Ratios of trace to ultra trace elements in human teeth from inhabitants of two differently polluted areas

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The content of Ca, K, Na and heavy metals in human teeth extracted from inhabitants in two southern Poland areas: Katowice and Sosnowiec — two Silesian towns (50 samples) and Wisła — the village in the source area of the Vistula river (32 samples) during 1996/1997 were examined. The most important pollution sources in the Katowice and Sosnowiec area are the following: power and heat generating plants, steelworks, smelters, coke, building and refractory materials plants and coal-fired home furnaces. Wisła is the agricultural mountainous area with great deal of forests. The concentration of heavy metals: Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb and Zn in teeth were determined by Atomic Absorption Spectroscopy, Ca, K and Na by Flame Spectroscopy methods.

The results of this study provide the information about possible changes in ratios of a given trace to ultra trace elements in human teeth from inhabitants of these two differently polluted areas. The basic statistical analyses were focused on determining the relationships between the metals in biological samples of the study area using a Standard Principal Component Analysis with the varimax raw rotation and Rao R. It made possible to compare the ratios of the mean contents of elements in teeth from inhabitants of these two differently polluted areas.

Key words: *human ecology, urban environment, rural environment, pollution, teeth principal composition analysis, chemical ratios, Katowice Poland*

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