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STUDY OF WATER QUALITY TESTING ON DRAVYAVATI RIVER PROJECT

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ABSTRACT

In this work, samples of water were collected from river in jaipur. Over the due course of time various parameters regarding the water quality were analysed& the Indian Standards: 10500 (Drinking water specifications) was referred to in order to check the acceptability of water. The parameters which were analysed are as follows :

1.Total Dissolved Solids

2. Total Suspended Solids

3. Determination of pH

1. INTRODUCTION

The project was based on testing the quality of water. Three different samples were collected from river in Jaipur. Water quality refers to the chemical, physical and biological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose. It is most frequently used by reference to a set of standards against which compliance can be assessed. The most common standards used to assess water quality relate to health of ecosystems, safety of human contact and drinking water. Different properties were analysed& compared during the course of the project. Some of the properties analysed are as follows –

1. Total Dissolved Solids

2. Total Suspended Solids

3. Determination of PH

INPORTANCE OF WATER QUALITY TESTING

1. Results are used to pinpoint any changes or trends that appear in water bodies over a period of time. These can be short of long term developments.

2. Regularly monitoring water quality is a crucial part of identifying any existing problems, or any issues that could emerge in the future. For example, data has been used to reveal that over the

past few years, increases in fertilisers used for food production had increased global nitrogen pollution in rivers by up to 20%.

3. When designing and developing pollution prevention and management strategies data collected from water quality monitoring efforts is hugely helpful. With 70% of untreated industrial waste dumped straight into water systems, pollution management is a must.

4. Today governments, communities and businesses are required to meet a range of water quality goals. Monitoring data is used to determine whether or not pollution regulations are being complied with.

5. From oil spills and radiation leaks to floods and mass erosion, water quality monitoring data is a must when developing emergency strategies.

2. LITERATURE REVIEW

2.1 Total suspended solids

TSS is identified as a conventional pollutant in the U.S. Clean Water Act. TSS was earlier known as non-filterable residue (NFR). TSS is the dry-weight of particles which are trapped by a filter having a specified pore size. To find TSS of a water sample, measured volume of water should be passed through a preweighed filter having a specified pore size, then taking the weight of filter again after drying to evaporate the water in the filter paper. Filters composed of glass fibres are typically used for measuring TSS. The dry weight measure of the particulates present in the water sample is the gain in weight & it is expressed in units derived or calculated from the volume of filtered water**.**

2.2 Total Dissolved Solids

A measure of the combined content of all inorganic and organic substances contained in a liquid in molecular, ionized or micro-granular suspended form is called Total Dissolved Solids (TDS). The solids should be small enough to survive filtration through a filter which has twomicrometer (nominal size or smaller) pores. We generally discuss TDS for freshwater systems only, as salinity consists of some of the ions contributing in the definition of TDS. The Study of water quality for streams, rivers and lakes is the most important application of TDS, although TDS is not a primary pollutant, but TDS is used as an indication of aesthetic characteristics of drinking water and as an

indicator of the presence of a broad array of chemical contaminants.

2.3 pH Value

pH is basically a measure of the acidity or basicity of an aqueous solution. Solutions having pH less equal to 7. Primary pH standard values are found out by using a concentration cell with transference, simply by measuring the potential difference between a standard electrode such as the silver chloride electrode & hydrogen electrode. Measurement of pH for aqueous solutions can be done with a pH meter or a glass electrode. We can also find the value of pH by using indicators. pH measurements have significant importance in the field of biology, environmental science, chemistry, medicine, oceanography, food science, agriculture, nutrition ,civil engineering, chemical engineering, forestry, water treatment & water purification and many other applications. Mathematically, it can be said that pH is the negative logarithm of the activity of the hydrogen ion.

3. EXPERIMENTAL PROCEDURES

3.1 Total Suspended Solids

Theory The solids which can't survive the filtration through a filter with 2 micrometer pores are called TSS. And hence, we use that procedure to find TSS.

Apparatus Required

1. Funnel
2. Conical Flask
3. Filter paper
4. Oven
5. Weighing Machine
6. Measuring Cylinder
7. Beaker

Procedure

1. 10 ml of water sample is measured using the measuring cylinder.
2. Water sample is transferred into a beaker.
3. Weight of the filter paper is recorded.
4. Filter paper is adjusted in the funnel.
5. Water is transferred to the conical flask through the filter paper.

6. Filter paper is kept in the oven in order to get it dried.

7. Once the filter paper gets dried, it is taken out.

8. The weight of filter paper is then recorded.

9. The initial weight of the filter paper is then subtracted from the final weight.

10. The result which we get is the amount of suspended solids in 10 ml of water.

11. It is divided by 10 in order to get the amount of TSS per ml of water

3.2 Total Dissolved Solids

Theory

The definition of TDS says that the dissolved solids which are small enough to survive filtration through a filter with two micrometer pores are TDS. And that is the procedure used here. The water is evaporated after the filtration & TDS is measured.

Apparatus Required

1. Conical flask

2. Petridish

3. Oven

4. Weighing machine

Procedure

1. TDS is measured in continuation to the procedure of finding TSS.

2. A petridish is taken.

3. Weight of the petridish is recorded.

4. Filtered water from the TSS process is transferred into the petridish.

5.Petridish is then kept in the oven.

6. The temperature of the oven is set at over 100° C.

7. After sometime, water is evaporated.

8. The petridish is then taken out.

9. The weight of petridish is then recorded.

10. The initial weight of the petridish is then subtracted from the final weight.

3.3 pH value

Apparatus Required

1. pH meter

2. Beaker

Procedure

1. All the samples are taken in the beaker one by one.

2. The pH value is recorded for all the sample using the pH meter.

4. RESULTS & DISCUSSION

4.1 TSS

Sample	weight of filter paper	Final weight of filter paper	Weight of suspended solids in 10ml	TSS
A	1.03 grams	1.05 grams	0.02 grams	2 grams/litre
B	1.01 grams	1.04 grams	0.03 grams	3 grams/litre
C	1.04 grams	1.06 grams	0.02 grams	2 grams/litre

4.2 TDS

Sample	Initial weight of petridish	Final weight of petridish	Weight of dissolved solids in 10 ml	TDS
A	29.37 g	29.44 g	0.07 g	7 g/l
B	30.11g	30.2 g	0.09 g	9 g/l
C	29.37 g	29.43 g	0.06 g	6 g/l

4.3 pH Value

Sample	pH observed	Nature (Acidic/Neutral/Basic)
A	7.1	Slightly basic
B	6.7	Acidic
C	7.6	Basic

5. Conclusion

It can be concluded that the suspended solids in the river has decreased in the following sample But at the same time , the value of TDS increases across the samples. As far as the PH value is concerned. It decreased in every new sample but in very less amount.So it can be stated that the quality of river is improving slowly in the months. Some steps need tobe taken to prevent TDS increment in the water.

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