

PECULIARITIES OF RADIONUCLIDE CONTAMINATION OF DIFFERENT SEMIPALATINSK NUCLEAR TEST SITE (SNTS) ZONES

***K. K. Kadyrzhanov¹, S. Khazhekber¹, Ch. Rofer², S. N. Lukashenko¹,
V. P. Solodukhin¹, I. V. Kazachevskiy¹, V. L. Poznyak¹, and
B. B. Knyazev¹***

¹ Institute of Nuclear Physics, National Nuclear Centre, Almaty, Kazakhstan

² Los Alamos National Laboratory, USA

The Semipalatinsk Nuclear Test Site occupies about 18500 km². There are 3 basic test zones in this territory including various test platforms where different character nuclear explosions were carried out. On the test platforms of the "Opytnoe Pole" zone air and ground tests were performed, including as nuclear, and hydronuclear (without nuclear reaction) explosions. On the other zones (the Degelen mountains and Balapan valley) the underground tests including as camouflaged, and excavation nuclear explosions were carried out. Each kind of these tests can be characterised by quantity and composition of radionuclides, which had been formed during a nuclear explosion, also by area of their distribution, localisation of the radionuclides on various sites, radionuclides species in soil.

Transfer of the products of the air and the ground nuclear explosions by air flows and their sedimentation on the ground surfaces have caused broadband and extended over hundreds of kilometres radioactive plumes. As a result of hydronuclear experiments plenty of alpha-active radionuclides, consisting of a nuclear device is thrown locally out. Besides the ground and the air explosions, radiation conditions of the territory of the SNTS were influenced by excavation explosions with ground throwing out. Such tests resulted in an intensive local pollution. Other zone of an original pollution is the Degelen mountains. Although a basic mass of the nuclear explosion products is obviously concentrated in basin cavities of the tunnels, the radionuclides are taken out on a day time surface together with waters which acting in basin cavity of the tunnels.

In an article the results of investigation of radionuclide pollution on the various platforms of the SNTS territory are presented. The results characterise the radionuclide pollution by specificity of spent tests.