

USE OF REGIONAL GEOCHEMICAL PROSPECTING OF FLUORINE IN SUB-BASINS OF THE MIDDLE PART OF THE SÃO FRANCISCO RIVER, NORTH OF MINAS GERAIS/BRAZIL

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The Multiuse Geochemical Project is a national/regional prospecting research, carried out since 2007 by the Geological Survey of Brazil (CPRM), aiming to outline behavior patterns of 53 chemical elements in stream sediments and soils, and 34 ions in surface waters. Drainages sampled held in an area of 200 km² and the soil grid was 25 x 25 km. In the studied area total fluorine in sediments and soils as well as fluoride in surface water was analyzed. Samples collected: 345 of sediments, 290 of surface waters and 85 of soils. Average and maximum values obtained for F respectively 376 and 1720ppm for soils, 320 and 1076ppm for sediments and 0.20 and 1.02 mg/L for surface waters. The predominant geology of the studied area is a rhythmic subhorizontal Neoproterozoic sequence formed by pelites and interposed limestones, varying in thickness from a few to dozen meters. At the Eastern Northern occur granites, sandstones, gnaisses, bifs and sienites. Previous work carried out on part of the studied area shows the presence of fluoride in groundwater and its inter-relation with cases of dental fluorosis, indicating the fluorite as source of F occurring in limestones of the Bambui Group (BG) (Velasquez, 2007). In the State of Paraná, there were defined areas with fluoride levels in surface waters above 0.25 mg/L (maximum 0.957 mg/L) encompassing regions with occurrences of fluorosis in Itambaracá city (Licht, 2006). The extensive distribution of these F curves for soil, sediments and superficial water in such high grade compared to the previous ones, indicate that probably there is another source of fluorine, coming from the metasediments of the Bambui Group added to high levels of fluoride present in limestones, responsible for the enrichment of fluoride levels in the superficial water. The results of this survey clearly show the areas that should be the target of further detailed studies and show the relevance of this CPRM Project. Licht, O.A.B. 2006 – Geoquímica Multielementar de Superfície na Delimitação de riscos e impactos ambientais, estado do Paraná, Brasil – www.cprm.gov.br/publique/media/Painel34.pdf acesso:11/01/2011. Velasquez, L.N.M. et al. 2007 – Investigação hidrogeológica de Flúor em aquíferos carbonáticos do médio São Francisco-MG e epidemiologia da fluorose dentária associada. Relatório final CTHidro 01/2003. 139p.

Keywords: geochemical survey, fluorine, dental fluorosis