

MULTIELEMENTAL SURFACE GEOCHEMISTRY AND ENVIRONMENTAL IMPACTS AND RISKS, STATE OF PARANÁ, BRAZIL.

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All the active, non active or latent processes occurring in any set of the environment, possess specific characteristics based on their spatial positioning and variations of their chemical composition (single or combined chemical elements). Those processes can be separated in environmental risks (natural processes) or environmental impacts (processes related to the presence and activities of men). Thus, most of the environmental components can be characterized by means of a group of geochemical parameters or their geochemical signature. The 200,000 km² territory of the State of Paraná, Southern Brazil, were covered by a low density sampling project aimed to these purposes and following the standards established by IGCP-259-360 Projects (UNESCO/IUGS). Water and stream sediments from 700 catchment basins were sampled and chemically analysed using high sensitivity techniques. By means of GIS techniques many important relationships are being established between geochemical background and natural and anthropogenic sources, supporting the delineation of environmental risks and impacts. Some of these results are an impressive 20,000 km² fluorine anomaly in stream waters causing high levels of severe teeth fluorosis in the countryside population, huge and complex geochemical provinces or Au, Pt, Pd, Hg anomalies in the volcanic flows of Paraná Basin under investigation, are widening the mineral exploration potentialities of the territory.