



STUDY OF CHLORIDE PRESENT IN THE INDUSTRIAL WATER SAMPLE OF NIPANI TOWN

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Abstract

The industrial water samples were collected from Halsiddhanath sugar factory, Nipani town and analysed every month throughout the year. So, we have studied levels of chloride in industrial water from industries and sewage disposal sites. Concentration of chlorides ranged from minimum 7.50 mg/lit to maximum 34.80 mg /lit.

Key words: Industrial water sample, Pollutants, chloride

I. INTRODUCTION

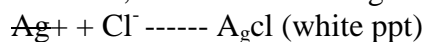
The presence of chlorides in natural waters can be attributed to discharge of effluents from sugar industries, chemical industries, sewage discharges irrigation drainage etc. Contamination of water with sewage increased chloride concentration in a water body.

In the present study, the level of chloride were studied in the vicinity of sugar factory located at Nipani. The underground water samples were collected from industrial water sample in the glass bottles by following standard procedure¹. Samples were taken from Halsiddhanath sugar factory which are located near 1. Bhim Nagar 2. Savant Colony 3. Ayodhya Nagar 4. Bhopale Galli 5. Ambalzari Nala 6. Azad Galli 7. Burud Galli 8. Pratibha Nagar 9. Ashray Nagar 10. Pragati Nagar 11. Shivaji Nagar 12. Mestri Nagar. The samples were collected every month throughout the every year and analysed in laboratory for the levels of chlorides 2,3.

II. EXPERIMENTAL

Methodology for determination of chloride

Chloride concentration in the water is determined by several methods viz argentometric or Mohr's method. Mercuric method and potentiometric method. In the present study, argentometric method was considered suitable for the determination of chloride ions. In neutral or alkaline solution, potassium chromate indicates the end point of titration of chloride AgNO_3 reacts with chloride ions to form very slightly soluble white ppt precipitate of silver chloride. After all the chloride is removed, the indicator changes its colour to reddish brown of silver chromate.



Reagents

a) Standard silver nitrate solution – (0.02N). Dissolve 3.4 g of dried AgNO_3 (A.R.) in distilled water to make 1 litre of solution in an amber coloured bottle and kept in dark, away from light.

Procedure

Water sample (30ml) was taken in a conical flask and 2ml $\text{K}_2\text{Cr}_2\text{O}_7$ was added to it. The solution was titrated against 0.02 N AgNO_3 . End point was taken when persistent red ring appeared, concentration of chloride (Cl^-) ions was determined using the following formula.

$$\text{Chloride mg/lit} = \frac{\text{N} \times \text{ml of } \text{AgNO}_3 \times 35.5 \times 1000}{\text{ml of sample used}}$$

Where, N= Normality of AgNO_3

III. RESULTS AND DISCUSSION

In surface waters concentration of chlorides ranged from minimum 7.50mg/lit to maximum 34.80 mg/lit (Table Nos 103,105,107).

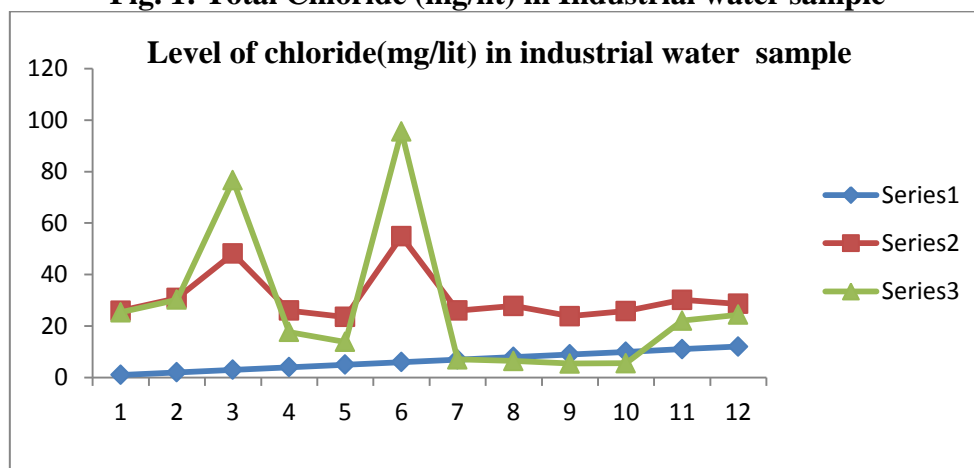
Season wise in rainy season 28.52mg/lit ,30.12mg/lit and 25.32 mg/lit followed in winter 34.72 mg/lit , 36.42 mg/lit and 39.67 mg/lit and slightly less in summer 37.43 mg/lit , 39.67 mg/lit , 38.73 mg/lit (Table Nos : 104,106,108) . Higher values of chloride observed in rainy season in the present study. Tallied with the observations. Thus, high chloride level, polluting surface waters i.e. Originates from an industrial effluent.

