Geophysical Research Abstracts
Vol. 14, EGU2012-13567-1, 2012
EGU General Assembly 2012

Methodology for the ecotoxicological evaluation of areas polluted by phosphogypsum wastes.

M.J. Martínez-Sanchez (1), M.L. Garcia-Lorenzo (2), C. Perez-Sirvent (1), S. Martinez-Lopez (1), M. Hernandez-Cordoba (3), and J. Bech (4)

(1) University of Murcia, Faculty of Chemistry, Agricultural Chemistry, Geology and Pedology, Murcia, Spain (melita@um.es, 34 968 364148), (2) Complutense University of Madrid. Department of Petrology and Geochemistry., (3) University of Murcia. Department of Analitical Chemistry., (4) University of Barcelona

In Spain, the production of phosphoric acid, and hence of phosphogypsum, is restricted to a fertilizer industrial site. The residues contain some radionuclides of the U-series and other contaminants. In order to estimate the risk posed by these materials, chemical methods need to be complemented with biological methods. Then, the aim of this study was to develop a battery of bioassays for the ecotoxicological screening of areas polluted by phosphogypsum wastes. Particularly, the toxicity of water samples, sediments and their pore-water extracts was evaluated by using three assays: bacteria, plants and ostracods.
The applied bioassays were: the bioluminescence inhibition of Vibrio fischeri in superficial water samples using Microtox® bioassay; the root and shoot elongation inhibition and the mortality of Lepidium sativum, Sorghum saccharatum and Sinapis alba using Phytotoxkit® bioassay; and inhibition of Heterocypris incongruens by way of Ostracodtoxkit®.
Proposed methodology allows the identification of contamination sources and non contaminated areas, corresponding to decreasing toxicity values.