

## HYDRO-CHEMICAL PARAMETERS OF GROUND WATER AROUND LIME MINES IN PIDUGURALLA. GUNTUR DISTRICT, ANDRAPRADESH.

### ABSTRACT

Present study deals with the consequents of effluents from lime industries on ground water quality of Piduguralla. Guntur, District, Andrapradesh. The samples were collected from 06 places in the middle town in January 2013. 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 Total hardness and COD fluoride. Therefore the contribution towards pollution by pioneer lime industries was found to be negligible.

**Keywords:** Ground water quality, lime stones, water pollution, water parameters, Piduguralla, Guntur district.

### INTRODUCTION

Water is an 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. Piduguralla is located with 16.49904 Latitude and 79.87114 Longitude. In the part of "PALNADU" This town is rich with minerals and also surrounding villages are very green with paddy fields. Most of the people depend on agriculture with fertile lands having water from the Nagarjunasagar canals. It has around 300 lime stone kilns and lime hydrating mills and lots of cotton mills in the town,

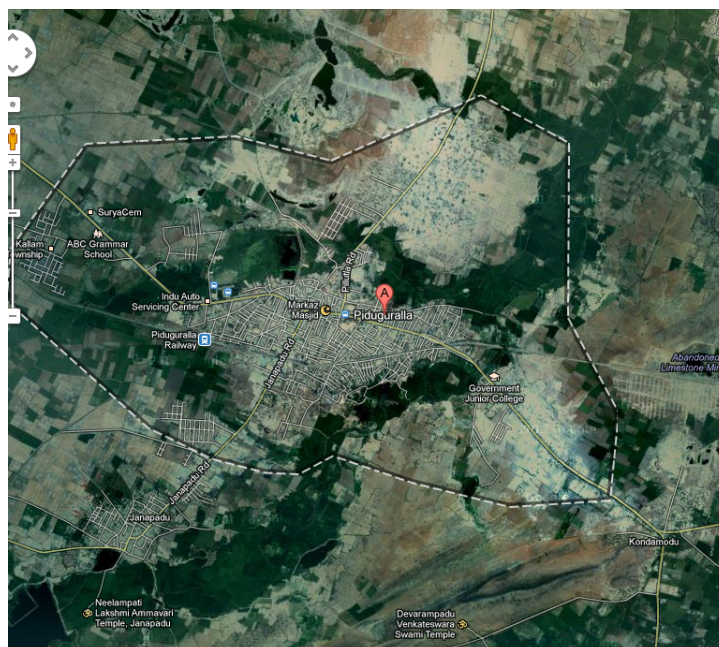


Figure.1 Satellite image of Piduguralla town

## EXPERIMENTAL

The water samples were collected by taking care of not to have any bubbling during sampling process. The initial water samples were thrown out and the bottles were filled up to the mouth without any air gap. The temperature was recorded at the site only. The pH was measured by using pH meter (ELICO-120) and combined glassed electrode, TDS was determined by evaporation method. DO was determined by winkers 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 determining using turbidometer. Nitrate was determined by chlorimeter. In all these experiments required solutions were prepared using double distilled water. The pH meter and Colorimeter Hitachi was calibrated before use. The volumetric apparatus also calibrated

## RESULTS AND DISCUSSION

S.NO	Parameter	WS1	WS2	WS3	WS4	WS5	WS6	Mean	Permissible limit ISI 1991
1	PH	7.86	8.21	8.14	7.95	7.93	7.84	7.98	6.5-8.5
2	Total Hardness	603.4	584.1	634.9	714.8	627.9	735.1	650.0	600
3	Ca (ppm)	194.2	173.7	192.1	188.7	179.5	198.2	187.7.0	200
4	Mg (ppm)	72.3	86.3	81.4	79.5	76.3	75.1	78.4	100
5	Na (ppm)	50.3	52.5	51.4	55.3	54.2	53.7	52.9	75
6	K (ppm)	7.9	7.5	8.4	8.2	7.6	7.4	7.833	9
7	Cl (ppm)	650.3	673.2	658.9	633.7	641.3	637.2	649.1	1000
8	SO <sub>4</sub> (ppm)	218.5	220.7	218.5	115.6	137.4	195.2	184.31	200
9	F (ppm)	2.3	2.5	2.6	2.3	2.4	2.5	2.43	1.5
10	NO <sub>2</sub> (ppm)	51.3	53.7	55.7	50.2	63.1	66.7	56.78	45
11	D.O (ppm)	6.89	7.32	7.64	6.58	4.32	5.38	6.35	8
12	B.O.D (ppm)	30.8	34.6	30.7	29.4	25.3	33.1	30.65	28-32
13	C.O.D (ppm)	256.3	249.8	263.4	233.8	261.7	244.3	251.5	250
14	Temperature	28.2	27.6	28.3	28.4	28.7	29.1	28.38	28-30

The Pidugurlla town is famous for lime stone in south India from so many years. The 7.98 P<sup>H</sup> value of water samples indicates the basic nature of drinking water. Hardness also more than permissible limit. The average value of Ca is near to Permissible limit. The fluoride is more than permissible limit. The average values indicate all the ground water samples of Piduguralla are in within the limit. The C.O.D and B.O.D results also within the range. But all the people using commercial mineral water. The lime mines showing more effect on P<sup>H</sup> of water.

## 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 patern 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. A special report on India: Creaking, groaning: Infrastructure is India's biggest handicap". The Economist. December 11, 2008.
6. Schueler, Thomas R. "Cars Are Leading Source of Metal Loads in California." Reprinted in The Practice of Watershed Protection. 2000. Center for Watershed Protection. Ellicott City, MD.
7. <http://www.cwc.gov.in/main/HP/download/Standard%20Analytical%20Procedures.pdf>

**K.Satti Reddy<sup>1</sup>, CH.Venkata Kishore<sup>2</sup>, K.Umamaheswara Sarma<sup>3\*</sup>**

1. Associate Professor, Dr.L.Bullayya Engineering college, Visakhapatnam. India

2. Dept of Chemical Engineering AUCE (A), Visakhapatnam, India.

3.KVR,KVR,&MKR College, Khajipalem, Guntur Dt. India