

# **Peculiarities of radionuclide distribution within rock destruction zones (by the example of the objects at the Semipalatinsk Test Site).**

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Carrying out of the underground nuclear explosions (UNE) at the Semipalatinsk Test Site (STS) caused the sizeable rock destruction, the forming of the man-made landscape and radioactive contamination of geological environment. The implementation of the comparative analysis of current and former radiation situation is necessary for the estimation of space-time radionuclide conversion.

From the beginning of 70-th years of the last century the works connected to studying of a state of filtration structure of UNE central part were carried out and included drifting of the mining excavations, hydro-geological and geophysical measurements, water and rock sampling. The monitoring of STS radiating situation is continuing now. The data of experimental investigations are evidence of radioactive contamination of geological environment within the formed man-made zones. In whole, the duration of existence of cavity impacted on dynamics of radioactive conversions and determined the representatives of radionuclides in the destruction zones after cavity depressurization. During the following progressive flooding of UNE central part the radionuclides were desorbed from the fracture surfaces and migration with ground water.

The connection between the UNE cavities and water-bearing horizon is indirectly confirmed by higher radionuclide concentrations in the observation boreholes. The partial radionuclide location has been determined within earlier formed depression cone confined to UNE epicentral zone. Accordingly, the areas where UNEs to be conducted can be considered as test sites for long-term underground storage of special hazardous radwaste.

The data of complex investigations of conditions of radionuclide distribution within UNE central part and its transport with ground water are of the particular interest for development of radioecological safety aspects of exploration objects of the raised risk.