



## **Specificity of Cs-137 redistribution in toposequence of arable soils cultivated after the Chernobyl accident**

Elena Korobova (1), Sergey Romanov (2), Vladimir Baranchukov (1), Vitor Berezkin (1), Fedor Moiseenko (3), and Sergey Kirov (4)

(1) Vernadsky Institute of Geochemistry and Analytical Chemistry, Rus. Ac. Sci. (GEOKHI RAS), Moscow, Russian Federation (korobova@geokhi.ru), (2) Unitary Enterprise “Geo-information Systems”, Nat. Ac. Sci. of Belarus, Minsk, Belarus (romanov\_s\_1@mail.ru), (3) Novozybkov agricultural experimental station, Rus. Ac. Agricult. Sci., Novozybkov, Russian Federation, (4) Institute of Global Climate and Ecology, Rus. Hydromet. and Rus. Ac. Sci., Moscow, Russian Federation (s\_kirov@rambler.ru)

Investigations performed after the Chernobyl accident showed high spatial variation of radionuclide contamination of the soil cover in elementary landscape geochemical systems (ELGS) that characterize catena's structure. Our studies of Cs-137 distribution along and cross the slopes of local ridges in natural forested key site revealed a cyclic character of variation of the radionuclide surface activity along the studied transections (Korobova et al, 2008; Korobova, Romanov, 2009; 2011). We hypothesized that the observed pattern reflects a specific secondary migration of Cs-137 with water, and that this process could have taken place in any ELGS.

To test this hypothesis a detailed field measurement of Cs-137 surface activity was performed in ELGS in agricultural area cultivated after the Chernobyl accident but later withdrawn from land-use. In situ measurements carried out by field gamma-spectrometry were accompanied by soil core sampling at the selected points. Soil samples were taken in increments of 2 cm down to 20 cm and of 5 cm down to 40 cm. The samples were analyzed for Cs-137 in laboratory using Canberra gamma-spectrometer with HP-Ge detector.

Obtained results confirmed the fact of area cultivation down to 20 cm that was clearly traced by Cs-137 profile in soil columns. At the same time, the measurements also showed a cyclic character of Cs-137 variation in a sequence of ELGS from watershed to the local depression similar to that found in woodland key site. This proved that the observed pattern is a natural process typical for matter migration in ELGS independently of the vegetation type and ploughing.

Therefore, spatial aspect is believed to be an important issue for development of adequate technique for a forecast of contamination of agricultural production and remediation of the soil cover on the local scale within the contaminated areas.

### References

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