Geophysical Research Abstracts,
Vol. 10, EGU2008-A-05001, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-05001
EGU General Assembly 2008

Background and baseline values for selenium in soils from Murcia Region (SE, Spain) and their relationship with mineralogical composition

M.J. Martínez-Sánchez (1), **C. Pérez-Sirvent** (1), M.L. García-Lorenzo (1), W. Mantilla (1), A. Solano (1), I. Agudo (1), J.Bech (2)

(1) Department of Agricultural Chemistry, Geology and Pedology, Faculty of Chemistry, University of Murcia, Campus de Espinardo, 30100, Murcia, Spain. melita@um.es. (2) Professor of Soil Science. University of Barcelona. Av. Diagonal, 645, 08028, Barcelona, Spain. jbech@ub.edu.

Selenium is a chalcophile non-metallic element forming several rare minerals, but is more widely present as an accessory element replacing sulphur in the common sulphide minerals, such as pyrite or sphalerite.

The objective of this study was to determine the selenium background and baseline level in soils from the Region of Murcia (Southeast Spain) and to study the possible relationship between mineralogical composition and selenium concentration. Sampling sites were selected in areas subjected to high and similar agricultural activity or soils with natural vegetation. A total of 490 samples were collected, and the mineralogical composition and the selenium content were determined. Samples were analysed for Se content by atomic fluorescence spectrometry (AFS). Background and baseline values could be determined for each geological unit, because of its unique and differentiating geochemical pattern. For some samples, the soils were influenced by the erosion of surrounding mountains, which belong to different geologic units and, as a consequence, background and baseline value determination was more difficult. Four different groups were established based on significant relationship with the mineralogical composition in soil samples, using discriminant analysis. The results showed that the concentration of selenium is correlated with the mineralogical composition. Thus,

Se level is positively correlated with the phylosilicate content and with the calcite and quartz contents. In summary, the background level, showed as the median was 0.34 mg kg^{-1} and the baseline level, showed as mean+ 2*Std. deviation, was 1.21 mg kg^{-1}.