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Analysis of various parameters in Water

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Abstract

Water from the various sources (Tap water, Pond water, Ground water) was taken and analysed for chloride ion content, Hardness and COD. The need for such type of estimation arose due to arising certain diseases which are caused due to contamination of water, corrosion of the underground water pipes, sewerage pipes, machine parts, retardation of the growth plants, coating of the geyser pipes which results in the bursting of geysers. The main interest on this topic is the investigation of the carcinogenic elements or compounds which are responsible for the various health hazards (food pipe cancer, breast cancer, intestine cancer) in the malwa region.

Keywords: Tap water, Pond water, food pipe cancer, malwa region, water Analysis

1. Introduction

Water the basic need of our life must be pure. As water is a universal solvent. This property of water is the major cause of pollution since the salts and organic matter dissolve in water and contaminate it. That is why quality of water in the nearby area is examined. The work is still going on.

2. Methods and Materials

2.1 Tests for chloride: Chloride is one of the major inorganic anions in water and waste water. Natural water generally consists of chloride ions due to dissolution of salt deposits, discharge of effluents from industries, irrigation drainage. In potable water, the salty taste produced by chloride concentrations is variable and depend on the chemical composition of water.

Chloride is not strictly a pollutant but concentration above 1000mg/L may harm agricultural crops and corrode the metallic pipes.

10 ml of the sample was taken in a titration flask and the solution was made weakly alkaline. In the burette Silver nitrate solution. Add five drops of potassium chromate indicator to the sample. Titrate the contents of the beaker with silver nitrate until the pinkish colour appears. Note the volume of the AgNO_3 consumed.

2.2 Hardness

Hardness of water is the capacity of water to precipitate soap. Hardness of water is due to discharges containing salts of magnesium and calcium. Hardness is objectionable for laundry and domestic purposes, since it consumes large amount of soap. Hardness of water may range from 10 to 100 mg/L in terms of calcium carbonate, depending upon the source of water.

10 ml of the sample was taken in the titration flask and 1 ml of the buffer solution was added. Then two-three drops of EBT indicator were added. In the burette 0.1 M EDTA solution was taken. The solution taken in the titration flask was titrated with EDTA solution till the colour of the solution changes from wine red to blue. The volume of EDTA used was noted.

2.3 Chemical Oxygen Demand (COD): It is the amount of oxygen required by organic matter in sample of water for its oxidation by strong oxidizing agent.

About 50 ml of the water sample was taken in a round bottomed flask fitted with reflux condenser. About 1 g of HgSO_4 was then added. Then 40 ml of conc. H_2SO_4 and 20 ml of 0.25 N potassium dichromate was added. It was refluxed for 30 minutes. The 10 ml of this

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solution was then titrated with Biphenyl amine as indicator against 0.25 N Mohr salt. This gives the amount of potassium dichromate used when the end point was blue to green.

Then the blank titration was carried out with 5 ml of the distilled water, 2 ml of the potassium dichromate, 4 ml of

conc. H_2SO_4 was then added and the solution was titrated against 0.25N Mohr's salt. Then the COD of the different water samples were calculated.

3. Results and Discussion

Sr. No.	Source of water	Hardness (mg/L)	Chloride (mg/L)	Chemical oxygen Demand(mg/L)
1	Tap water	272	61.98	120
2	Ground water	304	55.98	180
3	Pond water	600	71.97	240

As it is clear from above results that pond water is the most polluted one and is not suitable for use.

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