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Dip in a sacred lake: Divinity or Devastation Case study of Pushkar lake during the Panch Teerth Maha Snaan

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Abstract: "Water is the driving force of nature" one of the famous 'Vinci' quotes and true as well, "All life on Earth depends on water", but are we really aware and taking care of the most important thing which is covering almost three fourth part on this Earth as well as our body? This paper attempts to provide data about the water pollution caused by people during Panch Teerth Maha Snaan in the sacred Pushkar lake. Pushkar lake is believed as a holy lake situated 14kms away from Ajmer city in Rajasthan. The belief that a dip in the lake cleanses human beings of sins and diseases in the Kartik month, but are we really cleaning selves or polluting the natural element of Earth, Water? The lake has physical, cultural, economic and aesthetic importance thus the quality of water should be strictly maintained. This paper is an effort to understand the fact behind such believes and the end result of such practices on this unique natural resource WATER. The study is based on primary and secondary data. Primary data has been collected through field visits, lab tests of samples of water of lake before and after mass bathing and other religious activities and a comparative study has been established on the basis of the results. The secondary data has been collected from government institutions and have been organised and analysed.

Keywords: water pollution, mass bathing, Pushkar, Panch Teerth

I. INTRODUCTION

Anything and everything on this Earth is made up of Panch Tatva - Air, Water, Fire, Space and Land. Out of these five Water is one important element available as a renewable gift to man. Around us we can witness water and culture are strongly interlinked as most of the civilizations took birth near rivers. Every culture speaks the wide importance of water and water is worshiped and praised in each religion. In Hinduism Teerth Snaan, in Islam Vuju concept and in Christanity Baptism cleary explains the purity and divinity of water but due to ever increasing pressure of people and their selfish activities, water bodies are getting shrinked day by day. One such example of these activities is mass bathing in sacred rivers and lakes, Pushkar lake is also going through all this which directly effects the water quality of the lake. This holy water body is highly respected in terms of religious aspects, as people are connected spiritually with the lake. Millions of people take holy bath and perform other religious activities almost throughout the year but during the Kartik month the frequency and intensity of such activities increase which is undoubtedly affecting the water quality of the lake. Mass bathing in the lake causes an increase in biochemical oxygen demand (BOD), alkalinity, hardness of water, chlorine, magnesium, fluoride and nitrate content. For the better picture of the water quality of the lake the sample has been collected during the kartik month and has been compared to the normal water quality and has been compiled into a water quality index and then comparative analysis has been made.

Source: Newspaper clips(Maha Snaan 2016)

Source: Self Clicked Pictures, Field visit (18th Nov, 2016)

Objectives:

The present study is an exploratory effort to find out the quality of water of pushkar lake. Work includes the following:

1) To know the effect of Paanch Teerth Snnan on water quality of Pushkar and its impact on health.
2) To make people aware of the water pollution caused by ceremonial rites performed during Snaan.
3) To find efficient ways to revive the purity of the lake and rejuvenate the Oasis.

II. METHODOLOGY

The present study is based on primary data, field visit, sample of water was taken from Pushkar lake after **Kartik Snnan** and tested in lab, secondary data sources (internet, journals, newspapers, books, articles from published documents).

III. STUDY AREA

Pushkar is one of the four major teerths for the people living in India with over 500 temples in and around the town, the most sacred is the Brahma Temple. This holy town is situated around the sacred Pushkar Sarovar (Lake) and is set in the Valley of Aravalli Mountain. According to Padma Purana, Srstikhanda, Chapter 17, the Pushkar Sarovar was created at the place where a lotus flower fell from the hands of Lord Brahma and touched the ground. The name Pushkar is derived from the word Pushp meaning flower and Kar meaning hand. Lord Brahma was in search of a suitable place to perform a vedic yagna (sacrifice). While contemplating, a lotus fell from his hand on the earth and water spurted from three places, one of them was Pushkar, and Brahma decided to perform his yagna there. After the yagna was performed by Brahma, Pushkar received the status of a sacred town. A dip in the holy Sarovar is believed to free man of all his sins. The inscriptions found at Sanchi reveal its existence in late 2nd century BC. The discovery of punched coins as well as Greek and Kushan coins push back the existence of Pushkar to the 4th century BC. What makes the discovery of these coins quite interesting that Pushkar is nowhere near a trade route. This tends to suggests that travellers came to Pushkar exclusively for the purposes of pilgrimage.

