ANALYSIS OF pH AND NITRATES IN DIFFERENT TYPES OF WATER

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Introduction

Water is a scarce natural resource that is renewed with the hydrological cycle, it is indispensable for life, health and human activities. It is an essential substance and vulnerable to overexploitation, it is not inexhaustible. Its alteration can harm life and that is why it is necessary to know which elements contaminate it, which causes alterations in its natural regime and modify its availability. In addition, polluted waters are harmful to the health of living beings.

There are many factors that determine water pollution such as nitrites, phosphates, presence of microorganisms. Knowing the amount of nitrates and acidity (pH) among others can help us determine the level of pollution we can find in different types of water.

The amount of nitrates and pH value are indicative of the quality of water and life in the environment, so both parameters have been selected to determine them in different types of water present in our daily lives: running water from a normal tap of any house, standing water from a pond formed after the rains, river water from the Guadalquivir River and, finally, it will also be determined in ammonia that we can find in any ordinary supermarket.

Objective

The main objective of this project is to know the pH and nitrate levels that we find in different types of water (tap, stagnant, river and ammonia) to determine the level of alteration and pollution of the waters in our environment.

Materials and Methods

Materials used: 12 test tubes, nitrate reagents, pH test, types of water (tap, stagnant, river, ammonia), test piece and a tube of 5 ml capacity.

The process
In each water sample, its pH and nitrate levels were analyzed three times and then the average of the three values was obtained. These results were represented in a graph

