



Comparative Physico-Chemical Analysis of Omkareshwar Dam Reservoir Water  
(Narmada River) in Pre Monsoon and Monsoon Season- M.P., India

Dr. Madhuri Satish Patil \* & Dr Mote Sudhakar Pralhad.  
J.D.M.V.P.S. A.S.C. College Jalgaon(M.S.)

**Abstract:**

River Narmada is one of the biggest and important rivers of India. This river covers 98,797 sq. K.M. surface in India. This river is Line of Life of state Madhya Pradesh and Gujrat. Many dams are constructed on this river. One of this is at Omkareshwar Reservoir in omkareshwar in Nimad M.P. In the present study samples of water were collected from omkareshwar reservoir in pre monsoon and monsoon season. Various parameters were analyzed and compared these results with standard values according to WHO, BIS standard values.

**Key words:** River Narmada, Water pollution, Physico - chemical analysis, Narmada dam

**Introduction:**

Earth surface is covered by 70 percent of water but only 3 percent of this water is useful for drinking. Life without water cannot be imagined but no a day water bodies get polluted due to human activities like industrial waste, municipal sewage, domestic waste, agricultural runoff. Polluted water affects on human health. Higher value of Hg causes weakness of tongue, deafness. Sewage water contamination causes typhoid, jaundice and amoebiosis.

Polluted water affects on aquatic eco system it also affects on soil. Alkalinity may increases due to polluted water. Bacteria and micro organisms may die due to polluted water. Alternation in flora and fauna also occurs due to pollution (dammed site) Ogbeibu at al. 2002(1)

Narmada River is sixth largest river in India. Narmada is Holy River. River Narmada originates from Amarkantak. Many dams are constructed on this river. This helps to solve the problem of water for agriculture domestic use and industrial use. Hence investigators analyzed omkareshwar dam (Built on River Narmada) water in pre monsoon (may 2018)and monsoon season (August2018) and compare these results with standard values according to WHO and BIS.

In this investigation parameters like Temperature, PH, electrical conductance, TH, TDS, Turbidity, Sulphate, chloride and BOD are measured in pre monsoon and monsoon season.

**Material and Methods:**

Water sample were collected from the omkareshwar dam in pre monsoon and monsoon season as per standard methods given in APHA (2) in sampling bottles. All the parameters like pH, E.C. ,Turbidity, hardness(calcium & magnesium), nitrate, phosphate, sulphate, chloride, Dissolved oxygen were analyzed in laboratory according to procedure given in APHA

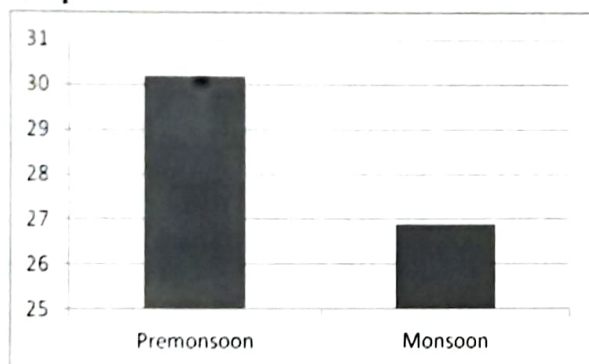
**Result and Discussion:**

Sr. No.	Parameter	Pre monsoon season	Monsoon season	WHO
1	Temperature in ° C	30.2	26.9	30 ° C
2	pH	8.4	7.9	6.5-8.5
3	EC in µmhos/cm	400.5	301.2	

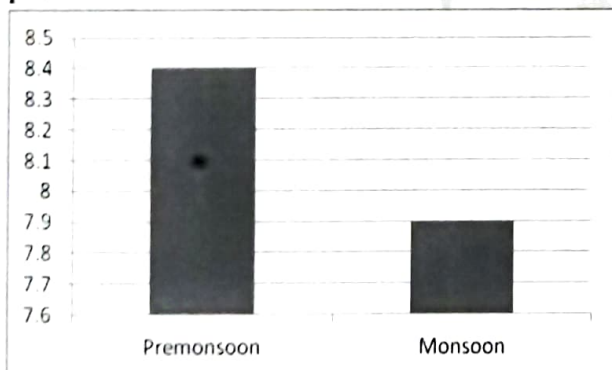


4	Total hardness mg/l	196.2	110.2	500
5	Total dissolved solids mg/l	189	225	500
6	Turbidity NTU	4.9	6.8	5
7	Sulphate mg/l	2.6	2.9	200
8	Chloride mg/l	23.6	20.2	250
9	BOD(PPM)	0.9	1.2	3-5