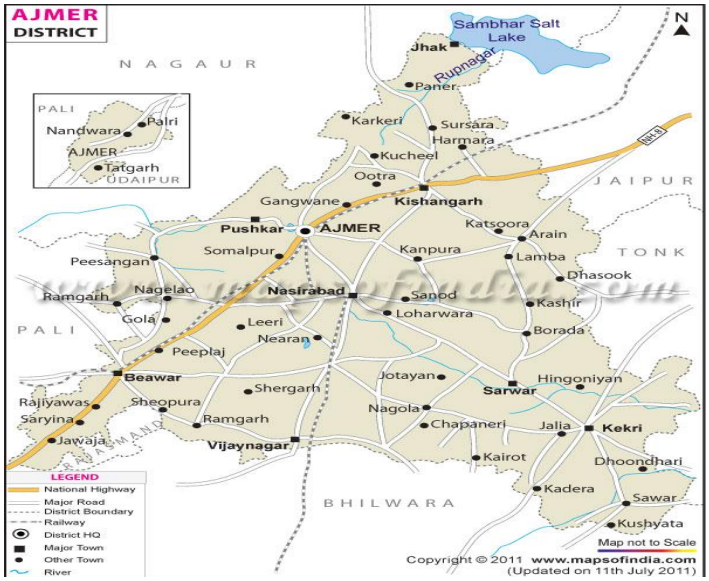

Fig.1 Map of Ajmer

Regional Setting of Pushkar:

Pushkar is situated 12 kms North West of Ajmer. It is located at latitude 26°27' North and longitude 74°37' East, at an elevation of 530 mts. above mean sea level. The town is located in the valley formed between two parallel hills of Aravalli ranges running South-West to North East. The height of the hills ranges between 650m to 856 mts. The town is developed all around the lake The town is linked to other pilgrim centers such as Mathura(NH48) and Ujjain(MP, SH17), via Ajmer. State Highway (SH-18) connects Pushkar to Ajmer and the same road links Pushkar to Merta (70km) and Nagaur (150km). Predominantly sandy soil is found here with very low water retention capacity. The town is situated in the valley formed between two parallel hills of Aravalli ranges running south-west to north-east. The average altitude of these hill ranges is between 650mt to 856mt.

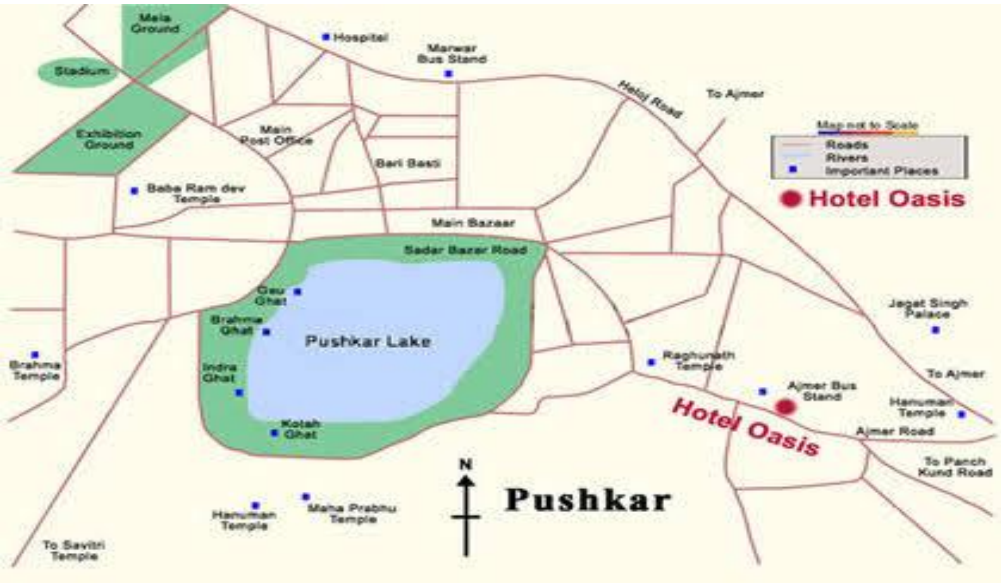

Fig.2 Map of Pushkar Lake

Fig.3 Satellite map of Pushkar Lake

Climate:

