DETERMINATION OF THALLIUM IN SOME GEOLOGICAL AND METALLIC SAMPLES BY ELECTROTHERMAL ATOMIC ABSORPTION SPECTROMETRY

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Thallium is a rare element, present in the earth crust below 1 ppm. During the weathering processes it is accumulated in sediments and soils where, furthermore, its content is increased as a result of human activity.

Besides the low abundance of thallium and its limited application, analysis of this element is important task due to the toxicity of thallium compounds. On the territory of the Republic of Macedonia there are several thallium contamination sources: zinc and lead mines “Sasa” and “Toranica”, zinc and lead metallurgical plant “Zletoyo”, ferromanganese metalurgical plant “RZ Topilnica”, coal burning power plant”REK Bitola” and cement factory “Usje”. A particularly geochemical, physical and analytical interest has a polymetallic sulfide deposit in region known, as Allchar, on Mount Kozuf in R. Macedonia, rich with thallium minerals.

From these reasons, a method for thallium determination in geological and soil samples by electrothermal atomic absorption (ETAAS) was developed. Different procedures for sample decomposition have been examined for obtaining reliable results. Several ammonium salts as chemical modifiers have also been applied for stabilization of thallium species in graphite atomizer. The limit of thallium determination by this method was 0,1 μg/g Tl.