

Plants as Indicators of Radioactive Contamination at Nuclear Test Sites

In some cases, after conducting a nuclear test can be carried out the necessary measures to eliminate surface contamination due to which radionuclides will be buried under the bulk of anthropogenic soil. In this situation, the traditional methods used to obtain evidence of the fact of nuclear testing would be inadequate. Additionally, due to the natural migration of radionuclides with groundwater can be increased area of contamination. Indicators of radioactive contamination of the buried layers of soil and groundwater can serve plants with deep penetrating roots that can accumulate radionuclides. The authors present the results of research conducted at the Semipalatinsk test site in the area of tunnels for underground nuclear testing. The specific activity of Cs-137 (≈ 1000 Bq/kg) in plants of about tunnels in some cases higher than in the surface layer of soil (≈ 100 Bq/kg). The maximum content of Sr-90 (350 Bq/kg), Pu-239+240 (13 Bq/kg), Cs-137 (6,7 Bq/kg) in plants is higher than in groundwater – Sr-90 (14 Bq/kg), Pu-239+240 (0,002 Bq/kg), Cs-137 ($< 0,03$ Bq/kg). Thus, it is shown that the plants in this case are indicators of contamination of the buried layers of soil and groundwater and can be used to identify the locations of nuclear tests.

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