ARSENIC EXPOSURE ASSESSMENT OF CHILDREN LIVING IN A LEAD MINING AREA IN SOUTHEASTERN BRAZIL

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Abstract: Environmental contamination by arsenic compounds in the Ribeira River Valley, São Paulo, Brazil has already been observed. Lead mining and refining activities had been carried on since late colonial times and finished recently, at the end of 1995. The source of As in the region is known to be mainly from arsenopirite geological presence in the lead ore. Chronic exposure to arsenic compounds may cause peripheral vascular disorders, hyperpigmentation, hiperkeratosis and cancer of the skin, bladder, lung, liver and other internal organs. The purpose of this study was to assess children exposure to arsenic from environmental sources in the region. Urine samples from children between 7 to 14 years old were collected at the following localities: Cerro Azul (PR), Ribeira (SP), Adrianópolis (PR) and Iporanga (SP), identified as groups 1, 2, 3 and 4, respectively. Group 1 was considered as non-exposed control group. Toxicologically relevant forms of As were determined by atomic absorption spectrometry with hydride generation system. The median values of urine arsenic levels obtained in groups 1, 2, 3 and 4 were respectively: 3.60, 6.30, 6.41 e 8.94 µg/L. There were statically significant differences (p<0,05) between group 1 (control group) and groups 2, 3 and 4. Meanwhile, despite the high values assessed in comparison to the control area (group 1) those levels do not represent immediate risk of adverse health effects for the children.

Keywords: urinary arsenic; environmental exposure; atomic absorption spectrometry; hydride generation.