Table 1: Chloride (mg/lit) in industrial water sample

Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	12.70	9.91	7.51	17.04	25.56	15.62	26.98	26.75	16.34	17.20	14.21	17.51
2	17.04	17.04	11.41	19.85	15.21	15.61	19.82	26.90	15.60	16.20	24.14	17.04
3	30.24	91.04	44.02	26.91	63.25	20.30	21.30	45.44	16.21	20.30	34.08	31.60
4	55.30	65.32	263.91	49.70	29.81	61.50	45.44	28.40	21.41	22.31	80.20	70.25
5	92.72	70.51	129.22	69.50	22.72	120.70	28.41	30.41	30.41	32.31	70.10	85.91
6	36.85	36.91	56.81	31.24	30.31	340.80	29.81	30.81	30.71	31.57	31.24	34.04
7	15.62	14.20	14.21	14.20	18.05	14.20	26.91	27.85	28.87	26.75	25.50	20.57
8	11.37	12.78	11.30	31.24	17.04	19.81	25.50	26.31	27.30	28.29	17.04	14.20
9	9.94	8.52	9.90	14.20	16.20	15.62	25.56	26.51	25.60	29.30	17.02	13.57
10	9.34	12.78	9.91	11.36	14.15	11.37	21.30	22.31	25.61	30.31	15.60	12.78
11	9.90	8.51	8.51	12.78	15.70	9.94	19.80	20.81	25.71	29.71	18.41	14.21
12	10.40	14.20	11.36	13.70	14.20	12.78	21.30	21.30	22.25	25.75	14.21	12.08

Stations	Average	S.D
1	25.95	25.34
2	30.89	30.23
3	48.17	76.62
4	17.70	5.95
5	23.52	13.81
6	54.85	95.59
7	26.01	7.03
8	27.82	6.43
9	23.84	5.46
10	25.83	5.55
11	30.15	22.11
12	28.63	24.40

Fig. 1: Total Chloride (mg/lit) in Industrial water sample



BIBLIOGRAPHY

- [1] APHA, AWWA., (1999) Standard Methods for Analysis of water and wastewater 19th ed.
- [2] Bahri , A., (1999) Agricultural reuse of wastewater and global water management . Wat. Sci.Tech. 40(4-), 339-346.
- [3] Munshi , J. D. and Munshi , J.S.D. (1995) Fundamentals of freshwater Biology . Narendra publishing House . delhi-110006 , India
- [4] Maiti , S.K., (2004).Hand Book of Methods in Environmental Studies . 1. Water and WasteWater Analysis 1st edition , ABD publisher , Jaipur
- [5] Sharma , D.K.(2005) Seasonal variations in certain physico-chemical characteristic of Rampur reservoir of Guna district (M.P.) . In : Ecology of lakes and reservoirs. Vishwas Balasaheb Sakhare (Eds.) Daya publishing House : 63-104
- [6] Saxena . M.M., (1998) Environmental Analysis of water , soil and Air ,Agro Botanica publication , Bikaner
- [7] Varale Y.S., 2009 Study of dissolved oxygen present in the underground water of Nipani town, Current world environment, 4(2), 421-423
- [8] Varale Y.S., (2012) study of chemical oxygen demand present in the underground water of nipani town, Acta Chim. Pharm. Indica, 2(2), 82-84
- [9] Varale Y.S., (2016) Study of phosphate present in the industrial water sample of nipani town , Research Journal of Life Sciences, Bioinformatics, Pharmaceutical and Chemical Sciences,2(3)Page No. 172-177
- [10] Varale Y.S., (2016) Study of Biological Oxygen Demand present in the industrial water sample of nipani town , International journal of Applied and Pure Science and Agriculture , 2(11)Page No. 103-106