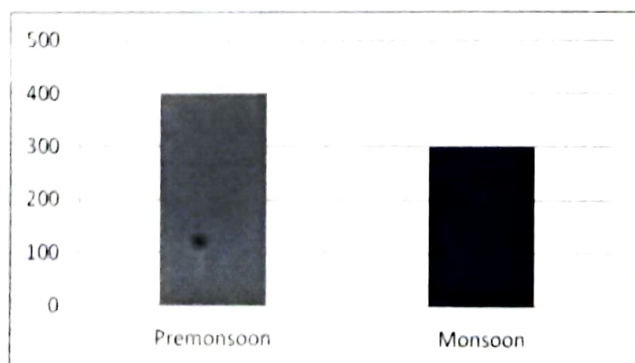
**Temperature:**



**pH**

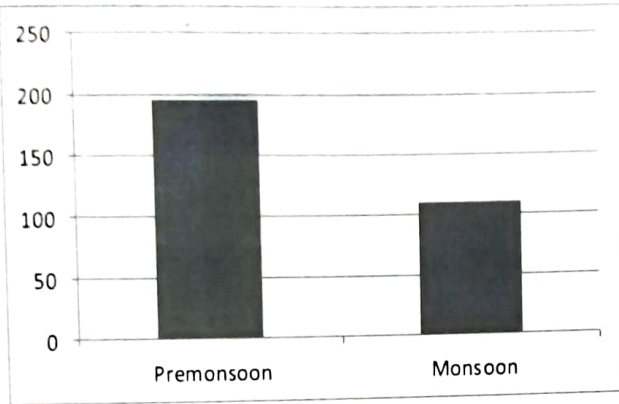


**EC**

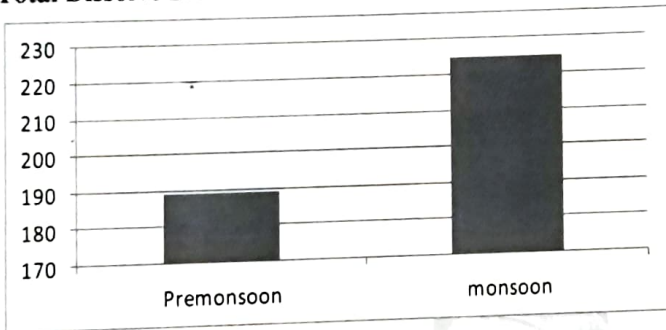




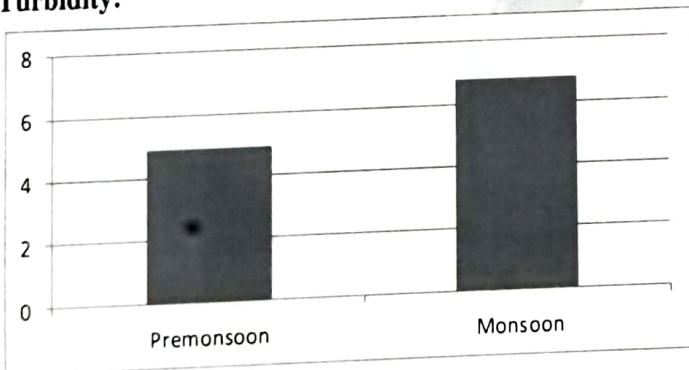
**Total Hardness:**



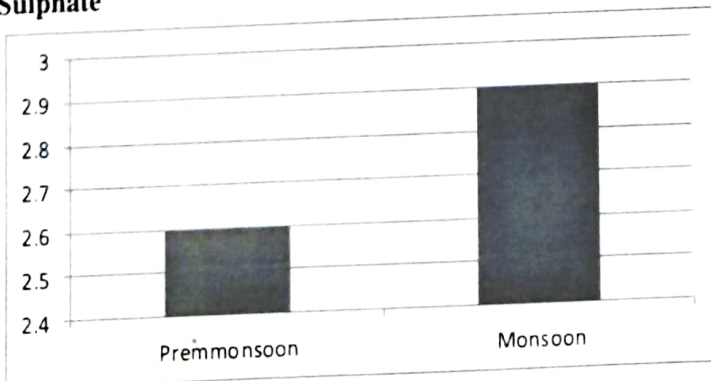
**Total Dissolve Solid:**



**Turbidity:**

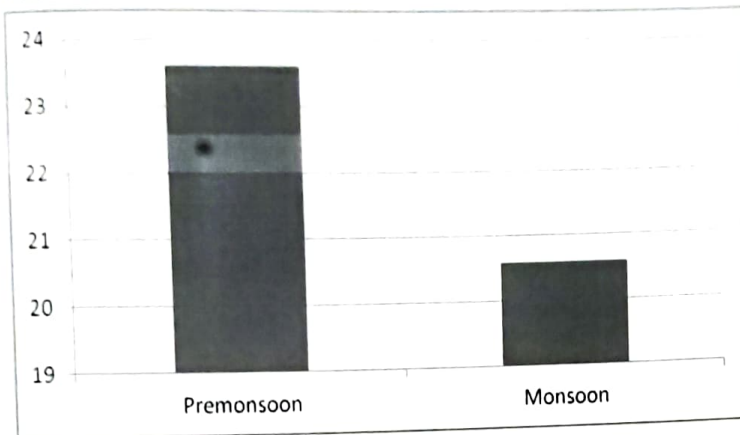


**Sulphate**

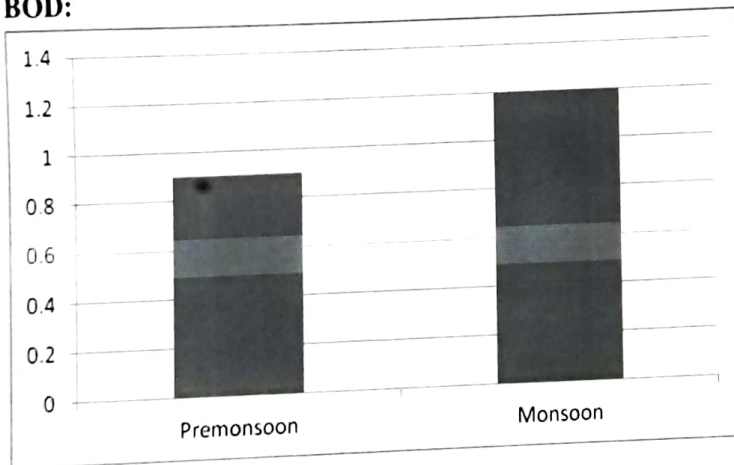




### Chloride:



### BOD:



### Temperature:

Temperature is important parameter. Temperature affects on aquatic system, low temperature is not good for microbial growth (3). In the present investigation temperature in pre monsoon and monsoon season was observed  $30.2^{\circ}\text{C}$  and  $26.9^{\circ}\text{C}$ .

### pH:

pH of Narmada dam- Omkareshwar water was found in pre monsoon season was observed 8.4 the value of pH reduces to 7.9. In wet season pH comes in acidic side (4). In monsoon season the value of pH reduces due to run off of salts dissolved in river water.

### Electrical conductance:

Electrical conductance gives an idea of TDS and salinity. Taste of drinking water affected by Electrical conductance (5) Electrical conductance of Narmada dam water in pre monsoon was observed  $400.5 \mu\text{mhos/cm}$ . The value of electrical conductance decreases to  $301.2 \mu\text{mhos/cm}$ . This decrease is due to run of salts in rainy season. Layalakshmi (2011) Observed  $3350 \mu\text{mhos/cm}$ (5) This value is very high. The values of EC in present investigation were within the standard values.



**T.H.:**

T.H. of Narmada dam water was calculated by standard methods the value of TH in pre monsoon was found 196.2 mg/Lit while the value of TH reduces to 110.2 mg/Lit in monsoon. In summer season TH value is higher than that of rainy season. Rashic et.al. (2014) found hardness 125-136 mg/lit in pre monsoon and 131-186 mg/Lit in his investigation.(6)

