Protocol on the pollution of the Saale water

Assignment:

In order to test the influence of humans on the water of the Saale, we investigate the PH value and the occurrence of pollution in the silt of the river. For this purpose, we take samples at 3 different locations.



Before the city



In the city



After the city

Reasoning for the choice of sampling points:

The extraction point in front of the city is a place near a nature reserve. Since this is close to a smaller settlement, dog owners often go out there with their dogs. As a rule, nature reserves should be kept clean, so we wanted to check whether the visitors actually comply with this.

The sampling point in the city is located near a well-attended bar whose visitors often spend time near the shore. We therefore wanted to check how the bar and its visitors influence the water quality.

We chose the location after the city to determine the influence of the city on the sediment of the Saale River.

Assumptions:

We suspect that in the city most plastic is contained in the silt. Before and after the city will be significantly less plastic.

Materials:

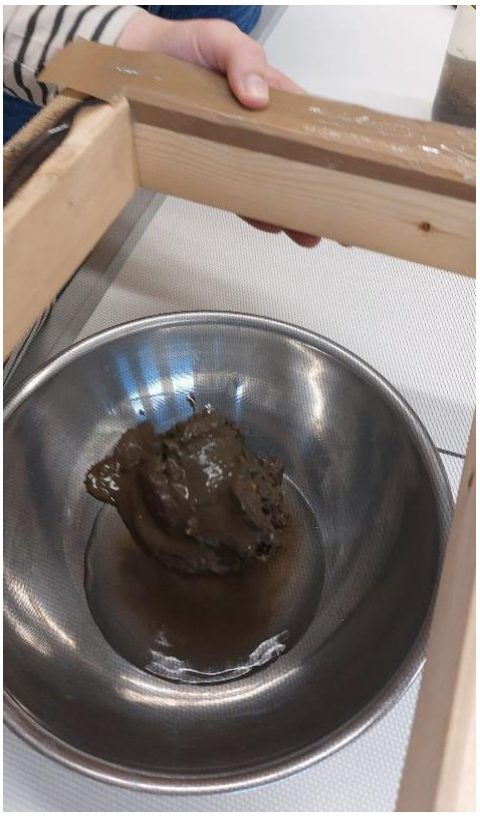
- 6x removal jars
- 4x beakers
- universal indicator paper
- 1x fine mesh sieve
- 1x collecting bowl
- 1x spoon

Implementation:

To check the contamination of the Saale water, we sieved through the Saale silt.

For this purpose, we placed a fine-mesh sieve on the collection bowl.
In the next step we put the silt samples on the sieve and pushed it through the sieve using a spoon.
To facilitate the process, we occasionally watered the sample with water in one of the beakers.
We stored the remaining scraps in the other beakers.

To further investigate the water quality, we used universal indicator paper to measure the PH-value.



Results:

Before the city	In the city	After the city
• Sample did not contain any contaminants besides stones • Finding of a sugar midge larva	• Sample contained two 2cm glass shards	• Sample did not contain any contaminants besides stones
PH-value: 8	PH-value: 8	PH-value: 9



Sugar Mosquito Larva



Broken glass

Evaluation:

As suspected, most pollution is found in the city. This can be explained by the fact that most people stay here. Furthermore, the effect is intensified by the nearby bar, whose visitors often stay near the shore. If the visitors leave their garbage there, it can get into the river course due to wind or high water and thus pollute it. Also larger companies or office facilities as well as independent individuals have, due to their waste, influence on the water pollution.

After the city we did not find any trash in the silt of the Saale, even if one could assume the opposite due to the flow direction of the Saale. This can be justified with the weirs between the extraction point in and after the city, which could prevent the flow of the pollution.

In front of the city, no pollution was detected either. Based on the results, we can therefore confirm that visitors to the nature reserve comply with the regulations.
The increase of the PH value after the city center indicates an accumulation of hydroxide ions in the water.

Consequently, we were able to prove that humans have an influence on the Saale water.

Error consideration:

As mentioned in the assessment, there are weirs in Halle that prevent or hinder the flow of impurities. This will affect the result. To avoid this, one could look for sampling points in front of the weirs, but there sampling was not doable due to bank slope or bank condition.

The different shoreline landscape at the selected locations led to difficulties, especially behind the city. Due to the hardness of the silt and the stony ground, we could only sample a smaller amount of silt there compared to the other locations. To get around this, samples could be taken at deeper sites in the middle of the river. However, due to lack of equipment and strong currents, we were unable to do so.
To achieve a more accurate result, a finer mesh sieve, which could also filter out smaller impurities, should have been used.