The problem of radioactive pollution of environment in oil-extracting sites and especially in old deposits of Apsheron peninsula, in particular, in oil fields of Surakhani and Balakhani by the various factors is rather urgent in Azerbaijan

On a whole, radioactive-ecological situation is defined by the quantitative contents of natural radionuclids, chemical structure of grounds waters and oil, and also accumulation of radioactive substances in pipelines and modular items as crystals radiobarits or calcium and magnesium.salts

Systemic and complex research on this direction will allow creating the mechanism of radionuclides transformation in oil-contaminated soils.

The condition of radioactive background of soil cover of oil field in Surakhani was studied in our researches. The soil samples taken from various depths of deposit are investigated. The quantities of total oil components, aliphatic and polyaromatic hydrocarbons, heavy metals and natural radionuclides are determined. The attempt is made to explain dependence of various meanings of carried out analyses on the depth of taken samples.

In summary it is necessary to note, that the researches on more detailed study of influence of the factors on processes of accumulation and transformation natural radionuclides proceed. The systemic researches on this direction will allow securing of radiation safety in this area.

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RADIATION-THERMAL PURIFICATION OF WASTE WATER FROM OIL POLLUTION

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During the extraction, preparation, transportation and refining of oil the sewages containing oil contaminations are produced. The concentration of oil content in the water depends on used technology and may vary from a thousandths parts up to tens percents. There is a necessity of cleaning this pollution up to a permissible level. There are numerous methods (adsorption, mechanical, chemical and etc) of treating of waster water from oil contaminations. Radiation-chemical method is one of the effective among the above mentioned methods.

The results of radiation-thermal decomposition of n-heptane micro-admixtures in water medium are adduced. The main parameters of radiolysis change within the intervals: temperature 20-400°C, absorbed dose – 0÷10.8 kGy at dose rate 3.6 kGy/h.

The correlation of n-heptane concentration and water steam changed within $[C_5H_{12}]/[H_2O] = (1\text{-}100)\ 10^{-5}$. Total concentration of steam was about 10^{20} molec/ml.

As a product of decomposition are observed H_2, CO, CH_4, C_2H_4, C_2H_6, C_3H_8, C_3H_6, C_4H_8, hydrocarbons C_5, and C_6. The changes of n-heptane concentration in the reactor also were established. The chain regime of n-heptane decomposition at high temperatures in the irradiated mixture is observed.

The critical value of temperature and mixture ratio of components, under which the break of chain process of normal n-heptane occurs are defined.

The mechanisms of proceeding radiation thermal processes in hydrocarbons-water system are discussed.

At the temperatures higher than 300°C the radiation-thermal decompositions of hydrocarbon micro-impurities in water into gas products occurs according a chain mechanism and the radiation-chemical yield of the decomposition exceeds 100 molec/100eV. This method can be used for purification of sewages from oil contaminations.

ECOLOGICAL APPLICATIONS OF THE IRRADIATED ADSORBENTS

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In our previous works it was shown that after irradiation some adsorbents gain new interesting properties such as increasing (or decreasing) of their adsorption capacity, selectivity in relation to some gases, change of chemical bounds of gas molecules with adsorbent surface as well as other properties. We investigated a lot of adsorbents with semiconducting and dielectric properties.

A high temperature superconductor was investigated also.

Adsorbents were irradiated by ultraviolet (UV) and gamma - radiation, reactor (n.γ) - radiation, α-particles (E=40-50 Mev), protons (E=30 Mev), and also He-3 ions (E-29-60 Mev).

The following techniques were used: volumetric (manometrical), mass-spectrometer and IR spectroscopic methods, and also method of electronic - paramagnetic resonance (spin paramagnetic resonance)

The obtained results allow to speak about creation of new adsorbents for gas purification (clearing) from harmful impurities, gas selection into components, an increasing of adsorbing surface Thus one more advantage of the irradiated adsorbents is that they have "memory effect", i.e. they can be used enough long time after irradiation.

In laboratory conditions we built the small-sized adsorptive pump on the basis of the irradiated zeolites which are capable to work in autonomous conditions.

It was found, that some of adsorbents after irradiation gain (or lose) selectivity in relation to definite gases. So, silica gel, which one in initial state does not adsorb hydrogen, after gamma irradiation it becomes active in relation to hydrogen. Some of rare earths oxides also show selectivity in relation to hydrogen and oxygen depending on a type of irradiation.

Thus, it is possible to create different absorbents, depending on a solved problem, using a way or selection of adsorbents, either of radiation type and energy, as a result obtained adsorbents can be used for various ecological purposes.