THE RETROSPECTIVE ESTIMATION OF RADIATION SITUATION ON THE TERRITORY OF REPUBLIC OF BELARUS IN THE FIRST PERIOD AFTER THE CHERNOBYL NPP CATASTROPHE

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INTRODUCTION

The most complicated situation at the territory of Belarus has been observed in the first period after the accident at the ChNPP owing to the great quantity of the deposited short-lived radionuclides and the radionuclides with half-lives up to 1 year.

In 26 April 1986, the radioactive isotopes, including radioactive noble gases and iodine isotopes have initially reached the height of 1.8 km and began transport with air flows in the Nort-West direction through the western and central areas of Belarus. The analysis of the subsequent meteorological situation has shown, that the meteorological conditions of the movement of the radiation-contaminated air masses in 26 April to 10 May, 1986 have determined the radioactive contamination of Belarus, in the first phase with short-lived radionuclides.

RADIOACTIVITY CONTAMINATION

The reconstruction of the distribution of iodine-131 according to the situation for 10.05.86, ruthenium-106 and cerium-144 for 30.05.86 has been carried out (Fig. 1,2). The Methodical Approaches on evaluation of the contamination of the territory of the Republic with these radionuclides have been suggested for construction of the maps-reconstructions.

In April-May, 1986, the nearest zone (10-30 km) has been mostly contaminated with iodine-131, that is, the Bragin, Chojniki, Narovlya Areas of the Gomel Region (the levels of the contamination of the soil with iodine-131 have reached 37000 kBq/sq.m and more the dose rates of 25-100 mR/h, including the Chechersk, Korma, Buda-Koshelevsk, Dobrush Areas, where the levels of contamination of the soil with iodine-131 have reached 5550-11100 kBq/sq.m, 11100-18500 kBq/sq.m.

The Elsk, Lelchithi, Zhitkovichi, Petrikovichi Areas of the Gomel Region, Pinsc, Luninets, Stolin Areal of the Brest Regions have been highly contaminated with iodine-131.

In 1986-1989, the significant contribution into the radiation situation at the territory of Belarus have made such radionuclides as cerium-144 and ruthenium-106. The Narovlya, Bragin, Chojniki Areas are the most contaminated with cerium-144 areas (the levels of contamination are 555-1480 kBq/sq.m). In the zone of the relocation of the population, the contaminations with this radionuclide have amounted to 1480-3700 kBq/sq.m. The Narovlya, Bragin, Chojniki Areas are the most contaminated with ruthenium-106 areas (the levels of contamination are 185-555 kBq/sq.m). In the zones of the levels of the contamination with these radionuclides have accounted for 555-1480 kBq/sq.m.

The restoration of the situation in the first period after the accident can be used for the evaluation of the doses, obtained in the period.

REFERENCES

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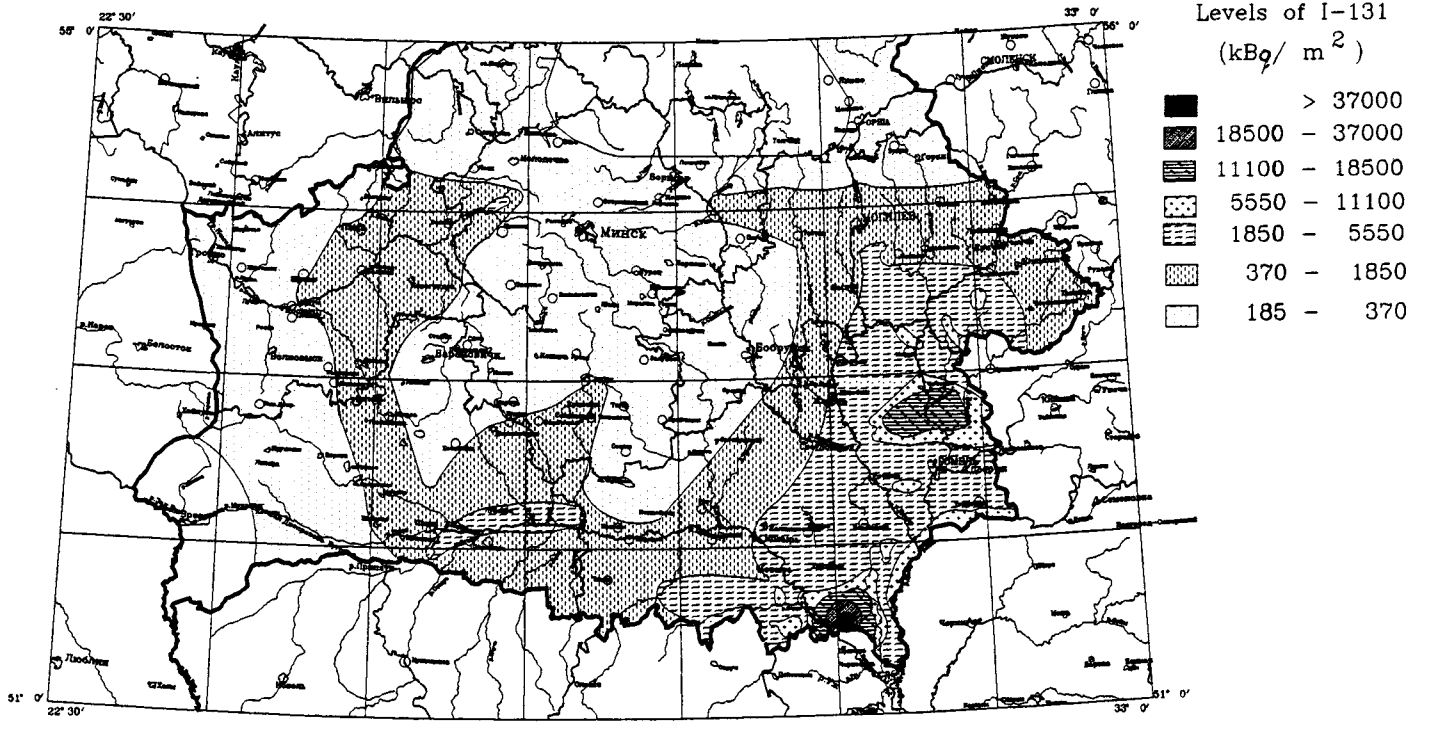

