



Mercury Concentrations in Soil Profiles in Two Arctic Sectors

Valery Udachin (1,4), Yury Tatsy (2), and Galina Kashulina (3)

(1) Institute of Mineralogy, Ural Branch of Russian Academy of Sciences, Miass, Russia; udachin@mineralogy.ru, (4) Geological Faculty, Branch of the Southern Ural State University, Miass, Russia, (2) Vernadsky Institute of Geochemistry and Analytical Chemistry of Russian Academy of Sciences, Moscow, Russia; yutatsy@mail.ru, (3) Polar Alpine Botanical Garden-Institute, Kola Science Centre of Russian Academy of Sciences, Apatity, Russia

Human activity has significantly altered the natural global geochemical cycle of Hg due to man-made anthropogenic emissions. The Arctic is particularly concerned regarding environmental risks for Hg, because this region is especially vulnerable to global Hg pollution. The databases on atmospheric Hg flux for the Arctic, environmental archives (profiles of soil, peat, lake sediments) are particularly important sources of data for understanding the flux history. These data also provide the basis for understanding the political steps to be taken in the future (like the recently adopted Minamata Convention).

An assessment of Hg concentrations and lead isotope ratios in soil in two remote Arctic: Spitzbergen (Svalbard), and delta of the Lena River was performed.

Mercury concentrations in Svalbard soil profiles varied from 36 to 56 ng/g in the basic soils (horizons C and B 4–70 cm) and from 110 to 241 ng/g in the topsoils (horizons A0 and A 1–4 cm). In soil profiles Lena River delta mercury concentrations varied from 33 to 40 ng/g in the basic soils (horizon C 14–65 cm) and from 43 to 98 ng/g in the topsoils (horizons A0, A and A1 0–14 cm).

The depth profile of isotopic ratio $^{206}\text{Pb}/^{207}\text{Pb}$ in Svalbard may be divided into two contrasting sections – with high values (1.187) in the basic and reduced values (1.154–1.166) in the topsoils. Such isotope ratios demonstrate preferential transfer of mercury and lead from industry in Europe and the Kola peninsula.

The depth profiles of isotopic ratio $^{206}\text{Pb}/^{207}\text{Pb}$ in the delta of the Lena River does not demonstrate the growth of the radiogenic isotope and decrease in $^{206}\text{Pb}/^{207}\text{Pb}$. The isotopic ratios are at the level of 1.155–1.168 for the whole soil profile.

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