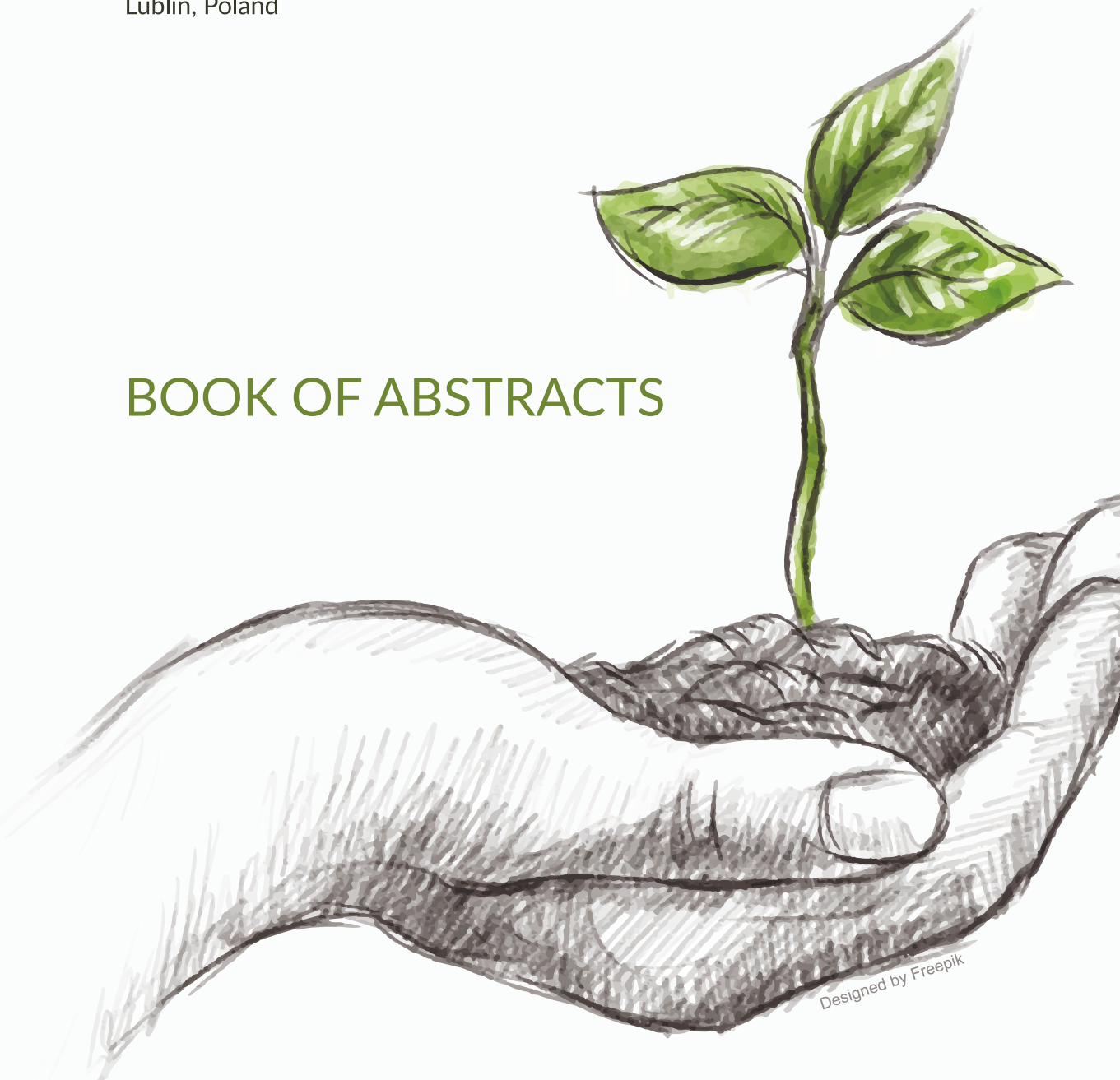


ICA 2018

12th International Conference on Agrophysics:
Soil, Plant & Climate

17th-19th September, 2018
Lublin, Poland

BOOK OF ABSTRACTS



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Pedogeochemical barriers of heavy metals' migration

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Introduction. The objectives of this work are: (i) to consider the genesis of the «geochemical barriers» (ii) to invited a definition for «pedogeochemical barriers».

Materials and methods. The matiasl for this study was scientific publications that show the results of heavy metals' content and heavy metals'distribution in soils. The methods for this study was general scientific methods of research (analysis / synthesis, induction / deduction, generalization / analogy of abstraction / modeling).

Results. The geochemical barriers. As kwon, the modern concept of geochemical barriers was work out by A.I. Perelman in 1961. At first time this concept had been used for: 1) ordering of the geochemical conditions at hypergenesis zone, 2) justification the concept of geochemical field; 3) mathematical modeling of geochemical processes, 4) effective mineral exploration. With the time, this concept has become successfully implemented in lithology, hydrogeology, soil science, geochemistry environment. Now, in the XXI century geochemical barriers used in the development of rehabilitation technology of contaminated lands and limit the spread of pollutants.

The ideas' invasion in soil science. At the beginning, the geochemical barriers's concept began to be used in soil science by V.A. Kovda (1972), A.A. Rode (1975), M.A. Glazovskaj (1988) works. With time, the number of researchers who used this idea in their works increased significantly. However, these researchers had misconceptions: 1) was performed a mechanical transfer this idea from geochemistry to soil science, 2) use this idea for environmental protection, 3) used of the geochemistry methodology and of the geochemistry classification schemes.

Pedogeochemical barriers. In our opinion, as for Soil Science the best analogue of "geochemical barriers" should recognize the term "pedogeochemical barriers". An essence pedogeochemical barrier is as follows. In hypergenesis zone the geochemical barriers act as "situational and contrast" phenomenon. In soil profile the pedogeochemical barriers act as "substation and reaction" phenomenon. We are supposed to that the soil profile is a multiaspect complex of pedogeochemical barriers. At that some of them can be localized within several soil horizons. At the same time, several such barriers can be located in one soil horizon. Therefore, in the refined form, a pedogeochemical barrier should be understood as part of the soil profile, where, as a result of the formation of special conditions for substitution-reaction interactions, the accumulation of certain chemical elements occurs.

Conclusions. The geochemist A.I. Perelman proposed and designed a "Geochemical Barriers" doctrine. This doctrine was used very effective and useful in geochemistry, geology, lithology, mineralogy, and in other contiguous sciences fields. At present, the ideas of this exercise are very important for a fundamental understanding of the biogeochemical functions of the pedosphere as the theoretical basis for preserving the biosphere and improving the soil in conditions of modern technogenesis. In our understanding, the pedogeochemical barrier is part of the soil profile, where, as a result of the formation of special conditions for substitution-reaction interactions, the accumulation of certain chemical elements occurs. In further studies it is expedient to consider: mechanisms of action, typology, parameters of pedogeochemical barriers, and also to analyze these parameters on the example of heavy metals in chernozems of ordinary and southern.