

## EVALUATION OF URINARY ARSENIC IN CHILDREN AND THEIR MOTHERS LIVING NEAR AN INDUSTRIAL COMPLEX (ESTARREJA, PORTUGAL)

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The Chemical Complex of Estarreja (CQE), one of the most important poles of the Portuguese chemical industry, is located in the north littoral of Portugal and has been operating for more than seven decades. The CQE is composed of several chemical industries which are recognized as important inputs of heavy metals into the environment. The most important inputs are chiefly related to past industrial activities, namely, the production of sulphuric acid from arsenopyrite roasting (e.g. As, Cu, Ni, Pb and Zn) and from a chloralkali plant (Hg). Nowadays the situation is different (EEC legislation), but for a long time the liquid industrial effluents have been discharged to the sewage outlet coming from the factories, and the solid wastes were deposited in the soil without prior treatment. These soils are mostly permeable, sandy soils with low humus content, often used as pasture and agricultural land. Recent studies (Inácio et al, 2010) show high levels of arsenic in soils (above 10,000 mg kg<sup>-1</sup>) and forage plants (maximum concentrations in green shoots are 255 mg kg<sup>-1</sup>) of this area. However, there are no studies in order to investigate possible relationships to public health problems. The main purpose of this study was to evaluate the urinary arsenic levels in local residents. The data were collected in January 2011 from 85 children aged 7 to 14, and their mothers, from the Estarreja area (parish of Beduído and Veiros) and from a reference area (Vagos, parish of Ouca). The parish of Ouca, located 40 km south of Estarreja, was selected as the reference area since it has no significant industry, but has a similar geology, pedology and population lifestyle. 95% of the individuals selected live in these places for more than five years and more than 50% live there for more than twenty years. The data presented were collected from questionnaires and from the first morning urine samples. The preliminary results show that, with the exception of a few cases in Estarreja children, deserving further studies, urinary arsenic levels are generally similar to those reported for the general population in European countries (Fillol et al, 2010).

[1] Inácio, M, Ferreira E, Pereira V. 2010. Proceedings of 15th International Conference on Heavy Metals in the Environment, Poland. 856-859.

[2] Fillol C, Dor F, Labat L, Boltz P, Bouard J, Mantey K, Mannschott C, Puskarczyk E, Viller F, Momas I, Seta N. 2010. Science of the Total Environment.408; 1190–1194.

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