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ORIGINAL ARTICLE

Assessment of Calcium and Magnesium in Chambal River at Dholpur District

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ABSTRACT

Pollution of water is responsible for a very large number of mortalities and incapacitations in the world polluted state of the water resources has led to a water without which vital activities are not possible on this planet has also been adversely affected by all kinds of activities of human being. Today on the bank of the Chambal set which is accessory River of Yamuna in south west M.P. to eastern Rajasthan set by the rightly rows of the Janapa hill and stretching down 850 to the M.P. It covers north east of M.P. region, Dhar, Ujjain, Ratlam, Mandsor then entered in Rajasthan in Bundi, Kota, Dholpur and unite with Yamuna in last region at 38 km away from Etawah. The Chambal River is a symbol of culture of M.P. heritage prosperity as well as philosophy. Since beginning at Sanatan Dharm many tribes religions are linked to the Chambal. Chambal is a symbol of traditions of tolerance, of poise, of challenging the dark forces and integrity of M.P. and Rajasthan, that tribe to subvert their ethical and traditional values. It was since the beginning of 1970's that environmental pollution become a serious problem in India, because the rapid industrialization and Urbanization have aggregated this problem.

***Key words**: Calcium, Magnesium, Chambal River, Water quality.*

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MAGNESIUM

It also occur in all kinds of natural waters with calcium, but its concentration remains generally the lower calcium. Then principal sources in the natural waters are various kinds of rocks. Sewage and industrial waste are also important contributors of Magnesium. Magnesium adds to the hardness of water

Principle: Calcium and magnesium a complex of wine red colour with Epicures black-T at pH 10.0. The EDTA has get a stronger affinity for $Ca^{++}$and $Mg^{++}$the former complex is broken down a new complex of blue colour is formed. The value of Mg^{++}can be obtained by subtracting the value of calcium from the total of Ca^{++}, Mg^{++}.

Process: The volume of EDTA used in calcium determination and also in hardness (Ca^{++}, Mg^{++}) determination with same of the sample as taken in the calcium determination.

Calculation:

$$\text{Magnesium (mg/l)} = \frac{\text{Y-X x 400.8}}{\text{Volume of sample x 1.645}}$$

Where X = EDTA used in calcium determinated for the same volume of sample.
Y = EDTA used in harness determination.

CHLORIDE:

It also occur naturally in all types of water. Its concentration remain quite low in natural fresh water and is generally less than that of sulphates and bicarbonates. The most important sourceofchloride in the water is the discharge of domestic sewage.About 8-15 gm of NaCl is excreted by a person per day. Therefore the chloride concentration serves as an indicator of pollution by sewage. Industries are also important source of pollution in water.

Process: Taken 100 ml sample in conical flask then add 5 drops of well mixed potassium chromate indicator then titrated against 0.0141 N $AgNO_3$ till the first appearance of

Calculation:

$$\text{Chloride (mg/l)} = \frac{\text{Titrant used x N x 35450}}{\text{ml sample}}$$

Where, N = Normality of silver nitrate

RESULTS AND DISCUSSION

MAGNESIUM:

The datas showed no significant variation in the Magnesium of Chambal water at different four sampling stations. However, the Magnesium of Chambal water varies significantly after each three months intervals.

Table 1: Average Magnesium

Month	Magnesium			
	Site A	Site B	Site C	Site D
Oct-04	30.0	35.0	39.0	39.0
Jan-05	31.0	36.0	43.0	43.0
April-05	29.0	38.0	38.0	45.0
July-05	35.0	42.0	42.0	46.0

Site A= High way, Site B= Shamshan Ghat, Site C= Shergarh Fort, Site D= Near railway bridge

CHLORIDE:

There was no significant variation of Chloride in Chambal water at different four sampling station. However, the Chloride of Chambal water varies significantly after each three months intervals.

Table 2: Average Chloride

Month	Chloride (mg/l)			
	Site A	Site B	Site C	Site D
Oct-04	47.0	59.0	62.0	69.0
Jan-05	51.0	61.0	68.0	73.0
April-05	58.0	62.6	65.0	70.0
July-05	57.0	71.0	73.0	75.0

Site A= High way, Site B= Shamshan Ghat, Site C= Shergarh Fort, Site D= Near railway bridge

The present investigation clearly indicate that Magnesium are significantly increased at down stream site (D) as compared to up stream site (A) throughout this period. The, increased values of Magnesium are probably due to, the existing calcium and Magnesium in the ground water which is already an established fact. Various small scale industries of Dholpur directly are responsible as their effluents are being discharged in to River and thus increased Magnesium. Chambal River receives million litres of untreated domestic

sewage which is one of the cause for increase in Magnesium of Chambal water. The above findings support by the finding of Rai, *et al*. (1990), Sinha, *et al*. (2005) who also reported high values of Magnesium in River Godawari, Sabarmati and Chambal River respectively due to discharge of industrial effluents. The ground water of Dholpur is very hard and contains high amounts of Magnesium in it. Chloride present in all find water. In natural fresh water, however its concentration remain very less. The most important source of chloride in natural water is the discharge of sewage. In the present investigation date reveals that chloride value increased throughout the study period at down stream site (D) as compared to upstream site A. It is quite clear that different kinds of pollutants are responsible to increase chloride value in Chambal River. Earlier, Shankar, *et al*. (1983), Sinha, *et al*. (1981) also reported increased value of chloride due to the discharge of industrial effluents in River Reh and Sai respectively.

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