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**BIOLOGY, CHEMISTRY**

**Task1**

* 1. **Tasks for group “Hydrologists”.**

Aim: Exploration of the lake, definition of the lake basin, characteristics of the lake side, definition of the colour, turbidity and smell of water.

Integrated subjects: Biology, Chemistry, Geography, Physics.

Equipment: sketch map of the lake, measuring glasses, distilled water, funnel, filters, Phillips beaker, measuring cylinder (at least 30cm high), paper towels, camera / smartphone.

1. Define the origin and the type of the lake Käsmu basin (http://en.wikipedia.org/wiki/Lake#Types\_of\_lakes).
2. Define the type of this lake according to the type of water exchange. (lake without outflow, lake with outflow, running water lake).
3. Describe the banks of the lake. Are they steep and high or flat and low? Is rock exposure seen?
4. In order to define the content of nutritional substances in the lake do some simple research work and draw conclusions.

**A) Water colour**. The colour of water depends on the mineral and organic impurities and contamination.

Pour some water from the lake into a test tube and compare it with the colour of the same amount of clean distilled water. Look at the water from the top and from the side. The colour unit is special degrees. (for example, the colour of drinking water does not exceed 40 degrees) .

**Test for definition of water colour**

|  |  |  |
| --- | --- | --- |
| **Colour sidewise** | **Colour from the top** | **Colority in degrees**  |
| Not marked | Not marked | 0 |
| Not marked | Very weak yellowish  | 20 |
| Very weak pale-yellow  | Yellowish  | 40 |
| Pale-yellow  | Weak yellow  | 60 |
| Pale-yellow | Yellow | 150 |
| Pale-yellow | Intense yellow | 300 |

**B) Turbidity of water**, i.e. the content of particulates is tested by means of filtering. Pour 50 ml of water through paper filter and estimate visually the amount of impurities settled down on the filter.

**C) Transparency of water**, in other words it is the ability of water to transmit light rays. Transparency is measured by Snellen method: pour water into cylindrical vessel with flat bottom, place standard font with the letters of 4 mm high and 0.5 mm thick at a distance of 4 cm from the bottom, and then pour water from the cylindrical vessel off until we can read the letters through the column of water in the cylindrical vessel. The height of this water column, evaluated in cm, characterizes water transparency.

**D) Smell of water** is connected with the activity of aquatic organisms, with the influence of the soil of the bank and the bottom, the waste water of various origin. To define the smell, pour some lake water into a test tube, cover the hole with your finger and shake actively, then open and smell. The odour can be marshy, earthy, fishy, etc.. By its intensiveness it can be strong, distinct, weak or very weak.

5. Is the footprint (trace) of human activity seen? In what way is it evident?

6. Make conclusion: are the conditions favourable to life of organisms in this lake?

Good luck in work!