

MEASUREMENT OF RADIOACTIVE FALLOUT IN LENINGRAD REGION

Sergienko V.A., Merzlaya A.O., Zippa A.I.
Saint Petersburg State University, Russia
E-mail: nucldep@yandex.ru

Nuclear catastrophes significantly affect the level of the radioactive contamination. The worst accidents occurred at the Chernobyl and the Fukushima nuclear power plants. As the result released radionuclides (more than 10 EBq) from discarded nuclear reactor materials spread around the world.

Soon after the Chernobyl accident the investigation was carried out to notify the pollution of Europe by gamma-spectrometric survey from planes, that showed overall but uncertain picture of the contamination. Thus, according to research in the Leningrad region was found ^{137}Cs from Chernobyl in Kingisepp and Lomonosov districts with an estimated activity 1–5 Ci/km² [1].

In order to obtain more accurate picture of the influence of accidents on radioactivity of the Leningrad region, investigations were carry out using another method that consists in measuring environmental objects by semiconductor HPGe gamma-spectrometer.

According this method samples of topsoils from Vyborg, Priozersk, Vsevolozhsk, Gatchina, Kingisepp, Lomonosov and Luga districts and St.Petersburg were measured. Analysis of the sample of topsoil of different areas of Leningrad region showed a significant expansion of the border of radioactive zones, since the activity of ^{137}Cs of the samples from places outside this zones according [1] is sometimes higher then in polluted area. For instance, the activity of ^{137}Cs is approximately 200 Bq/kg in Kotelski village (the contaminated area) and in Luga district was found ^{137}Cs with activity more than 350 Bq/kg. The radioactivity of ^{134}Cs with $T_{1/2}=2$ years, which can identify the Fukushima trace, doesn't exceed 0.3 Bq/kg. This data is consistent with previous investigations in Leningrad region [2].

1. Leningrad region. The map of the radioactive pollution of the area (by Cs-137). 1992.
2. В.А.Сергиенко и др. // Изв. РАН. Сер. Физ. 2013. Т.77. №7. С.974.