



## PREVENTION OF RADIOACTIVE GAS SEEPING INTO BUILDINGS THROUGH CONSTRUCTIVE MATERIALS

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One of possible method of realization of the terrorist acts is using gases and liquids, which easily permeate through the constructive materials of walls, floor, ceiling, roof, etc. into buildings by the capillary action of the pores. Toxic volatile organic compounds, organic and inorganic gases, radioactive elements, especially, which emits alpha particles can be used as the dangerous substances. Increased ventilation may help in removing the gases, but can actually increase the gases level by increasing the suction through the pores of concrete. If the gases and liquids are soluble in water and are easily volatilized from it, they can also get by groundwater up to underground structures and penetrate inside through opening and pores in concrete or pushed by hydrostatic pressure.

The purpose of this work is creating a method to reduce concentration of toxic and radioactive gases in homes, buildings, underground buildings, tunnels, hangars, garages, bombshelters, etc.

The most effective method to prevent penetration of radionuclides into premises of buildings and underground structures through walls, roofs, floors is using special chemicals, which seal micropores inside the construction materials against gases. Worked out chemicals which consist of blend of polymeric compounds are described in the paper.

Radioactive gases permeability in constructive materials after treatment by chemicals was studied. Influence of types of cement, sand and gypsum, preliminary treatment by different chemicals, different types of polymeric compounds, time between treatments, moisture of materials, time between preparation of chemicals and treatment of materials (aging of chemicals), time between treatment of concrete and testing (aging of treated concrete) were examined. Experiments have shown that our method allows reducing the coefficient of gas permeability 200 – 400 times.



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## SCINTILLATION $\gamma$ -SPECTROMETRICAL METHOD OF ATMOSPHERIC FALLOUTS OF $^7\text{Be}$ ACTIVITY DETERMINATION.

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Cosmogenous radionuclide  $^7\text{Be}$  ( $T_{1/2}=53,3$  days,  $E_\gamma=478$  keV) is formed in upper layers of atmosphere as the result of oxygen atoms splitting by cosmic radiation.