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.

Dear Authors,

The authors went to great lengths to determine 13 heavy metals (As, Cd, Cr, Co, Cu, Fe, Mn, Mo, Ni, Pb, Ti, V, Zn, Ca, and K) in 300 samples of the topsoil layer (0-20 cm). They calculated several indicators and prepared a statistical analysis. Despite this amount of work, the manuscript is a report on tests that are routinely performed by environmental protection inspectorates. It has no scientific character.

The obtained results of metal determinations in the soil (which were used by the authors for statistical analyses) were not related to soil conditions. They are characteristic only for soil with specific properties, i.e., at the time of sampling. However, the authors did not examine these properties. After all, there are many (sorption) processes taking place in the soil environment that influence the concentrations of the determined metals in the top layer of soil. For example, exchange sorption is influenced by factors such as: the structure of the soil sorption complex, soil reaction, type of cation, type of accompanying anion, etc. It is enough that the soil pH changes and the amount of metals in the tested layer will be different.

The authors reported various sources of heavy metal pollution in the study area. It follows that these are:

- emissions into the atmosphere, i.e., heavy metals into the soil as precipitation of particles containing metals, but also as metals in plants (in leaves) and surface deposits of plants located in this area;

- emissions to deeper soil layers. If there are plants with deeper roots (e.g., trees), metals from the deeper layers of the soil move within the plant to the leaves, and when they fall, they will cause an increase in metal concentrations in the surface layer.

Therefore, testing metal concentrations without reference to soil characteristics has no rational justification. The distribution of metals in the surface layer of the soil depends on many factors, so I suggest examining the properties of the soil.

Fig. 1 is missing. There is only a signature, and in place of the drawing - an arrow.

Best regards,

Reviewer