MONITORING OF HYDROLOGICAL PARAMETERS

-The importance of pure fresh water

The importance of the water

The water is a substance that is transparent, tasteless, odorless, and nearly colorless. It’s the main constituent of Earth’s hydrosphere and the fluid of all known living organisms. It’s vital for all known forms of life, so without it, we wouldn’t exist.

Water basins

The major types of basins are river drainage basins, structural basins, and ocean basins.
As we said earlier, water is vital for every living organism. The pure fresh water is very important. River drainage basins has a pure water. Our town is supplied with water from the Dragor river.

Hydrological parameters we measure

The river that flows trough our town is called Dragor. The riverbed is close to our school, so we easily get water for our researchers.

We monitor the temperature of the water, the water pH, alkalinity and electrical conductivity.

Water temperature

The temperature of the water is an important factor. Organisms can’t resist in low-temperature enviroment. We live in a country that has four seasons, so the water temperature depends on the seasons. In winter it’s lower. In spring and autumn it increases. We measure the water with an alocohol-filled thermometer.

The alcohol-filled thermometer that we use

Water pH

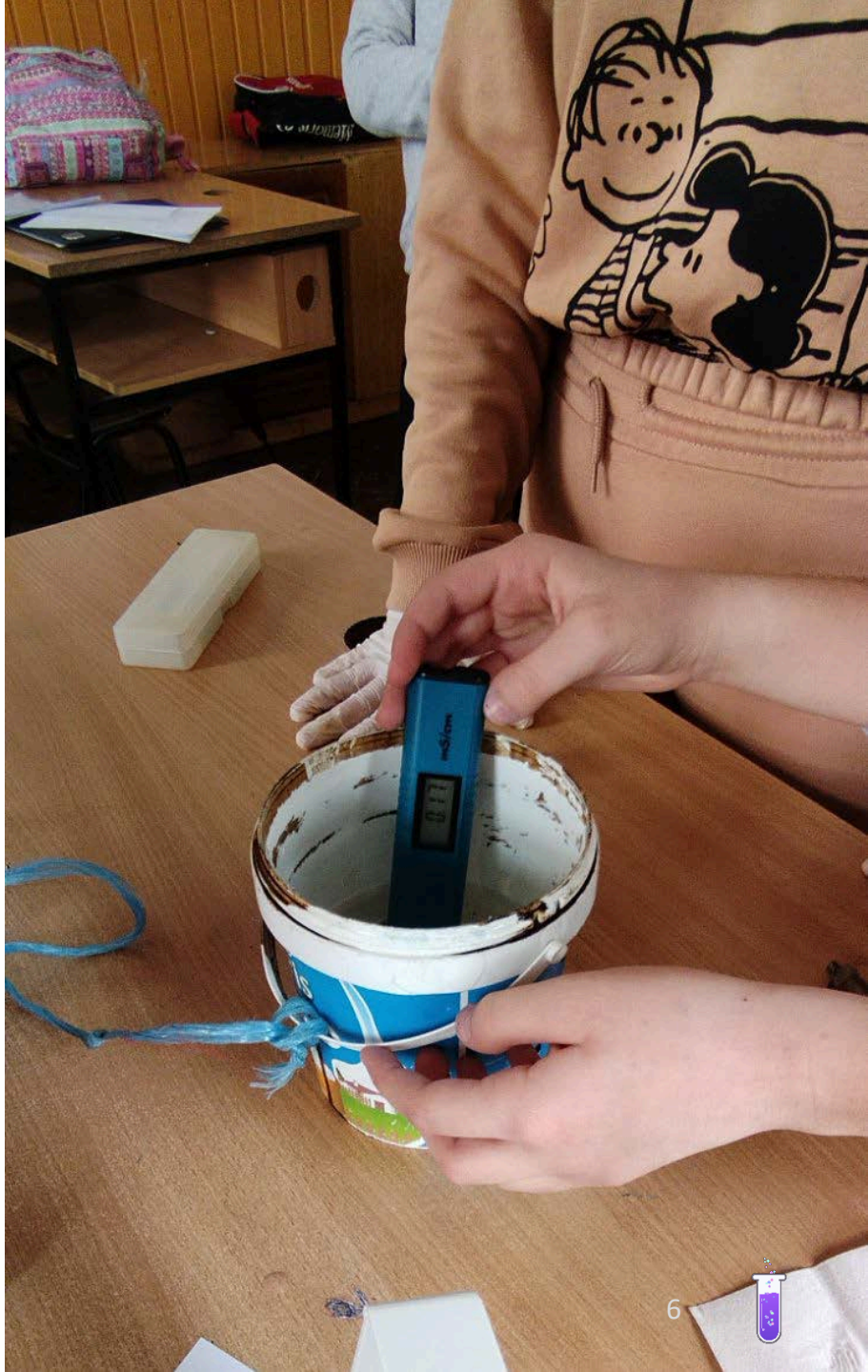
pH is a measure of how acid or basic the substance is.
Organisms can’t resist in too acid or too basic environments.
We measure the pH value of the river-water with pH paper, litmus paper. It has a scale from 5.2 to 6.7. In the middle it has an indicator that changes color depending on the acidity of the substance (in this case, water).

