

Review of: "Probabilistic Assessment of the Heavy Metal Pollution in Debrecen's Topsoil"

Hadi Niknejad¹

¹ Shahid Beheshti University of Medical Sciences

Potential competing interests: No potential competing interests to declare.

According to the investigations carried out, the article titled "Probabilistic Assessment of the Heavy Metal Pollution in Debrecen's Topsoil" has the ability to be printed in the journal of Qeios after major revision;

- 1. The abstract does not stand alone in its current form and requires major revision. In principle, the abstract should comprise the problem of the study, the objective of the study, materials and methods, results and discussion, and conclusion and recommendations. Most of the important points are missing in the abstract, and the information provided is somehow qualitative. Please modify it accordingly.**
- 2. The Introduction is not welcoming and should be separated into paragraphs based on the intended ideas, and the flow should be good as well. Finally, add the novelty of the work in the last paragraph in a convincing way. Several sentences need to be rephrased.**
- 3. The necessity and innovation of the article should be presented in the introduction.**
- 4. Study area: The geographical coordinates are not well written. There is a lack of information: What type of climate? Wind direction? (only mentioned in the discussion) Topography and geology of the study area? These points are very important to mention because these are soil-forming factors.**
- 5. Chemicals and reagents: What is the grade of the chemicals used?**
- 6. Soil sampling: More information is really needed. What are the types of soils? If the physical and chemical properties of soils are known, they should be given. The sampling strategy must be explained: the number of samples per site and how the sampling points have been chosen. In addition, there is little information on the context of the sites studied in this section ("near highways and city areas"). This point is of crucial importance for the discussion and maybe for explaining the variability of soil pollution (proximity of highways, nearby industries and/or commercial sites, etc.).**
- 7. The Analytical Procedures are very confused and must be rephrased. XRD analysis is not suitable for the accurate determination of heavy metal concentration in soil. To accurately determine the concentration of heavy metals, graphite furnace atomic absorption analysis or an ICP device should be used to represent the exact concentration of heavy metals in the soil. Therefore, detecting the concentration of heavy metals with XRD**

analysis cannot represent the exact concentration of soil metals.

8. Pollutant Accumulation Index (PGI), Heavy Metal Enrichment Index (HMEI), Ecological Risk Index

(ERI), and heavy metal pollution load index (HMPLI) elements are discussed, but the enrichment factors might have been more appropriate to do so. Have you tried to calculate them?

9. Poor statistical analysis is not enough to support your study.

10. The part of Statistical Description for the Pollutants and Trace Elements in the Topsoil of Debrecen is presented in an unintelligible way.

11. I would suggest the author to enhance your theoretical discussion and arrive at your debate or argument.

" Much more explanations and interpretations must be added for the results, which are not enough at all.

" It is suggested to compare the results of the present research with some similar studies which were done before.

12." It is suggested to organize the Conclusion section much better. This section should be presented in one 250-300 words paragraph.

13. The whole manuscript is written in poor English. It is suggested to please write/revise this draft by a professional writer and make sure to add scientific strength.