The climate of the town is semi-arid with dry and hot summer and cool winter. The hottest months are May and June with maximum temperature of around 45°C, while in winter the maximum mean temperature is 25°C. During summers, strong winds prevail resulting in the formation of sand dunes. The prevailing wind direction is south- west to north-east. The monsoon season is relatively short from July to August with average rainfall ranging from 400 to 600mm, occasionally rainfall is received in the months of January and February due to western disturbances.

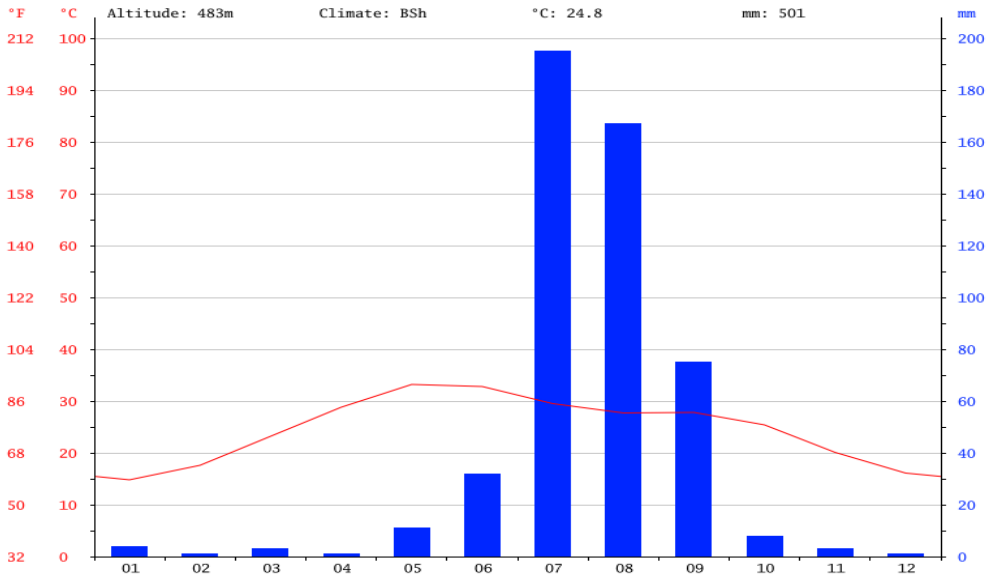

Fig. 4: Pushkar :Temperature and Precipitation Graph

Population:

The population of Pushkar as per 2011 Census was 21,626. The population growth in Pushkar can be largely attributed to natural organic growth. Day migration into Pushkar is significant, estimated to be anywhere in the range of 3,000 to 5,000. Total number of female population is 10,291 and male population is 11,335. There are 4288 households in the city and an average 5 persons live in every family. Population of the city has increased by 46.2% in last 10 years.

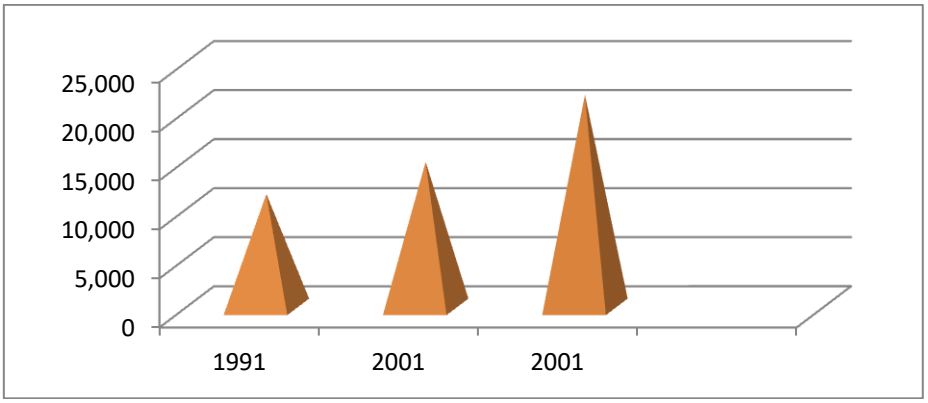

Fig. 5: Pushkar : Total Population Census wise (Census)