The litmus paper that we use and the scale

Water conductivity

The conductivity of water refers to the ability of water to conduct an electrical current.
The reason that the conductivity of the water is important is because it can tell you how much dissolved substances, chemicals, and minerals are present in the water.
We measure the water conductivity with a conductivity meter. The conductivity of the water that we use for our researches is low because it’s pure water and it hasn’t got many dissolved substances, chemicals, and minerals in it.

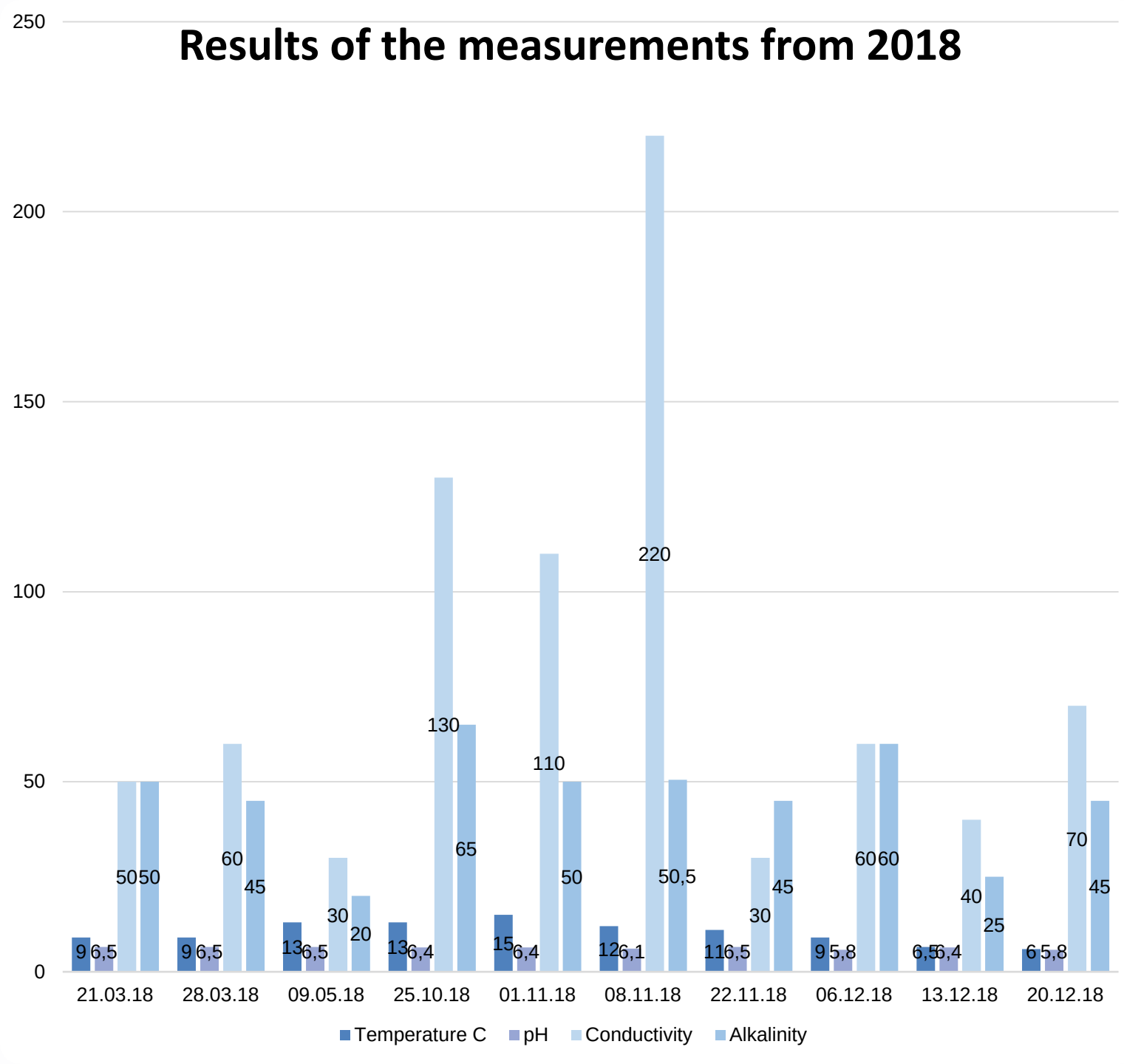
