

## HYDRO-CHEMICAL PARAMETERS OF GROUND WATER AROUND PIONEER DISTILLERIES LIMITED, DHARMABAD. DIST NANDED.

Sayyed Hussain<sup>1</sup>, Sayed Yousuf<sup>2</sup>, Syed Abed<sup>3</sup>, Vidya Pradhan<sup>4</sup> and syed Asif<sup>5</sup>

<sup>1</sup>Sir Syed College, Aurangabad, Maharashtra, India.

<sup>2</sup>Kohinoor College, Khuldabad, Dist Aurangabad, Maharashtra, India.

<sup>3</sup>Govt. College of Arts and Science, Aurangabad, Maharashtra, India.

<sup>4</sup>Dr. Rafiq Zakaria College for Women, Aurangabad, Maharashtra, India.

<sup>5</sup>Maulana Azad College of Arts, Science and Commerce, Aurangabad, Maharashtra, India.

### ABSTRACT

Present study deals with the impact of effluents of distilleries on ground water quality of Dharmabad District Nanded. The samples were collected from 10- stations in December 2010. The temperature, pH, TDS, DO, BOD, COD, Total hardness, chloride, sulphate and nitrate were determined. All the parameters were found to be below permissible limit except TDS. There fore the contribution towards pollution by pioneer distilleries was found to be negligible.

**Keywords:** Ground water quality, Pioneer distilleries, water pollution, water parameters.

### INTRODUCTION

Water is a essential commodity of human life, it is the right of every human being and living organism to have fresh and unpolluted water therefore it is essential to monitor the water tables periodically, the ground water is a main source of water supply. The ground water if get polluted is very difficult to purify or treat it<sup>1-2</sup>. There are various sources for water pollution among these the predominant is industrial effluents. The industries release their waste in the open ducts lagoons etc. hence it get percolated through the soil and inter into water tables, ultimately polluting the water. Hence we decided to study the water quality around the pioneer distilleries which is located in Dharmabad, district Nanded of Maharashtra state, India.

### EXPERIMENTAL

The water samples were collected by taking care of not to have any bubbling during sampling process. The intial water samples were thrown out and the bottles were filled upto the mouth without any air gap. The temperature was recorded at the site only. The pH was measured by using pH meter (ELICO-120, Hydrabad) and combined glassed electrode, TDS was determined by evaporation method. DO was determined by winklers method. BOD was calculated using DO for five days. COD was measured using dichromatic titration method. A EDTA method was used to determined total hardness. Mohrs method was used to determine for chloride. Sulphate was determine using terbidometer. Nitrate was determined by chlorimeter. In all these experiments required

solutions were prepared using double distilled water. The pH meter, Turbidometer and

Colorimeter was calibrated before use. The volumetric apparatus also calibrated.

## RESULT AND DISCUSSION

**Table 1: physico chemical parameters of groundwater**

S. no.	Parameters	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	Range	Average value	Permissible limit ISI 1991
01	Temp °C	26.0	26.8	27.8	26.0	28.0	27.5	26.5	26.0	27.5	28.0	26.0-28.0	27.1	28-30
02	pH	7.6	7.2	7.5	7.1	6.9	7.2	7.8	6.4	6.8	7.0	6.8-7.6	7.15	6.5-8.5
03	TDS mg/lit	520	750	560	610	580	510	640	600	580	520	510-750	587	500
04	DO mg/lit.	2.9	3.5	3.8	2.6	3.2	4.2	2.9	3.4	3.4	2.6	2.6-4.2	3.25	8
05	BOD mg/lit.	7.2	7.8	8.4	6.4	8.6	6.8	7.4	8.0	7.8	6.8	6.4-8.6	7.52	28-32
06	COD mg/lit.	16.6	17.0	18.2	24.0	18.0	17.5	19.8	22.0	17.0	16.0	16.0-24.0	18.61	250
07	Total hardness mg/lit.	324	418	358	366	318	412	436	388	310	400	310-436	373	500
08	Chloride mg/lit	166	196	180	128	208	168	148	176	180	156	128-208	170.6	250
09	Sulphate mg/lit.	160	172	148	162	156	140	172	160	148	168	140-172	158.6	200
10	Nitrate mg/lit.	26	32	22	18	24	30	28	20	28	34	18-34	26.2	45

In the current study from ten sites we collected the ground water and carried out the analysis. We observed temperature in the range of 26 to 28 °C which is in the permissible limit. pH observed 6.4 to 7.8 also in the range of 6.5 to 8.5 which is standard permissible limit of ISI. This low pH does not cause any harmful effect<sup>3</sup>. TDS observed above the permissible limit at all stations due to percolation of solid around the distilleries. D.O observed which is low in this area, this is due to average temperature of ground water<sup>4</sup>. D.O observed was 2.6 to 4.2 mg/lit. which is much below the permissible limit that is 8mg/lit. The B.O.D observed was 6.4 to 8.6 which indicates the presence of the biodegradable material in the ground water. Due to the waste of dis. The COD observed was 16 to 24 mg/lit. which is very low compare to the permissible limit of 250mg/lit. Total hardness observed in the range of 310 to 436 the hard water makes difficulties in the washing and cleaning when hardness of water exceeds then 180mg/lit. it generally causes problem<sup>5</sup>. In our case it exceeds then the permissible limit given by WHO (250 mg/lit.) for drinking purpose. The chloride above permissible limit changes taste of water. The variation in chloride was observed from 128 to 208 mg/lit. which is within the permissible limit. The low chloride is due to irregular distribution in the area. Similar observation were made by other workers at different places. The sulphate occur naturally in water in higher concentration. The high concentration of sulphate in drinking water can

cause scale formation, taste effect and laxative effect. In our study we observed sulphate below the ISI limit of 200 mg/lit.

Nitrate concentration is observed in the range of 18 to 34 mg/lit. which is below permissible range of 44mg/lit.

## REFERENCES

1. Abdul Jameel A. Studies on the status of available micronutrients for plant growth in different soil series of Tiruchirappalli region (Tamil Nadu). Asian J of chemistry. 1998;10(1):148-149.
2. Kaushi Anubha et al. Ground water quality of Ambala and Nilokheri cities in Haryana in relation to land use, environment and ecology. 2000;18(3):616-623.
3. Bhuiyan and Hazarika S. A study on distribution pattern of some water quality parameters in Dhakuakhana sub division of Lakhimpur district Assam, India. Int J of chem Sci. 2009;7(2):1268-1276.
4. Sayyed Hussain, Vinod Mane, Surendra Takde, Arif Pathan and Mazahar Farooqui. Comparison between Treated and Untreated water so as to study water treatment plant of Ahmadpur, Dist. Latur. International Journal of Modern Engineering Research. 2011;1 (2):564-569.

5. Sayyed Hussain, Syed Yousuf Hussain, Vidya Pradhan and Mazahar Farooqui. Fluoride ion concentration of ground water from Dharmabad, District Nanded,

Maharashtra. International Journal of Plant, Animal and environmental Sciences. 2011;1(3):241-243.