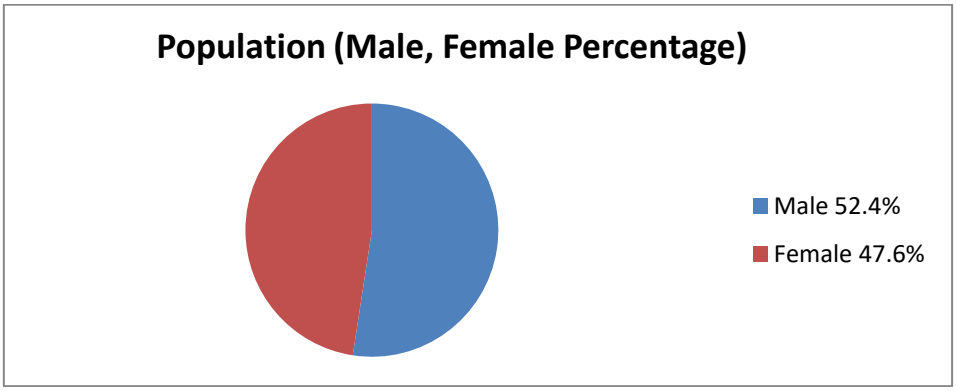

Fig. 6: Pushkar : Male, Female percentage according to Census 2011.

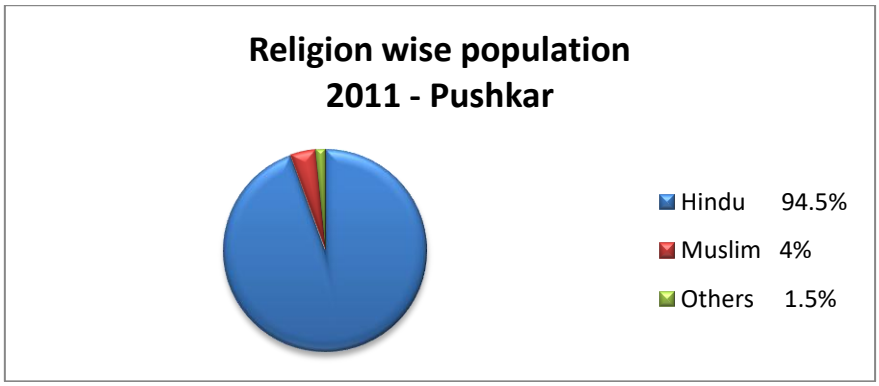

Fig. 7: Pushkar : Religion wise population according to Census 2011.

Population Density:

Pushkar is a small town covering 25 square kilometre of an area divided into 20 administrative wards. The average town density is very low which is 865 persons per km^2. Pushkar town is growing very fast such uneven density highlights the need for proper planning in future as uneven density has severe implications on infrastructure networks.

Occupation:

Tourism is the main economic activity of the town, which is providing base to other sectors of economy. Puskhar and its surrounding areas has around 500 temples, and thus is a predominantly pilgrim town. These temples are the sources of livelihood for most of the citizens. Majority of the resident population of the town is engaged in temples and tourism. These days younger generation have ventured into businesses as they are exposed to foreign tourist and advance communication skill. The cattle fair is yet another most important event which attracts large number of traders and craftsmen from across the state. This fair has become a major tourist attraction especially among the foreign tourists. The chief attractions of the fair are cattle trading, cultural programmes, craft bazaars etc. Pushkar Municipal Board earn 80% of the annual income during the Pushkar Fair. Garment manufacture is the only significant industrial activity which employs around 5,000 persons; of which most of the workers come from nearby villages. The cottage industries include traditional handicrafts and production of rose by-products e.g. Gulkand, rose oil, rose water etc.