**T.D.S. :**

TDS in water sample is contain of carbonates , bicarbonates, chlorides, calcium, potassium, nitrate sodium, magnese organic matter and other salts(7)TDS value found more (225mg/lit) in monsoon season but this value was less in pre monsoon. These values are within standard limits. Helen et al (2011) found maximum TDS 3955 mg/lit in investigation. (8)

**Turbidity:**

Turbidity value was observed 4.9 NTU in pre monsoon season and 6.8 NTU in monsoon season in the Narmada dam water. These values were lower than that of standard values.

**Sulphate:**

Sulphate level in Narmada dam water in pre monsoon was found 2.6 mg/Lit this value increases to 2.9 mg/lit in monsoon season. The sulphate level in both pre monsoon and monsoon was found within the standard limits.

**Chloride:**

The chloride level in river water affected by sediments, sewage and industrial waste. The chloride level in Narmada dam water was observed in pre monsoon season 23.6 mg/Lit and in monsoon this level decreases to 20.2 mg/Lit. In pre monsoon and monsoon the concentration of chloride was found with in standard values.

**BOD:**

BOD is Biological oxygen demand BOD is directly related to organic material present in water sample. The BOD level 0.9 was observe in pre monsoon season the value of BOD increases up to 1.2 in monsoon season. Hassanat et.al observed BOD in pre monsoon 6.8 to 12.57 this value reduces to 3.9 to 4.98 in winter (9) Gupta et.al found BOD 4.00 in Kewara dam water(10)

**Conclusion:**

From the above investigation it is observed that temperature of Narmada Dam water in pre monsoon as well as in monsoon season was found within the standard level so it is not harmful to aquatic eco system. Temperature in monsoon season was found less than that of pre monsoon. pH in pre monsoon was found more than that of monsoon. pH in both the seasons was found slightly acidic but within the standard value. Similarly all other parametric value like EC, TH, TDS, Chloride, Sulphate, BOD are observed with in standard level.

**Acknowledgement:**

Authors are thankful to the Principal J.D.M.V.P.S. A.S.C. College Jalgaon for permission and providing facilities to carry out this work.



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