

HEAVY METALS AND OTHER ELEMENTS DISTRIBUTION IN THE SOIL OF EORDEA BASIN, W. MACEDONIA, GREECE.

C.G. PETALOTI, A. KOURAS and T. KOUIMTZIS

Environmental Pollution Control Laboratory, Department of Chemistry,
Aristotle University, 54124, Thessaloniki, Greece
E-mail: kouimtzi@chem.auth.gr

EXTENDED ABSTRACT

In this study the distribution of heavy metals and other elements in the soil of the major Eordea basin, Western Macedonia, were examined. The soil samples were collected according to the Official International methods and were analyzed by X-Ray Fluorescence Analysis, XRF. Heavy metals and other elements' concentrations in 19 sampling points distributed in the above study area, are presented. Statistical analysis and spatial distribution (using GIS) of the studied elements are also presented.

The data obtained in this study demonstrate that heavy metal concentrations of top soils can be used as geochemical tracers for monitoring the impact of human activity, undertaking that background levels have been correctly interpreted and established.

Topsoil samples from Eordea basin show high concentration levels and quite high enrichment factors for Cd, Cr, As, Pb, Zn, Sb and Se. Based on the whole dataset these metals are inferred to derive from anthropogenic sources, although Cr, Zn and Ni are known to be abundant in the ophiolites, which occur in large extent in Western Macedonia. Conversely, V, Sn, Mn, Cu and Co seem to be mainly controlled by lithogenic inputs.

Most of the examined metals show great spatial dependence. Cr, Ni, Sb and Mn had the highest spatial variability. The other elements appear to be influenced by specific point sources and although the same sources may exist at different sites, they seem to have different environmental impact.

Key words: heavy metals, soil, XRF, GIS, enrichment factors.