- Ammonium levels was measured due to the presence of organisms (worms) in the selected stagnant sample
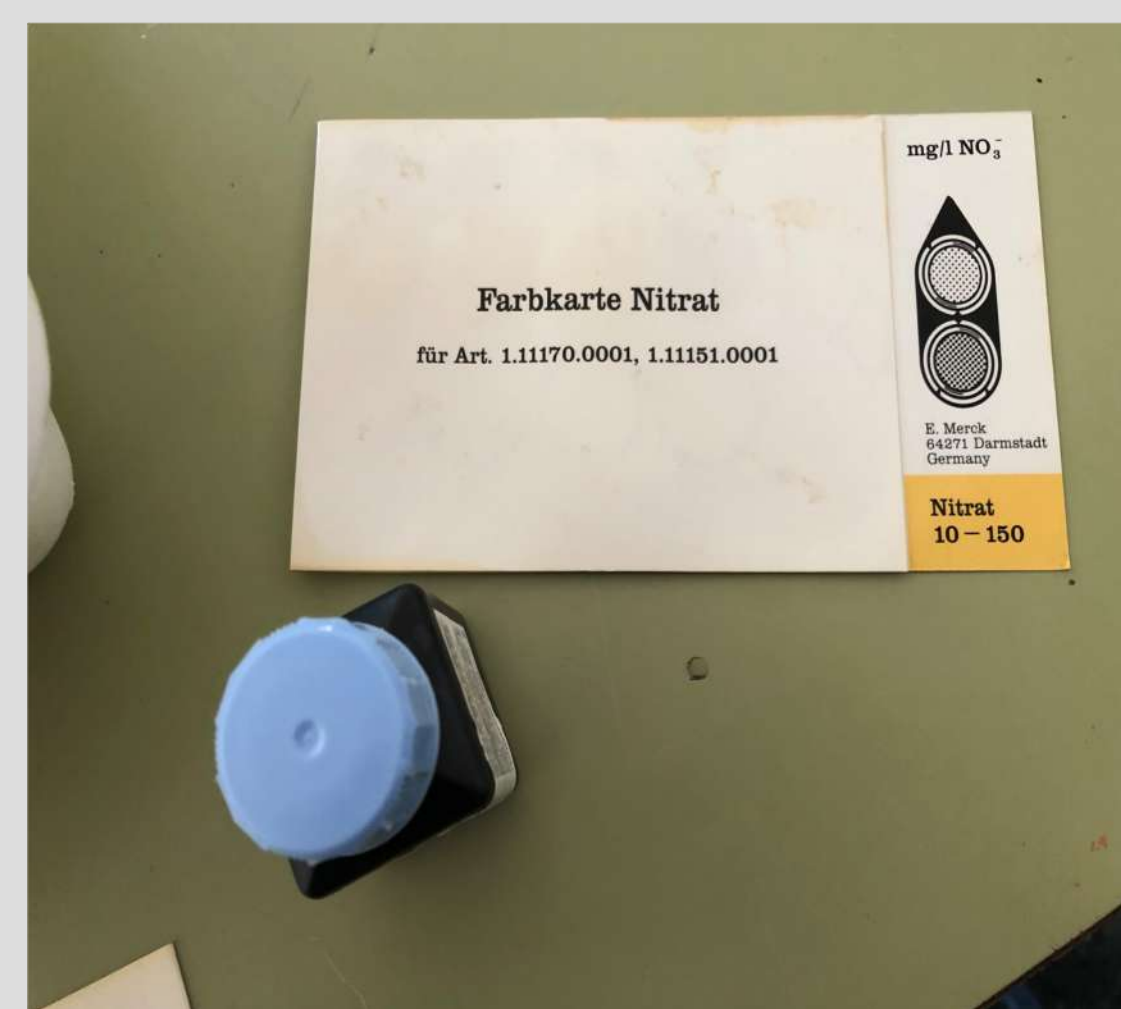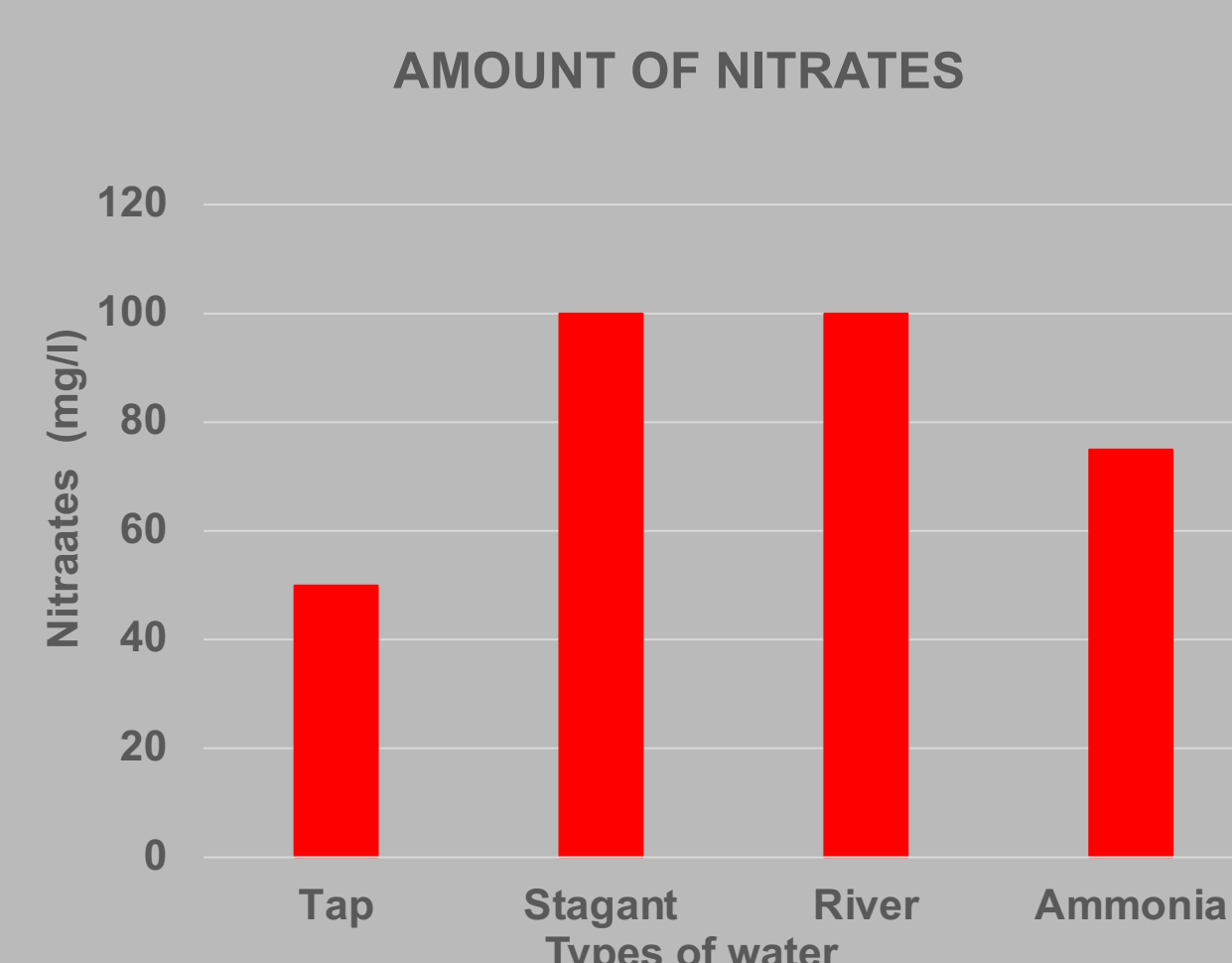

Image 1.Nitrate test.

