

EPR DOSIMETRY STUDY OF THE RESIDENTS IN THE VICINITY OF THE SEMIPALATINSK NUCLEAR TEST SITE

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A tooth enamel electron paramagnetic resonance (EPR) dosimetry study was carried out with the purpose of obtaining the individual absorbed radiation doses of population from settlements in the Semipalatinsk region of Kazakhstan, which was exposed to radioactive fallout traces from nuclear explosions in the Semipalatinsk Nuclear Test Site and Lop Nor test base, China. Most of the settlements are located near the central axis of radioactive fallout trace from the most contaminating surface nuclear test, which was conducted on 29 August 1949, with the maximum detected excess dose being 430 ± 93 mGy. A maximum dose of 268 ± 79 mGy was determined from the settlements located close to radioactive fallout trace resulting from surface nuclear tests on 24 August 1956 (Ust-Kamenogorsk, Znamenka, Shemonaikha, Glubokoe, Tavriya and Gagarino). An accidental dose of 56 ± 42 mGy was found in Kurchatov city residents located close to fallout trace after the nuclear test on 7 August 1962. This method was applied to human tooth enamel to obtain individual absorbed doses of residents of the Makanchi, Urdzhar and Taskesken settlements located near the Kazakhstan–Chinese border due to the influence of nuclear tests (1964–1981) at Lop Nor. The highest dose was 123 ± 32 mGy.