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The estimation of radon activity in multistoreyed buildings of industrial iron-ore region

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Some regions of Ukraine are Radon dangerous. Geologic peculiarities of Krivbass region, available mining tunnels, historic habits in housing construction, decreased morbidity on malignant tumor of population specify the actuality of "Radon"problem studying in iron-ore region which should be consider at estimation of radiation exposure to population.

By our own researchings it is determined that as a rule Radon is accumulated in basement and on the ground floor of buildings. Though significantly high doses of Radon EEVA were registered in the upper stores of five-storied dwelling houses of 1968-1970 years of construction.

Thus level of Radon-222 EEVA in five-storied dwellings was registered as follows: on the ground floor it was 33 - 113 Bq•m-3 , on the first floor –21-63 Bq•m-3 , on the second floor –43-69 Bq•m-3 , on the third –22-85 Bq•m-3 , on the fourth floor –67-93 Bq•m-3 .

During measuring the daily variation of Radon content in the air of the dwellings it was determined that Radon volume activity depended directly on ventilation regime in the dwelling. Thus the Radon level was measured in two the apartments of the fourth floor with two different ventilation regimes –with regular opening of the window and without this procedure.

In the first case the family was of three adult persons, engaged in job. Radon level was measured in the kitchen with regular ventilation using window. This level was 67 Bq•m3. Effective dose of Radon exposure was 2,9 mSv•year-1 . Radon level was measured in the room with vacuum ventilation provided by the house design. This level was 93 Bq•m-3 .

In the second case the residents of the apartment were three adult persons, engaged in job. Radon level was measured in the room with vacuum ventilation provided by the house design. This level was 93 Bq•m-3 . Effective dose of Radon exposure was 4,0 mSv•year-1 .

In both cases exposure doses were significant in spite of additional ventilation.

Radon entering the upper stores is caused by lack of ventilation. The rate of air near ventilation holes was < 0,1 м•s1 . This peculiarity displays during heating the apartments, when windows are closed hermetically and the air inflow diminish. As a result the contingent of population exposured to radon increases.

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