Picture 2. pH indicator strip.

Picture 3. Material used in the analysis

Results

AMOUNT OF NITRATES

We can see that the level of nitrates is higher in standing water, where there were a lot of worms. This is because they act as decomposers of organic matter and make carbon compounds available to nitrifying bacteria. These bacteria through nitrification generate large amounts of nitrates. Finding similar amounts of nitrates in the river water tells us that it will probably be contaminated

Figure 4.Results of the pH tests.
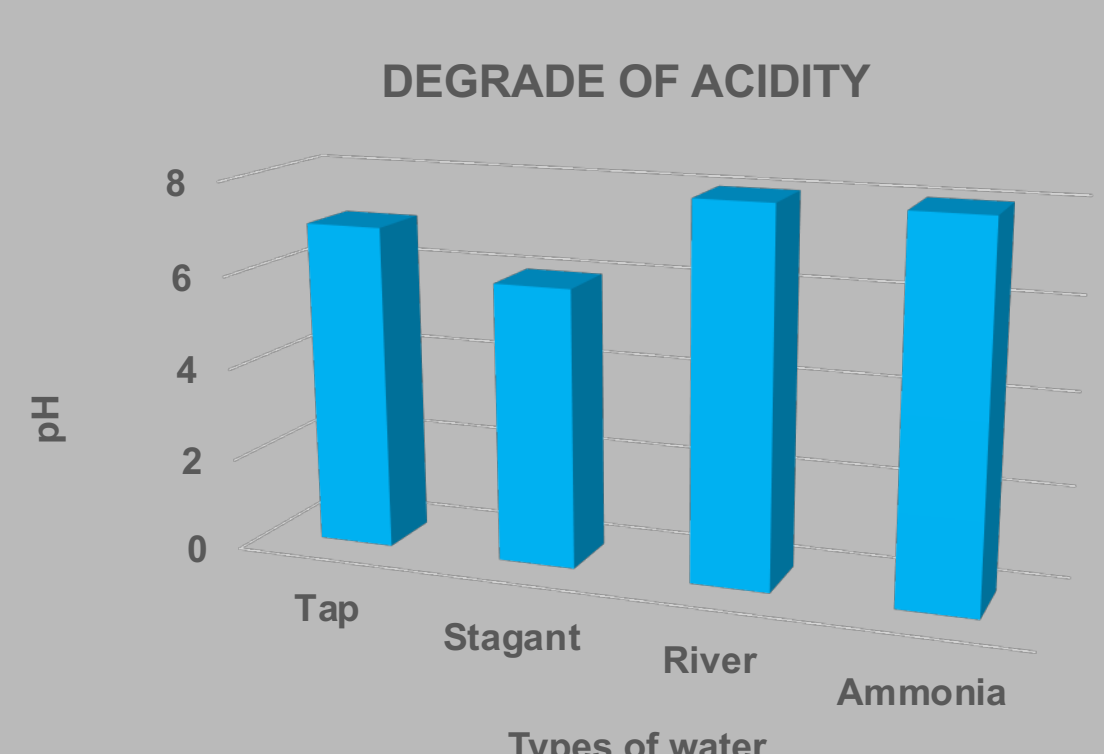
DEGRADE OF ACIDITY

On the other hand, there were no large variations in pH levels. If a certain degree of acidity was observed in water highly contaminated with worms

Figure 5. Nitrate test result in standing water.

Figures 1 and 2: Nitrate and pH levels in different types of water.

Conclusions

The obtained data shows that the higher the pollution the higher the nitrate levels , so that the obtained results the stagnant water and the river could also be related to the presence and activity of organisms.

The four types of water have more or less the same pH level, but in highly polluted waters this is a little acidified.

Acknowledgements