Geophysical Research Abstracts, Vol. 9, 05107, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-05107

Pb isotopes patterns in sediments from Rio de Janeiro State (Brazil): evidence for anthropogenic sources

Geraldes, M.C. (1), Dias, A.P.(1), Babinski, M.(2), Mansur, K.(3) and Valeriano, C. M. (1).

(1) LAGIR- Faculdade de Geologia, Universidade do Estado do Rio de Janeiro (UERJ), Rua São Francisco Xavier 524, Rio de Janeiro-RJ, Brazil. 20559-900

(2) Universidade de São Paulo (USP), Rua do Lago, 562 , Cidade Universitaria, São Paulo-SP, Brasil.

(3) Departamento de Recursos Minerais (DRM) Rua Marechal Deodoro 351 - Centro - Niterói - RJ - CEP 24030-060.

We carried out Pb isotopes studies in sediments from São Domingos River located in the NW area of the Rio de Janeiro State to discriminate the signature of metal contamination from domestic sewage, intensive tomato crops and geogenic sources. The sampling net points have been chosen in the São Domingos main stream and its tributaries. Sample preparations included: (a) dry out and granulometric separations; (b) weighting and oxidation of organic material; (c) leaching extraction procedure; (d) residue total dissolution; and (e) Pb isotope analysis obtained by TIMS (ratios $^{207}Pb/^{206}Pb$, $^{208}Pb/^{204}Pb$, $^{207}Pb/^{204}Pb$, $^{206}Pb/^{204}Pb$).

Preliminary results of 7 samples showed two groups of Pb isotope signature in the leached samples. The $^{207}Pb/^{206}Pb$ values of the first group range from 1.152 to 1.161, and of the second group range from 1.213 to 1.367. The $^{206}Pb/^{204}Pb$ values of the residues show limited variation between 1.145 and 1.187. These $^{206}Pb/^{204}Pb$ values of the residues are interpreted as geogenic (rock basement) signature. The Pb isotope data of the leaching may be interpreted as contribution of a pollutant sources of Pb not yet identified. According to the literature the anomalous Pb signature is similar to anthropogenic source.The present study confirms the advantages of the use of Pb isotopes systematic to probe the changing anthropogenic versus natural origins of this toxic heavy metal in recent sediments.