the key source for domestic and irrigation purposes in the study area. So it is very necessary to evaluate the quality of water in the study area. In the present study water sample of narmada river from Khalghat has been assessed physico-chemically to evaluate its suitability for domestic and irrigation purposes.

In India many environmental scientist have done work on physico-chemical and biological evaluation of water⁴⁻⁶. Also many study have done on Narmada River^{1,7-10}.

Material and Methods

Samples were collected in April 2012 from the sampling site Khalghat. In the physico-chemical properties of water, standard methods prescribed in literature were used. Temperature, turbidity, pH, Conductivity, T.D.S., Suspended Solid, Alkalinity, Total hardness, Calcium hardness, Magnesium hardness, Chloride, Fluoride, Nitrate, Dissolve Oxygen, B.O.D. and C.O.D. were determined in the laboratory. The Physico- Chemical parameters were determined as per standard methods of APHA (2002).

pH of water Sample measured by pH meter using standard solutions; Temperature of water sample measured by Thermometer; conductivity measured by conductivity meter; Turbidity of water sample measured by Turbidity meter; TDS (Total Dissolved Solid) measured by TDS meter; Suspended solid measured by filtration; Total Alkalinity and Value Bicarbonate determined by Acid-Base titration method; Value of Total Hardness, Calcium Hardness and Magnesium Hardness of water Sample determined by EDTA method; Chloride measured by titration method; Fluoride measured by Sodium 2-(parasulphophenylazo)-1,8-dihydroxy-3,6- Naphthalene 128 Disulphonate (SPADNS) Method; Nitrate measured by Spectrophotometric metod; Dissolved Oxygen determine by Winkler method; BOD also analyzed using BOD incubator; COD measured using Open Reflux Method.

Results and Discussion

The results of study have been reported in the given table. The values of all the parameter were found to be within the limits. The pH value was found to be 7.9. Temperature was found to be 29.9 °C. Conductivity was found to be 285 µs/cm. Turbidity was found to be 0.19 NTU. Total dissolved solids (TDS) was found to be 171 mg/l. Total suspended solids (TSS) was found to be 11.5 mg/l. Alkalinity was found to be 128 mg/l. Total hardness was found to be 116 mg/l. Calcium Hardness was found to be 80 mg/l. Magnesium Hardness was found to be 36 mg/l. No Nitrate was found to be 0.005 mg/l. Chloride was found to be 28 mg/l. Fluoride was found to be 0.11 mg/l. Dissolved oxygen (DO) was found to be 7.2 mg/l. Biological oxygen demand (BOD) was found to be 1.4 mg/l. Chemical Oxygen Demand (COD) was found to be 15.2 mg/l.

Table-1
Observation Table

Parameters	Khalghat, Dhar (M.P.)
pH	7.9
Temperature (°C)	29.9
Conductivity (µs/cm.)	285
Turbidity (NTU)	0.19
T.D.S. (mg/l)	171.0
Suspended Solid (mg/l)	11.5
Alkalinity (mg/l)	128
Total hardness (mg/l)	116
Calcium hardness (mg/l)	80
Magnesium hardness (mg/l)	36
Chloride (mg/l)	28
Fluoride (mg/l)	0.11
Nitrite (mg/l)	0.005
Dissolve Oxygen (mg/l)	7.2
B.O.D. (mg/l)	1.4
C.O.D. (mg/l)	15.2

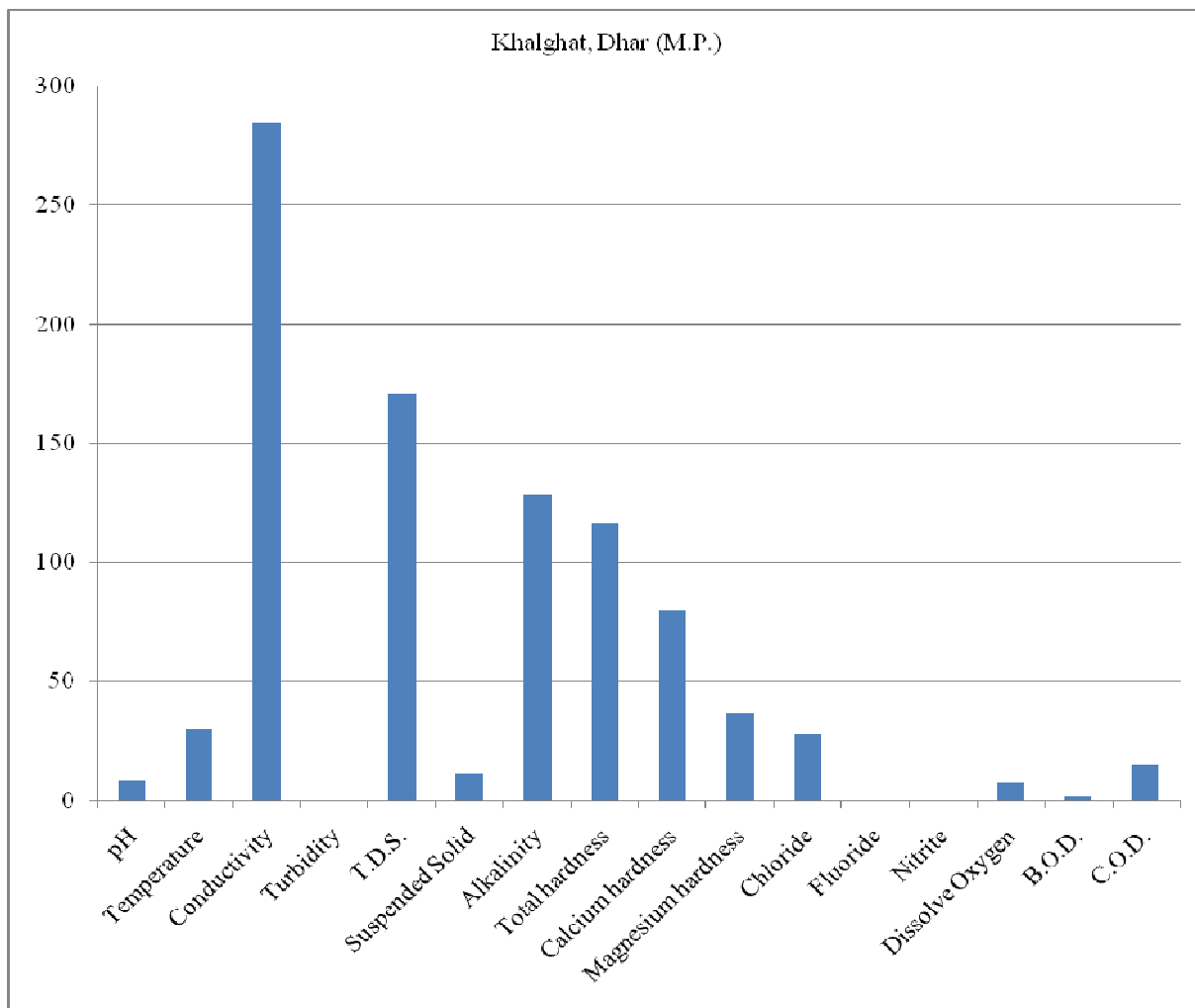


Figure 1
 Showing the comparative values of different parameters of sites

Conclusion

The quality parameters determined for sources are conclude that the Narmada river water at Khalghat quite within the acceptable range and shows that the overall quality of water is suitable and safe for domestic and irrigation purposes.

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