

Assessing water quality in a stream by chemical means essay sample

[Science](#), [Chemistry](#)



1. Introduction

The aim of this experiment was to investigate water quality by chemical tests with which the

momentary characteristics of the water could be assessed very precisely.

The temperature, turbidity,

flow velocity, ph (measures the alkalinity or acidity), total hardness,

ammonium, nitrate, phosphate and dissolved oxygen content (measures the amount of oxygen in water)of the water were measured.

This investigation was carried out at a stream in Bükkös.

2. Materials & Methods

a. materials

Thermometer

ph meter

Transparent plastic bottle

Test kits

Turbidity disc

Stop watch

Floating object (paper boats)

b. method

1. Measuring temperature and pH:

The temperature was measured using a thermometer, which was held into the water for 30 seconds. This was done at two different points of the stream and at the same place, the pH was measured at the same points.

2. Measuring turbidity:

The turbidity was measured using a transparent plastic bottle. A turbidity disc was put on its surface and it was then filled with water. The water was then compared to the turbidity disc's color and thus the turbidity was determined.

1. Measuring flow velocity:

The flow velocity was measured using paper boats. A 10 meter long distance was measured and the boat was taken to starting point of the measured distance. Then, the speed of the boat was calculated. This was repeated 3 times.

2. Test kits were used to measure the total hardness, ammonium, nitrate, phosphate and the dissolved oxygen content.

3. Data

a.) The pH paper showed a green colour, the value of its pH was 7.

Place

pH

Temperature / °C \pm 0.5

1

7

15.0

2

7

14.0

Table 1: The temperature and its pH at the two places

b.) The speed of the water was tested by three paper boats with a distance of 10 \pm 0.05 m.

Observation

The speed of water / s \pm 0.5

1

66.0

2

92.0

3

78.0

Table 2: The speed of the water

1. The test kits are used as the paper of instructions says.

Table 3 - The results of the test kits

Test kit

Result

PO₄

0

NO₃⁻

1

NH₄⁺

0.2

Titration

4 ml

Total hardness of water

16 drops

4. Results/Conclusion

It could be shown that the was not polluted by acid rain or agricultural chemicals which would have swoed the extent of human interference int he nature. The pH value of the stream was 7, and its temperature was 14. 5 °C. Both of these results are normal.

1. Calculating the speed of water:

By calculating the mean of the three measurements first:

s

Dividing the distance covered by the mean time:

, where $s = 5 \pm 1 \text{ m}$ and $t = 78.7 \pm 0.3 \text{ s}$

m s⁻¹

The runoff of water is responsible for the transport of sediment, nutrients, pollution etc. The result shows the streamflow of the stream Bükkös can provide a maintainable water cycle.

1. The chemical test kits support the idea that the water quality is good as do the results in Tabée 3. There is no extra phosphate int he water, which result in algae appearing and not letting as much oxygen as needed by the water animals.

The table also shows that the concentration of NO_3^- and NH_4^+ is low which also indicates good water quality. These substances stimulate the growth of water seeds which provide food for fish and keep the stream clean.

1. To calculate the quality of the water, total hardness has to be calculated which is the number of drops multiplied by 0.03. Its unit is nk° or $^\circ\text{dH}$, they are the same. In this investigation, the total hardness of water was 0.48 nk° or 0.48 $^\circ\text{dH}$. This indicates soft water which means that the water quality is good.

As a final conclusion for the investigation of assessing water quality by chemical means it can be said that the water quality of the stream Bükkös at Pilisszentlászló is good. This was supported by all chemical evidence.

5. Evaluation

The measurements were conducted at only one part of the stream and thus the results are only valid at that area of the stream Bükkös. To improve the experiment the measurements should be taken at several different points of the stream.