Answers for Doctoral (PhD) Dissertation Assessment to assessor **Prof. Dr. habil. Hosam Eldin Bayoumi**

Candidate: **Roquia Ibrahim Saad Rizk**

Dissertation Title: **Advanced comprehensive water quality assessment**

Institute: University of Pannonia, Institute of Environmental Engineering Doctoral School of Chemical Engineering and Material Sciences

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Dear Prof. Dr. habil. Hosam Eldin Bayoumi,

Actually, I am so grateful for your assessment, it really means to me. I appreciate the time you committed to providing me with detailed and constructive feedback. Your comments were helpful. I really appreciate you taking the time to consider all aspects of my performance while offering me constructive criticism.

Answers for the questions:

1. **Do you think that the climatic changes can cause changes in the water quality of the lakes through the changes in the values of the different parameters you measured, and why?**

   Yes, Climate changes can cause changes in the water quality:

   a. *direct impact*: decreasing of precipitation, rising temperature.

   b. *indirect impact*:

   Physical-chemical parameters, e.g.: dissolved oxygen content decreases with increasing temperature

   Hydro-morphological elements (level of water in the lake decreases)

   Biological components/ limnological (warming up of the water algae bloom)

2. **Given that Lake Nasser is an artificial lake. What are the consequences resulting from the construction of High Dam and Lake founding? And what is its importance to Egypt?**

   The consequences resulting from the construction of High Dam and Lake founding is represented in many economic benefits and advantages for Egypt.

   The aim of Aswan Dam water project (Advantages) is:

   a. Prevent Nile rivers flooding.

   b. Generate electricity.

   c. Provide water (irrigate land) for agriculture.

   d. The dam has had a significant impact on the economy and culture of Egypt.

   e. Lake Nasser has also created a big fishing industry, which produces 25,000 tonnes

of fish a year.

3. **How did you measure the very low concentrations of heavy metals? Is it detectable on Atomic Absorption Spectroscopy?**

The detection limits of flame atomic absorption spectrometry (FAAS) are 1–100 µg/l, in case of furnace unit, the detection limit is 0.025 µg/ml.

In some samples which concentration were very low (below 1µg/l), Spiking samples technique has been used (dillute known amount of sample in known volume of standard).

4. **Why you choose in your study Lake Nasser in Egypt in Lake Balaton in Hungary?**

Lake Nasser is one of the largest man-made lakes on earth. It has a vital importance to Egypt for several decades because it safe water supply of the country. In case of Lake Balaton, it is the largest shallow lake in Central Europe.

Both Lakes have great importance for their own countries and there are many activities that can disrupt water dynamics. Therefore, water quality of the lakes must be profoundly investigated, water parameter changes should be continuously monitored and assessed.

5. **TU, NTU qualified as bad if high. What does turbidity depend on?**

Sediment mixing: DR=8.5 > 0.8, $(\frac{\sqrt{A}}{h})$

Organics: Microorganism**,** decaying plants (trees, reed) and animals

Soil erosion: slit**,** clay**,** summertime sunshine protective oils and residues of protective creams that used by people, etc.

High turbidity **could cause** illumination problem**,** photosynthesis disruption and aesthetical problems.

While *highly turbid water* can be detrimental to an aquatic ecosystem, however it is not correct to assume that clear water is always healthy. Slightly turbid water can be perfectly healthy, while clear water could contain unseen toxins or unhealthy levels of nutrients.

Thank you so much

Sincerely,

Roquia Rizk