

Physico-Chemical Analysis of Ground Water Affected by Ganapati Visarjan

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Abstract: The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life. This paper is intended to be a study concerning with surface water quality in various river affected by ganapati visarjan. While monitoring samples were collected in September 2015 from sampling sites before ganapati visarjan and after ganapati visarjan to evaluate relative differences in Physicochemical properties of river water such as Turbidity, Silica, Hardness, COD, TDS, DO, Phosphate, Alkalinity, Sulphate, Ca^{2+} , Mg^{2+} , Cl^- , etc. The results are compared with standards of World Health Organisation (WHO), United States Public Drinking water Standard (USPH) and Indian Council of Medical Research (ICMR). A systematic correlation study showed significant linear relationship among different pairs of water quality parameters

Study Area: Study area is selected from Amravati district, Maharashtra State. Devna river from shendurjana ghat, Chudaman river from warud. Sample point indicated in table number 1. And are shown in figure number 1.

Keywords: Physico-chemical parameter, Ganapati visarjan, Hardness, BOD, COD, DO.

1. INTRODUCTION

Water play an important role in human life. The quality of ground water depends on various chemical constituents and their concentration, which are mostly derived from the geological data of the particular region¹⁻⁴. Most of the rivers in the urban areas of the developing countries are the ends of effluents discharged from the industries. It is a very difficult and laborious task to regularly monitor all the parameters even if adequate manpower and laboratory facilities are available⁵⁻⁷. Maharashtra is well known state for ganapati festival in india. These festivals show high impact on water quality because of ganapati visarjan in rivers. In many parts of the country available water is rendered non-potable because of the presence of heavy metal in excess because of ganapati visarjan these water gets contaminated and drastically changes occurred in various parameters. These changes directly effect on plants, animals, aquatic animals etc⁸⁻¹⁰.

In the present study we analyse the water from various rivers and dam affected by the ganapati visarjan.

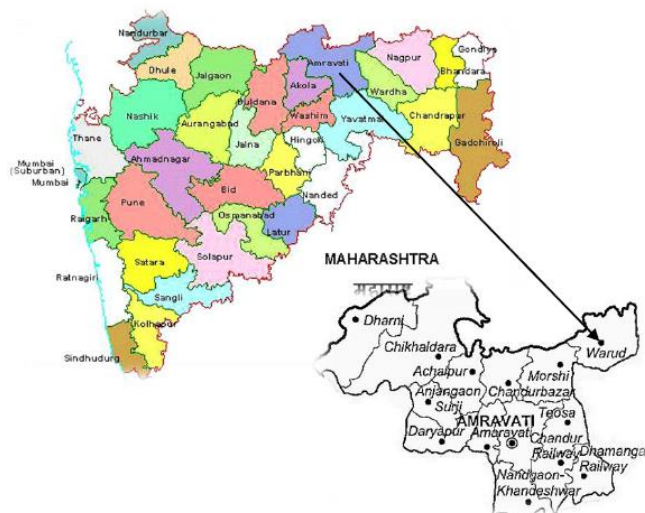


Table1.

Sr. No.	Sample Point	Indicated as
1	Devna river Before ganapati Visarjan	DGBGV
2	Devna river After ganapati Visarjan	DRAGV
3	Chudaman River Before ganapati Visarjan	CRBGV
4	Chudaman River After ganapati Visarjan	CRAGV

2. MATERIALS AND METHODS

The following methodologies was adopted during the present investigation-

- Data collection regarding the physico-chemical analysis.
- During field investigation physical parameter like pH and temperature were measured.
- Proper sampling and preservation techniques for collecting water samples for DO, COD etc.

Methods used for estimation of various parameters are shown in Table number 2.

Table2. *Methods Used For Estimation of Various Parameters*

Sr. No.	Parameter	Method
1	pH	pH Metrically
2	Conductance	Conductometrically
3	Alkalinity	Titration Method
4	Calcium	Titration Method
5	Magnesium	Titration Method
6	Chloride	Precipitation Titration
7	Hardness	Titration Method
8	DO	Winkler Method
9	COD	Titration Method
10	BOD	Incubation followed by titration
11	Turbidity	Turbidity Meter
12	Silica	Spectrophotometrically
13	Sulphate	Spectrophotometrically

3. RESULT AND DISCUSSION

Table3. *Statistical Analysis of Water Samples and Comparison with Standards*

Sr.No	Parameter	DGBGV	DRAGV	CRBGV	CRAGV	WHO	USPH	ICMR
1	pH	7.05	6.78	6.80	6.85	6.5-9.2	6.0-8.5	6.5-8.5
2	Conductance	0.87×10^{-3}	0.65×10^{-3}	0.87×10^{-3}	0.88×10^{-3}	300	300	300
3	Alkalinity	270	220	300	276	-----	-----	-----
4	Calcium	101.306	102.11	96.10	80.08	75	100	75
5	Magnesium	1.07	0.48	1.21	2.77	50	30	50
6	Chloride	0.00	0.00	7.09	7.09	200	250	250
7	Hardness	303	368	350	470	300	500	300
8	DO	2.3	2.9	2.8	3.1	-----	-----	-----
9	COD	216	234	231	245	-----	-----	-----
10	BOD	14	21	17	23	6	-----	30
11	Turbidity	0.97	2.7	1.02	1.9	5	-----	-----
12	Silica	18.86	21.40	17.33	20.23	-----	-----	-----
13	Sulphate	0.27	0.79	0.34	0.84	-----	-----	-----

4. CONCLUSION

From the present investigation it is conclude that due to ganapati visarjan the pH of water quality decreases. Alkalinity is important to aquatic organisms because it protects them against rapid changes in pH. Study shows that alkalinity decreases after ganapati visarjan. One source of alkalinity is calcium carbonate (CaCO₃), which is dissolved in water flowing through geology that has limestone. Total hardness of water is caused by the presence of Calcium and, Magnesium salts. Hardness has no known adverse effect on health. The hardness of water rapidly increases by ganapati visarjan this directly affect on human health. The investigation shows that DO, COD, BOD increase by ganapati visarjan which has remarkable effect on human health, animals and aquatic animals also. Turbidity is a measure of the degree to which the water loses its transparency due to the presence of suspended particulates. From the present investigation it is conclude that the turbidity increases after ganapati visarjan. Sulphate and silica values are also increase by ganapati visarjan in river water.

Finally it is conclude that the ganapati visarjan in river are directly increases the values all parameters which has a harmful effect on human beings, plants, animals and aquatic animals. This water is gets highly contaminated and not suitable for drinking purpose or irrigation as well.

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