The conductivity meter that we use



Alkalinity

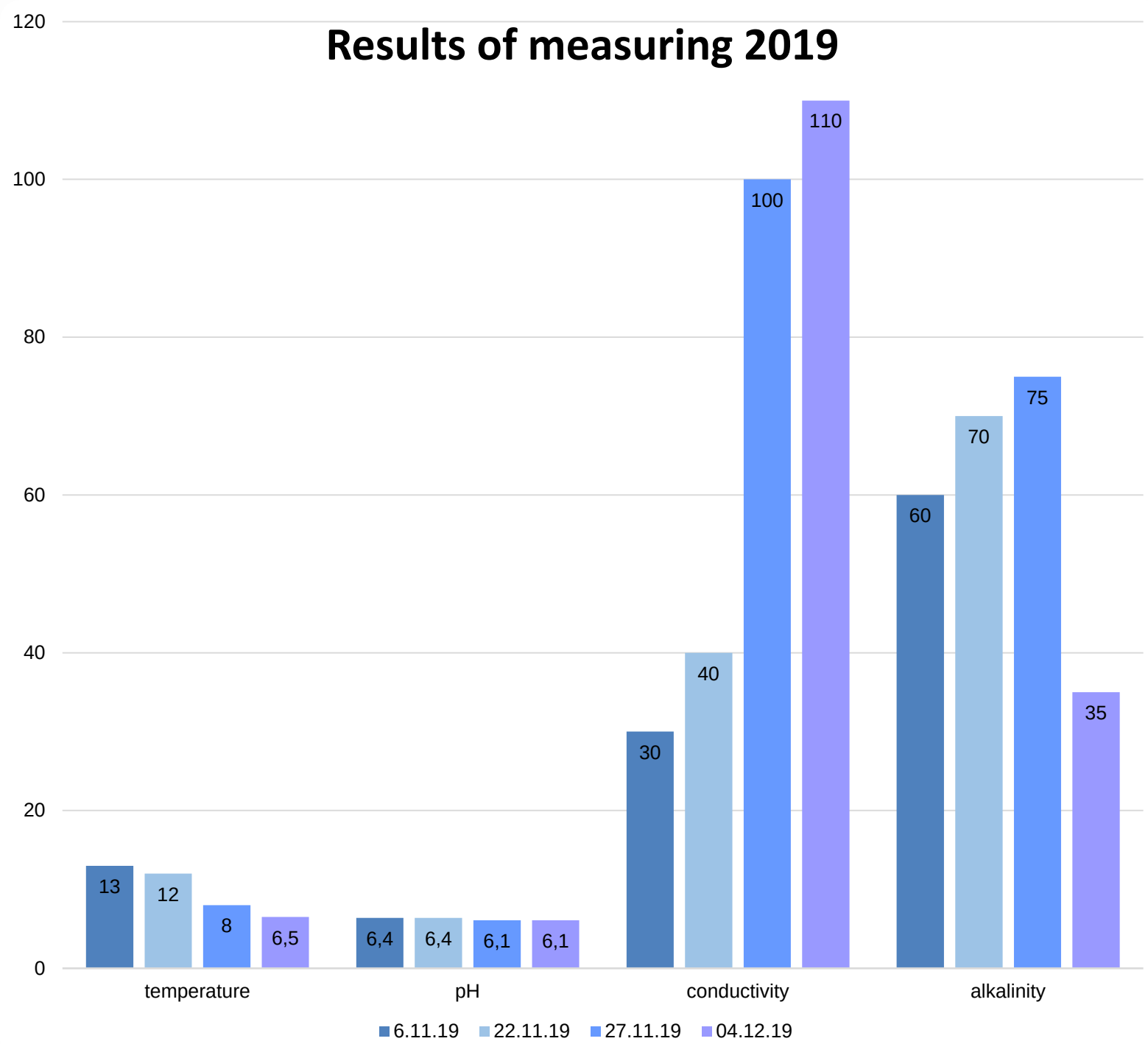
Alkalinity is water's capacity to resist acidic changes in pH, essentially alkalinity is water's ability to neutralize acid. This ability is referred to as a buffering capacity. A water body with a high level of alkalinity (which is different than an alkaline water body) has higher levels of calcium carbonate, $CaCO_3$, which can decrease the water's acidity. Therefore, alkalinity measures how much acid can be added to a water body before a large pH change occurs.

