Deutsch – Polnischer Austausch

German - Polish exchange



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Fach: VNU

Subject: VNU

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English…… **3-7**

locations and rationale…….. 3
photos of the water samples.…….. 4
scientific report-water samples…… 5-6
photos of the soil samples…….. 7

Locations and rationale:

We chose our locations to collect water samples at the Kreuzerteiche, the pond at the Zieglwiese, and the Geiseltalsee. These are all still waters.

The Kreuzerteiche are located in the district of Kröllwitz. In total, there are three ponds. The largest is 3,000 m², and the smallest 350 m². They reach a maximum depth of 1.5 m. In the past, they served as a sheep pond for a large sheep farm and later as a fishing pond. Today it is a species-rich urban biotope with two molch and toad species each and several different frog species. We have chosen these ponds for water sampling because of their biodiversity, naturalness and northern location in Halle.

The pond at the Zieglwiese is located on the Peißnitz (=inland island in the Saale) and has a size of 10,000 m². This is very centrally located in Halle and was artificially create. We have chosen this pond, because of its central location and people, because of its famous fountain, often visit it and it is therefore somewhat polluted by people.

The Geiseltalsee is located south of Halle in the Saalekreis. Moreover, the river Saale flows into the Geiseltalsee. It has a size of 18.4 km² and a maximum depth of 78m. It also has remnants of an open pit mine. As for fish species, besides perch, gable, carp and pikeperch, there are also pike and many other species. We also chose this lake because it also holds a great variety of species has a large area and is located south of Hall.



1: Kreuzerteiche



2: pond at the Ziegelwiese



3: Geiseltalsee



Photos of the water samples:

Kreuzerteiche





pond at the Ziegelwiese





Geiseltalsee





Water samples

1.) Examination: Coli bacteria

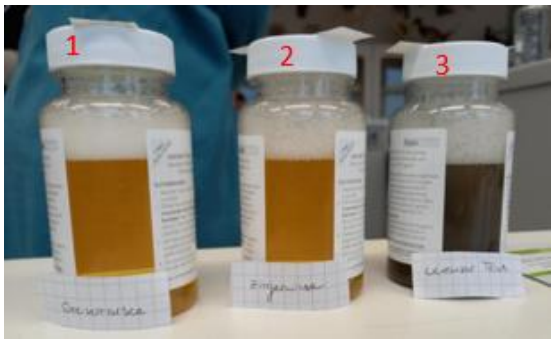
Materials:
- Water test for bacteria
- Measuring cup with a capacity of at least 100ml
- 3 water samples

Implementation:
We measure 100ml of each of the three water samples with the measuring cup. Then we add them to the bottles with the water test. After 48 hours, we can see a colour change.

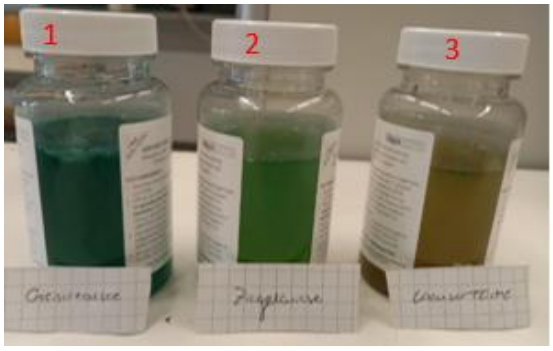
Observations:

	Kreuzerteiche	pond at the Ziegelwiese	Geiseltalsee
colour change			

before:



after 48h:



Evaluations:
During the water test to check for the presence of coli bacteria, we were able to determine that coli bacteria were present in the water sample from the Geiseltalsee and the pond at the Ziegelwiese, as the water turned green to blue. We were able to detect a not very strong colour change in the water test from the Kreuzerteichen, where the water only turned slightly greenish. Coli bacteria include anaerobic bacteria (= bacteria that do not depend on oxygen), but also pathogenic bacteria (e.g. salmonella, enterobacteria, EHEC pathogens, etc.). These get into the water either through strong rainfall or through remains of dead animals, because most of them are formed in the human or animal intestinal flora and are natural components there. If they are ingested by humans, for example when bathing, and enter the stomach, this can have consequences such as diarrhoeal diseases.

Error observation:
Of course, this test only detects coli bacteria and does not detect all bacteria, pathogens and pollutants in the water, which is why the test can not be used to make a statement about the purity of the water.

2.) Investigation: Resistance

Materials:

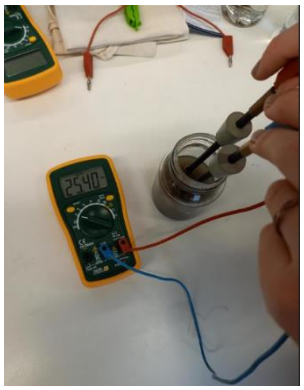
- Multimeter with test leads
- 2 electrodes
- 3 water samples

Implementation:

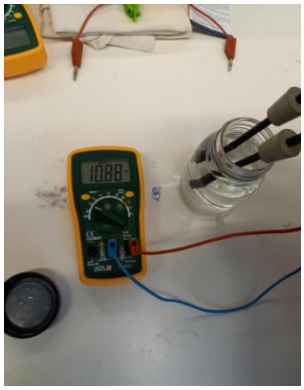
First, we plugged the test leads into the multimeter and selected resistance with the unit Ω. Then we attached the electrodes to the test lead and measured the resistance of our three water samples.

Observations:

	Kreuzerteiche	Pond at the Ziegelwiese	Geiseltalsee
resistance in MΩ	25,4	9,8	10,8







Evaluation:

During the experiment, we were able to determine the resistance of three water samples. The highest conductivity was measure in the water sample from the Kreuzerteiche with 25.4 MΩ, the smallest value of 9.8 MΩ was measure in the sample from the pond at the Ziegelwiese. The water from the Geiseltalsee has a value of 10.88 MΩ and is thus very close to the resistance of the pond at the Ziegelwiese. Overall, we can conclude from the electrical resistance measurements whether the water is conductive and how many particles are dissolved in the water. This is because the water only becomes conductive through substances such as chlorides, sulfates or carbonates. Therefore, the higher the conductivity value, the more saturated the water is with particles.

The water sample from the Kreuzerteiche contains the most dissolved substances, which is why the resistance here is also very high. In contrast, the resistance in the water of the Geiseltalsee and in the pond of the Ziegelwiese is very low, from which one can conclude that not many particles are dissolved here.

Error consideration:

The measuring of the resistance of the water is, of course, not an accurate determination of the substances dissolved in the water, but only gives an indication of the absolute number of dissolved particles. Other substances, such as hormones, fungicides or pesticides are also dissolved in water, but do not conduct electricity. These cannot be determine by this measurement.

Photos of the soil samples:

Kreuzerteiche





pond at the Ziegelwiese





Geiseltalsee



