

# METHOD OF REDUCING RADON LEVELS IN BUILDINGS

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It is known that radon concentration is particularly great in regions with the heightened content of uranium in soil and water and with geological breaks of the earth crust. The Republic of Uzbekistan is located in granitoid zone. As a result concentrations of uranium greater than 10 g per ton of soil have been found in 14% of territory of the country. In Tashkent (the capital of the Republic) and Central Kyzylkum regions the average level of uranium concentration is 25-170 g/ton and comes up to 1000 g/ton. Concentration of radon in soil's air varies from 1000 Bq/m<sup>3</sup> in the west parts of the country up to 20,000 Bq/m<sup>3</sup> in the submontane parts. And high concentration of Radon gas is found in houses and underground structures all over the Uzbekistan. For instance, the concentration of radon s exceeds the regulation level in 10-100 times in 14% of premises in Tashkent, 41% in the city of Almalyk and 44% in the city of Yangyabad

The purpose of this work is creating a method to reduce concentration of radon gas in buildings and underground structures.

The gas diffuses from soil into the buildings through pores in the construction materials. Moreover radon emanates from construction materials and as well as gets indoors via water migration. The concentration of radon can be reduced by using polymeric compositions which fill pores inside the construction materials and decrease coefficient of permeation of radon atoms and water molecules in construction materials (concrete, gypsum, etc.). In the paper polymeric silicoorganic compounds are investigated and selected as the chemicals to prevent radon seeping indoors.

Gas (air, Ar, <sup>222</sup>Rn, H<sub>2</sub>O) 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 (aging of chemicals), time between treatment of concrete and testing (aging 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 5 buildings' basement has reduced the radon concentration in the premises of the first floor from 400 - 600 Bq/m<sup>3</sup> to the background value of 17-20 Bq/m<sup>3</sup>.