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The use of thermal release technique with atomic absorption detection for the study of mercury transformation in contaminated environment

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Mercury transformation and transport in the environment strongly depends on the chemical form. The most widespread species of mercury are the salts and oxide of Hg(II), HgS and methylmercury. In world-wide practice of mercury species determination in soils and sediments the different modifications of sequential extraction procedure are used. But the method based on the thermal evaporation of mercury species from solid samples is attractive because of the absence of the dissolution stage. This technique has been mainly used for total mercury determination in ores, there are only a few examples of this technique application for speciation in ores, soils and sediments but unfortunately no attempts have been made to identify methylmercury. In present work the results of mercury speciation in the solid environmental samples by the use of thermal release technique with atomic absorption detection are discussed. The features of the earlier developed assay application to the study of mercury transformation in the tailing material of contaminated region of the gold recovery plant are also considered. It was shown that in demolished material of the tailing's waste mercury is present as HgX₂, HgS and methylmercury at the predominance of HgCH₃⁺ and Hg².

Biography

Olga V Shuvaeva, is Dr. of Science, Head of Environmental Chemistry Chair (department of Natural Sciences, Novosibirsk State University) Senior Researcher at the Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of Sciences. The field of research interests: trace elements (mainly mercury and arsenic) transformation and transport study in environmental and biological systems using separation techniques (HPLC and capillary electrophoresis), atomic-absorption and atomic-emission analytical methods (ETA and FAAS, ICP AES) as well as their combinations, the author of about 100 papers in reputed journals.

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