



Biogeochemistry of a reclamation process affecting an area to be mined for monazite-REE.

Pablo Higuera (1), Eva Garcia (1), Raimundo Jimenez (2), Francisco Garcia (3,4), Jesus Peco (3,4), Juan Campos (3,4), Enrique Burkhalter (5), Raquel Vergara (5), and Irene Fernandez (5)

(1) Universidad Castilla-La Mancha, Instituto de Geología Aplicada, Almaden, Spain (pablo.higuera@uclm.es), (2) Facultad de Ciencias Químicas, Universidad Autónoma de Madrid. Spain., (3) Escuela de Ingenieros Agrónomos de Ciudad Real. UCLM. Spain. , (4) Instituto de Geología Aplicada, IGeA-UCLM. Spain, (5) Quantum Minería. c/ Santander, 3 – Planta 14ª | 28003 Madrid (Spain) |

Interest in rare earth elements (REE) grows every day due to the increase of its use in new technologies and the dependence of China that comprises 85% of world production. The presence in a given area of minerals rich in these elements, such as monazite, can be considered as a factor that could trigger growth and per capita income of a that geographical area. However, the mining of these minerals raises a strong social controversy, mainly due to the presence of radioactive elements, such as uranium and thorium, and to their possible environmental impact. Following the directions given by Life Cycle Assessment (LCA) technology (ISO 14040, 2006), to provide the technicians with solid arguments for the possible extraction of monazite in an area located in the southeast of the Province of Ciudad Real (Spain), various actions have been programmed to monitor the environmental impact that would result from its exploitation.

Two surveys have been carried out in which we proceeded to excavate plots of 9 m² and 2-3 m deep that were later filled with material similar to that obtained from a mechanical extraction process of monazite. For that purpose, the plots were plowed, tilled and planted with barley and pea-plants. Next, they were monitored during a year cycle and the edaphological parameters, as well as those related with soil microbial activity, soil geochemistry changes and plant growth were logged. In the present work we present the preliminary results obtained in the first stage of the whole assessment study.