

**TO THE ISSUE ABOUT NEGATIVE CONSEQUENCES
OF UNDERGROUND NUCLEAR EXPLOSIONS
IN THE SALT DOMES**

D.N. Belyashov, V.A. Mohov, T.D. Murzadilov
Institute of Geophysical Research of NNC RK, Kurchatov

**К ВОПРОСУ О НЕГАТИВНЫХ ПОСЛЕДСТВИЯХ
ПОДЗЕМНЫХ ЯДЕРНЫХ ВЗРЫВОВ
В СОЛЯНЫХ КУПОЛАХ**

Беляшов Д.Н., Мохов В.А., Мурзадилов Т.Д.
Институт геофизических исследований НЯЦ РК, г. Курчатов

1. From 1970 to 1984, 26 underground explosions were conducted at Azgir test site salt domes and Karachagan-skoye gas-condensate deposit (KGKD) of Kazakhstan. Consequence, 9 and 6, relatively, underground cavities were created. At Azgir test site 5 cavities were filled by water and brines. Some of them were destroyed with surface spotting formation. It is noticed the spreading of radionuclides out of cavities bounds. At the KGKD gas-condensate is loaded into 4 cavities, another 2 cavities are in the accident condition, the last one (5TK) was filled by brine. There are characters of radioecological situation degradation above the last cavity. Radioactive logging in the cavity shown that the γ -activity of rock was increased more then 8 times in the distance of depths 0-64m for 3 years. Apparently, outbreak of radioactive brines takes place along the zones of fissuring on the bound of casing tubes into the 5TK borehole and along enclosing rocks with sorption of radioactive isotopes in clay rocks.

2. There are examples of negative evolution of events at the Astrahan gas-condensate deposit, where 15 nuclear cavities were created from 1980 to 1984 years. In 1986 year, 13 of them stopped to exist because of tectonic shearing, triggering by underground nuclear explosion in the salt dome. Many of them are flooded and they throw out the radioactive brines, reaching the surface.

3. Negative development of radioecological situation is occurred because of depressurization of cavities, their flooding, displacement of radionuclides with salt into the brines, destroying of cavities, extrusion of radioactive brines along the permeable zones, more often along the militant and observation boreholes. It is possible to spread of radioactive contamination along horizontal at the distance for 1,5-3km. In 2 years after the underground nuclear explosion at the Grachev oil deposit of Bashkiria radioactive tritium was detected in underground water and in the ground more then 3 km far from epicenter. At the Osin deposit in 8-10 years the products of underground nuclear explosions were discovered on 1,5 km far from epicenter, where «blinking» regime of contamination tens production wells was noticed.

4. Another ecological destructive results of Azgir underground nuclear explosions are the appearing of «white fogs», illness of horses in summer months, growth of lungs and upper respiratory tract diseases among the population. We can suppose the connection of these phenomena with nuclear cavities. Intensive prolonged radiolitive reactions with participation of salt, water, brine with possible accompanying of throw outing chlorine, hydrogen and another gases in the main year volumes (tens, hundreds of m³), which valley outbursts with participate of photochemical reactions bring to appear hydrochloric acid formation as «white fogs». It ulcerates extremities of animals and effect to breathing organs. There are another consequences of radiolitive processes, their study requires supplementary investigations.

5. Problem of investigation of negative consequences of nuclear explosions requires of conducting special complex of geological and geophysical investigations as monitoring. Monitoring allows to forecast the behavior of cavities, salt domes and radioecological consequences depending on them.

* * *