



NOVEL TECHNIQUE OF REDUCING RADON LEVELS IN LIVING PREMISES



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Radon is a naturally occurring gas seeping into homes and underground structures (buildings, tunnels, hangars, garages, etc.) from the surrounding soil through walls, floor, etc. and emanating from construction materials such as concrete, granite, etc. The level of radon is especially great in regions with the higher content of uranium in soil and water and with geological breaks of the Earth's crust. Concentrations of uranium higher than 10 g per ton of soil have been found in 14% of territory of Uzbekistan. As a result, for instance, concentration of radon 10-100 times exceeds the regulation level in 14% of premises in Tashkent, 41% of premises in Almalik town and 44% in Yangiabad town.

The purpose of this work was creating a method to reduce concentration of radon gas in buildings and underground structures. We suppose that the most effective technique is a treatment of walls, floors, etc. of basement and underground structures by special chemicals which seal micropores inside the construction materials. Sealing the pores stops radon diffusion and, in addition, it blocks another radon pathway – water migration and emanation from concrete, gypsum or other construction materials. In the paper polymeric silicoorganic compounds are investigated and selected as the chemicals to prevent radon seeping indoors.

Gas (air, Ar, ^{222}Rn , H_2O) permeability of concrete and gypsum after treatment by chemicals has been examined. Influence of types of cement and sand, preliminary treatment by different chemicals, different types of polymeric silicoorganic compounds, time between treatments, moisture of concrete, time between preparation of chemicals and treatment of concrete (ageing of chemicals), time between treatment of concrete and testing (ageing of treated concrete) have been examined. Surfaces of the samples were treated by spray.

Experiments have shown that chosen method of treatment of the construction materials allows reducing the coefficient of gas permeability in 200 – 400 times. The treatment of floor, walls and ceiling of basements of 5 various houses has reduced the radon concentration in the premises of the first floor from 400 - 600 Bq/m^3 to the background value of 17-20 Bq/m^3 .



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MEASUREMENTS OF RADON LEVELS AND EXHALATION RATE OF RADON IN DWELLINGS BY DETECTORS CR-39

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In the paper, results of radon level measurement by CR-39 detectors in multistory and one story buildings as well as exhalation rate of radon from a surface of walls of houses are reported. It is shown, that in some one and two story houses constructed of brick and clay the concentration of radon reached up to 520 Bq/m^3 and higher. The exhalation rate of radon from the surface of