

MAGNETIC SUSCEPTIBILITY MAPPING OF ROADSIDE POLLUTION

Denisa KLUČIAROVÁ – D. GREGOROVÁ

Geofyzikálny ústav, Slovenská akadémia vied, Dúbravská cesta 9, 845 28 Bratislava,

e-mail: geofdeni@savba.sk

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ABSTRACT

In the last years, several proxy methods have been used to outline increased levels of pollution. One of them is based on measurements of the concentration of (ferri)magnetic minerals of antropogenic origin. This approach was successfully applied in several European cities and has shown that magnetic parameters (mainly magnetic susceptibility) can be used as a proxy for heavy metals pollution in topsoils.

The aims of our study were to trace the distribution and concentration of contaminants (heavy metals) in the soil along the road carrying appreciable traffic by using magnetic proxies. The area of this study was the part of the main road between Pezinok and Pezinská Baba. We tested how far magnetic measurement of soil samples can give information about road soil pollution. The soil samples (very close to the road, 0.5m and 2m from the road) were collected each 50m on the 3km long way, air-dried, sieved and measured for the bulk magnetic susceptibility on the Kappabridge (KLY-2).

The results show that the soil samples near the road are characterized by enhanced magnetic susceptibility, with highest values and that the magnetic susceptibility decreases with increasing distance from the road. The geochemical analyses revealed the high positive correlation. Therefore the measurement of magnetic susceptibility of soils can be - in this case - used as a supplemental method to the geochemical mapping; method, which allows to assess, in a simple, cheap and rapid way, the level of soil pollution in sites, where the geochemical data are missing.

Key words: magnetic susceptibility, heavy metals, magnetic screening, pollution of roadside soils