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A study on the accumulation of 55 elements in attic dust at two former industrial cities - Ózd and Salgótarján, Hungary

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Undisturbed attic dust possesses cumulative characteristics. Distinction in chemical composition of the attic dust from those of house or street dust reflects an indirect measure of air pollution during the anthropogenic activities of the studied areas (Davis & Gulson, 2005). Collecting attic dusts samples is safe for human health and it is a convenient way for screening large area to have a preliminary overview about the geochemical background. This study presents the results of analyzing the concentration of 55 elements major to trace) in the attic dust samples in 2 former industrial cities, Ózd (44 samples) and Salgótarján (40 samples) can be characterized by coal mining, iron and steel production and coal-fired thermal power plant. The selected houses with attics unchanged for at least 30 years are considered qualified for sampling. STATISTICA 11.0 software has been used for the purpose of determining the quantity rate of environmental pollution. The geometric mean concentrations of some important anthropogenic-derived metals from Salgótarján are: 1245.2 ppm Zn, 303.7 ppm Pb, 40.4 ppm Cr, 0.49 ppm Hg, 5.65 ppm Cd and 55.2 ppm As and Ózd 2566.4 ppm Zn, 542.1 ppm Pb, 73.1 ppm Cr, 1.31 ppm Hg, 9.16 ppm Cd and 101.1 ppm As. Furthermore, there is significant difference of specified elements (Al, Fe, Mg, Ca, S, Mn, Ti, Cr, Sc, Ag, Zn, Sn, As, Sb, Cs Ba, Sr, U, Th, Hg, Pb, Nb Zr, Hf, and almost of trace elements group) in both cities with p-value higher than 95%. Base on the overall analysis, the differences of elemental concentrations between the two cities indicate the effect of anthropogenic activities included industrial activities

Reference:

Davis, J. J., & Gulson, B. L. (2005). Ceiling (attic) dust: A “museum” of contamination and potential hazard. *Environmental Research*, *99*(2), 177–194. https://doi.org/10.1016/j.envres.2004.10.011