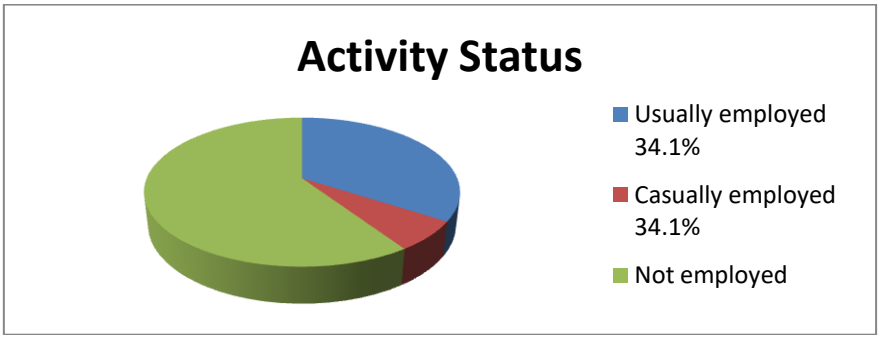

Fig. 8: Pushkar : Working Status according to Census 2011.

IV. RESULT AND DISCUSSION

Puskhar's religious, cultural significance and its ecosystem provide the town its unique characteristic. The lake is in need to conserve its built environment, cultural heritage, and its natural environment on one hand, while balancing the increased tourism activity and economic development on the other hand. Pushkar experiences a significant floating population comprising both tourists and day migrants for work and education. Tourism figures reveal that there is a base load of about 100,000 tourists each month. The town also experiences a huge inflow of tourists during the Pushkar Fair / Kartik Purnima festival as the below graph and data represent that load of Indian tourists is more than foreign tourists at Pushkar and this is due to the fact of divinity and purity of the Lake people believe in.

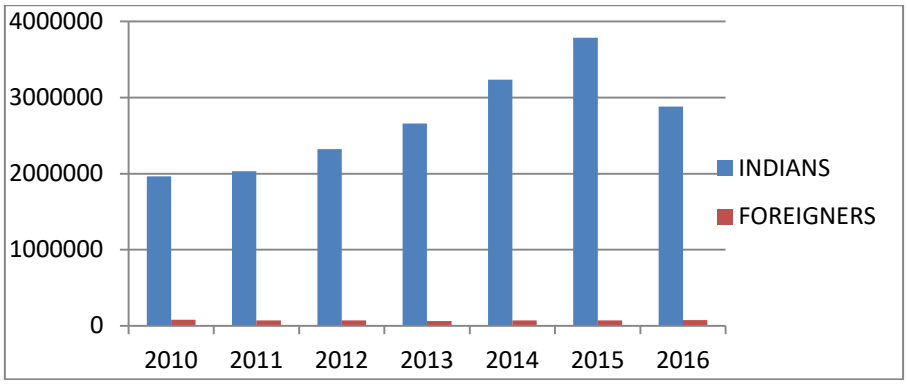

Fig. 5: Tourist data (RTDC Pushkar)

The lake is surrounded by Aravalli hill ranges forming a catchment area of 22 sq.km. It is a stagnant water body formed by the collection of rain water from the catchment area in a natural depression and is replenished mainly by the monsoons in the month of July-August. Although the lake is perennial, its depth varies considerably between the rainy season and summer season. The lake has the capacity of 0.79 million cubic meters and its depth varies from 8 to 10m. The Sarovar is encircled by Ghats, 52 in number.

Bathing in the lake during the Kartik month has scientific reason too. After rainy season, when sky becomes clear and sun rays fall on Earth directly, the environment becomes compatible to human body. Bathing in the lake early morning fresh air and water remove many ailments.

The present study was conducted on water samples from the ghat of Pushkar lake on the day of the Kartik Snaan and following tests were given to be done to the Dept. Of on the collected sample. The result revealed that the water of Pushkar lake has high value of BOD, alkalinity, Ph, total hardness etc when compared to max. permissible limit of the impurities of water.