Figure 1. Radioactivity contamination of I-131 in soil on the territory of Belarus (10.05.1986)

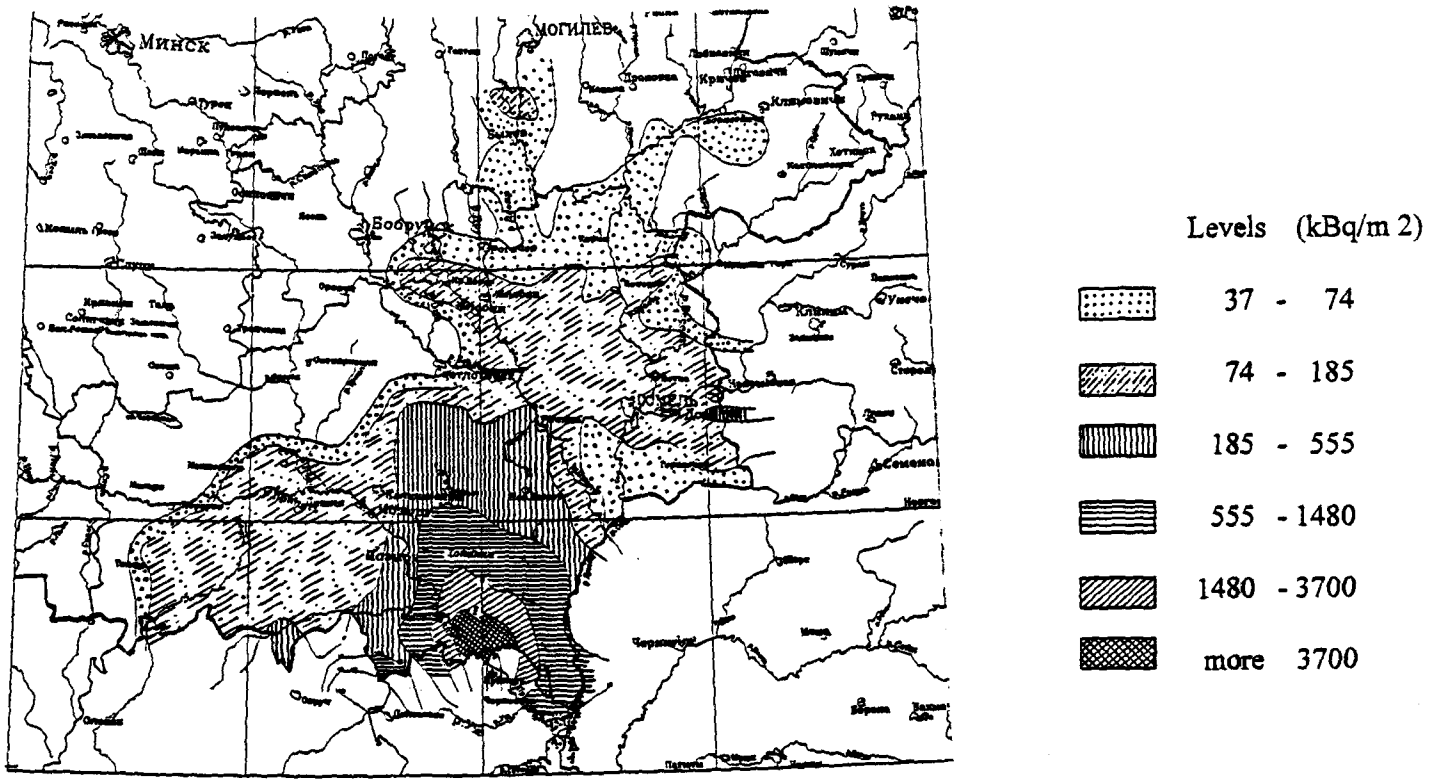

Figure 2. Radioactivity contamination of Ce-144 in soil on the territory of Belarus (30.05.1986)