Instruments we use for alkalinity measurements



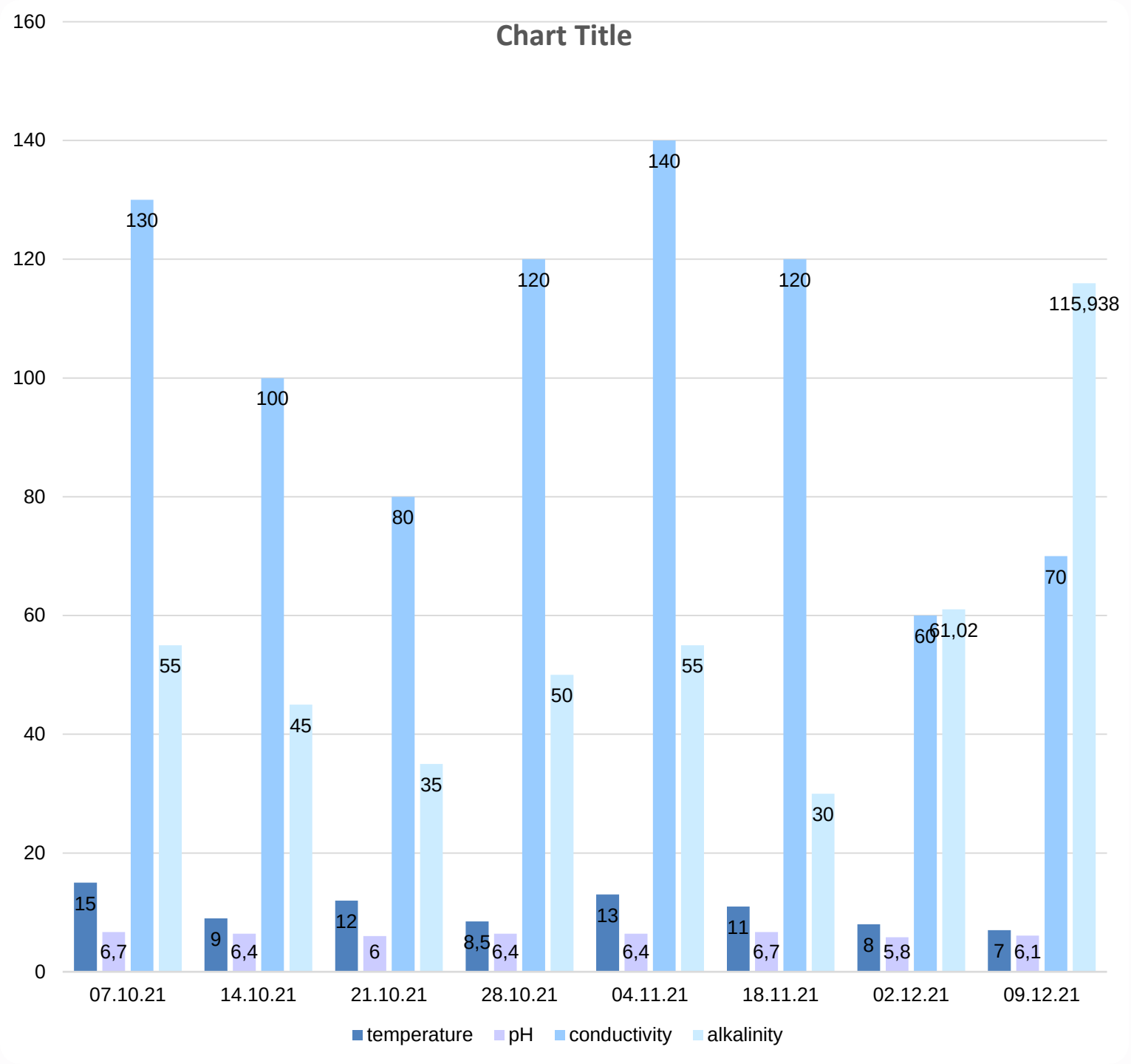
Results of the measurements from 2018

- Temperature- °C
- pH value
- Conductivity- µS/cm
- Alkalinity- mg/L $CaCO_3$



Results of the measurements from 2019

- Temperature- °C
- pH value
- Conductivity- µS/cm
- Alkalinity- mg/L $CaCO_3$



Results of the measurements from 2021

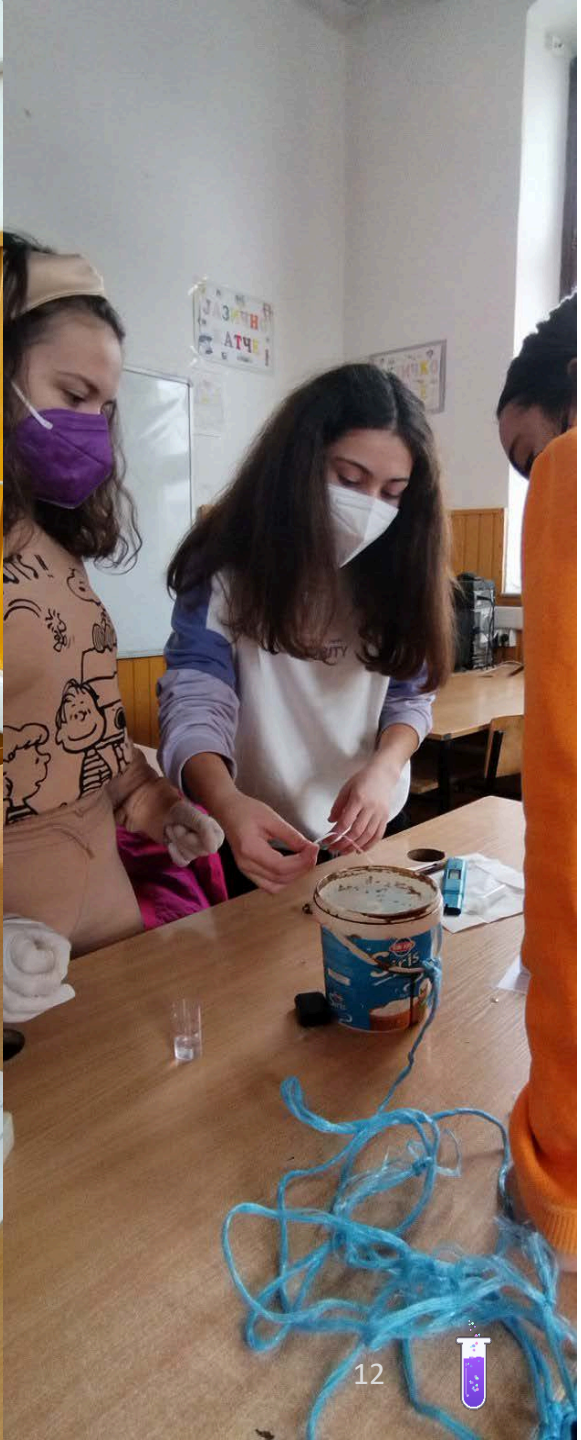
- Temperature- °C
- pH value
- Conductivity- µS/cm
- Alkalinity- mg/L $CaCO_3$

Analyses and conclusions

There aren’t huge concessions in the measurements results from past three years. If there are, that means that there might be water pollution.

We need to quickly find the cause of the concessions from the usual measurements and solve it, because bigger consequences may follow.



THANK YOU FOR YOUR ATTENTION

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