Sr.No.	Results of pushkar water sample (mg/lt)		Max. permissible limit of the impurities of water (mg/lt)	
1.	Ph	7.7	Ph	7
2.	Hardness	100	Hardness	2
3.	Calcium hardness	60	Calcium hardness	75
4.	Magnesium hardness	40	Magnesium hardness	30
5.	BOD	6.4	BOD	3
7.	Flouride	0.2	Fluoride	1
8.	Nitrate	4	Nitrate	10
9.	Total dissolved solids	268	Total dissolved solids	500
10.	Chloride	30	Chloride	4
11.	Turbidity	8.7	Turbidity	5
12.	Coliform	11000mpn/100ml	Coliform	5000mpn/100ml

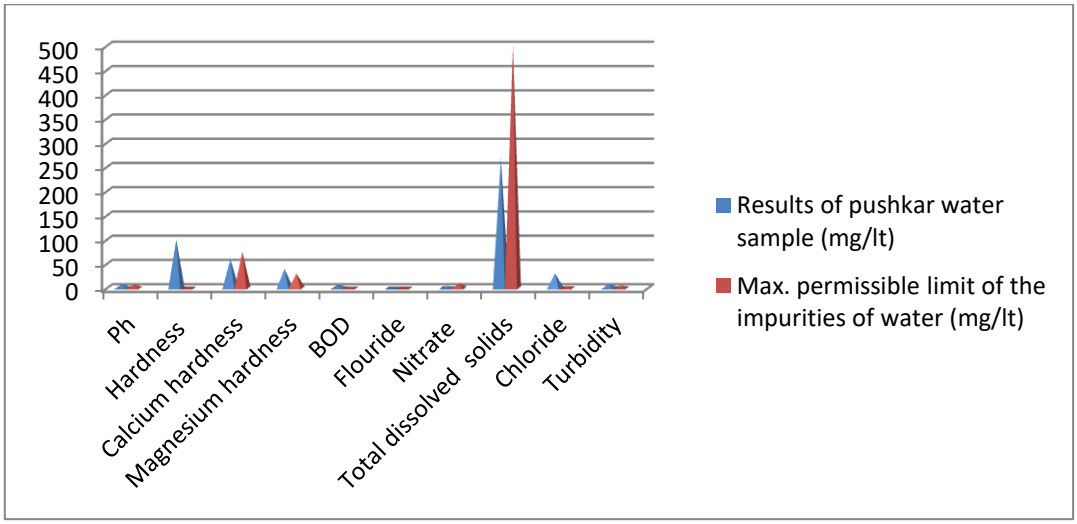

Fig.5: Comparative analysis of Pushkar lake and Normal water samples.

1. **Ph value**- In water solution variations in ph value are mainly due to hydrolysis of salts of strong bases and weak acids. It is the measure of hydrogen ion concentration.
2. **Alkalinity**- Excess alkalinity in water is harmful for irrigation which leads to soil damage and reduce crop yields. Alkalinity is primarily due to carbonate, bicarbonate and hydroxide contents.
3. **Hardness**- Capacity of water for reducing and destroying the lather of soap. It is the total concentration of calcium and magnesium ions. Temporary hardness. Temporary hardness is a type of water hardness caused by the presence of dissolved bicarbonate minerals (calcium bicarbonate and magnesium bicarbonate).
4. **Flourides** – It is the simplest ion of fluorine. Its salts and minerals are important chemical reagents and industrial chemicals, mainly used in the production of hydrogen fluoride for fluorocarbons. In terms of charge and size, the fluoride ion resembles the hydroxide ion.
5. **Nitrate** and **Nitrite** are naturally occurring ions that are part of nitrogen cycle.
6. **Chlorides** are the inorganic compound resulting from the combination of the chlorine gas with metal. Some common chlorides include sodium chloride (NaCl) and magnesium chloride ($MgCl_2$).
7. **BOD** – Biochemical Oxygen Demand – A measure of the quantity of oxygen used by micro organisms in the oxidation of organic matter. High amount of BOD is the indicator of water pollution.
8. **Turbidity**- The turbidity in water is the reduction of transparency due to the presence of particulate matter such as clay or silt, finely divided organic matter, plankton or other microscopic organism
9. **Coliform** – Group of bacteria whose presence indicates that harmful pathogens of faecal origin may be present in the water body.

