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

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Potential competing interests: No potential competing interests to declare.

This study was conducted to investigate heavy metal pollutants and their uncertainties in the Debrecen region using different pollution indices and multivariate statistical analysis. The heterogeneities of pollutants were shown across the study area by the stochastic model. The dataset has practical value for the local environment. I recommend a minor revision before publication.

Page 2: "These methods don't clearly capture the minor and major heterogeneities of these pollutants." This is not true. Also, many references did different analyses for the heterogeneities of metal contamination in soils. You should clarify this information with specific examples.

Chapter 3.1: Except for the pollution limit value, is there any historical data on the geochemical baseline of this area for major elements such as Fe, Cu, and Mn?

Chapter 3.3: What is the relationship between pollutants and trace metals? I think some trace metals are risk elements when they are above certain levels.

Page 11: The PCA analysis is not clear. Why are these sources cited by the authors? For example, As, Pb, and Zn, why did they originate from industrial activities? Why are industries nearby? How does Zn have the same group in factor 1 with Pb and As?

In conclusion, the first and second paragraphs should be merged as one with the shorter information. Future risk assessment recommendations should be given at the end of the paragraph.

Figure 1 seems to be missing from the manuscript.

Figures 2 and 3 need higher resolution with a bigger size to see clearly.