V. CONCLUSION

The results of the samples clearly determine that the water quality of Pushkar lake may not be in a position to sustain the aquatic life as well as not suitable for human purpose. The water samples were analyzed that includes BOD, Ph alkalinity, hardness, etc. Mass bathing has given rise to BOD, Coliform. For outdoor bathing, the total Coliform organisms should be 500M.P.N./100ml or less , asexcess of coliform result into several diseases, symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue and the BOD should be 3 Mg/L or less but, the reports show an increased amount which is affecting the ecosystem of the Pushkar Lake.

- Experts must make immediate decision and implement plans into actions to improve the condition of Pushkar Lake.
- Water samples should be regularly sent to the laboratories to monitor the pollution levels.
- Tourist must be aware of the condition of the lake and should be informed about the hazardous effects of religious act such as Panch Teerth Snaan.
- Throwing of garlands, coconuts, ashes, plastic bags, washing of clothes and feeding fishes in the lake should be banned.

With the water being so dirty one may suffer from diseases instead of getting moksha. Cleaning of such an Old Divine Lake (National Heritage) which is not only protecting the social and cultural legacy but also enhancing tourism and boosting the economy of the State is not just the duty of Government but it should be a collective effort with the active participation of common people.

REFERENCES

[1]. DOE, "Environmental Water Quality Standard," 1991.
[2]. F. Al-Mashagbah, "Assessment of surface water quality of king abdullah canal, using physico-chemical characteristics and water quality index, Jordan," Journal of Water Resource and Protection, vol. 7, no. 4, pp. 339–352, 2015
[3]. K. Gupta, K.Mishra, P. Kumar, C. Singh, and S. Srivastava, "Impact of religious activities on the water characteristics of prominent ponds at Varanasi (U.P.), India," Plant Archives, vol. 11, no. 1, pp. 297–300, 2011.
[4]. Kiran, K. Harish, M. Ravikumar, E. T. Puttaiah, and C. D. Kamat, "Water quality assessment Of Bhadrariver with special reference to industrial pollution," Indian Journal of Environmental protection, vol. 26, no. 2, pp. 148–152, 2006.
[5]. M. Ahmed and M. Rahman, "Water Supply and Sanitation," 2000.
[6]. PrakashC. Sharma, M.M.Ranga and Deepti Mishra. " Effect of Mass Bathing on Water Quality of Sacred Quality of Sacred lakes of Rajasthan, India' Pollution Research, EM International Vol.35 Issue 1, 2016 Page No.(67-71)
[7]. R. A. Deininger and J. J. Macinans, A Water Quality of Environmental and Industrial Health, School of Public,University of Michigan, AnnArbor,Mich, USA, 1971.

[8]. R. D. Harkins, "An objective water quality index," Journal of Water Pollution Control Federation, vol. 46, no. 3, pp. 588–591, 1974
[9]. Sharma C M, Baduni N P and Nautiyal D P (1999), "Socio Economic Strategies for Environmental Conservation in Rural Garhwal Himalaya", Journal of Ecological, Environment and Conservation, Vol.5, No. 3, pp. 225-229..
[10]. U. Mishra and P. Borah, "Assessment of indicator parameters to investigate the variations in groundwater quality of west districts of tripura using entropy and correlation," International Journal of Chemistry and Chemical Engineering, vol. 3, no. 3, pp. 215–222, 2013.
[11]. V. Sharma, S. Bhadula, and B. D. Joshi, "Impact of mass bathing on water quality of Ganga River during Maha Kumbh-2010," Journal of Nature and Science, vol. 10, no. 6, pp. 1–5, 2012. [21] B. R.
[12]. http://www.brahmasavitripushkar.org/Page.aspx?contant=14
[13]. http://www.mapsofindia.com/pushkar/history.html
[14]. https://www.ncbi.nlm.nih.gov/pubmed/2038661
[15]. http://www.pushkarfairindia.com/pushkar-lake.php
[16]. https://en.wikipedia.org/wiki/Pushkar

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