DISTRUBUTION OF RADIONUCLIDES IN CENTRAL REGIONS OF AZERBAIJAN

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Drinking water radioactivity is caused by the presence of natural and technically obtained radionuclides in rivers and lakes and also in underground water sources (subsoil water, artesian wells, and springs). The most important natural radionuclides from the point of view of their action to the man are K-40, U-238, U-235, Th-232 and the products of their radioactive disintegration: Ra-226, Rn-222. When these radionuclidies with drinking water come into man organism a source of internal alpha, beta- and gamma- irradiation is created there. Technically obtained radionuclidies are formed under nuclear weapon tests, under nuclear reactors operation and accidents and under radioactive wastes disposal. Technically obtained radioactivity of natural waters is formed as a result of global transfer and atmospheric precipitations of radioactive fission products. The most dangerous technically obtained radionuclides are strontium-90, cesium-134 and cesium-137. Considerable part of strontium -90 (~20%) pass to man skeleton. Owing to extraordinarily slow strontium removal from man organism a source of marrow irradiation arises. Cesium-137 concentrates in soft tissue and due to relatively fast removal from man organism (~ several month) it is less dangerous [1]. Radiation danger of drinking water depends on composition and volume activity of natural and technically obtained radionuclides.

The Koura River is the main water system which flow throw central regions of Azerbaijan and used as drinking water. In central regions of Azerbaijan the ground water has high level, which consist dissolved NORM, therefore dissolved natural occurring radioisotopes can influence to water quality in Koura River.

The main hydrodynamical mechanisms of carry radionuclides in reservoirs are the distributions (diffusive, vertical and other) and convection.

Radionuclides absorb on a suspension, are absorbed by biothat, pass in bottom sediment that results in reduction of concentration dissolved in water radionuclides.

If it is possible to measure concentration radionuclides (and their change in time) in various environments, and components ecosystem, then the dozes of an irradiation of the population can be designed.

In the given article for definition of distribution radionuclides in central regions, we have carried out sampling in the specially chosen points along the Koura River (altogether -53 samples): 1. Bottom sediment; 2. Soil sample from a coast; 3. Groundwater samples; 4.Artesian water samples.

Taking of such type of samples will enable to determine background and to reveal sources of pollution, if such exist.

Sample preparation of bottom sediment and soil taken from a coast were spent on standard methods. The samples of bottom sediment and soil were dried up up to airily - dry condition. Samples have cleared of extraneous subjects, and then the samples were pounded and were sifted through a sieve with a diameter of cells 1 mm and were placed in Marinelly beaker. For created radioactive equilibrium, samples kept in closed Marinelly beaker about 3 weeks, and then the gamma-spectrum of each sample was accumulated. For measurement radioactivity was used gamma spectrometer with high-sensitivity Ge - detector, controlled software Genie 2000

(manufacture of firm CANBERRA). For all samples the identical mode of measurement was chosen, the duration of accumulation of a spectrum was 4 hours. As a result of researches value and distribution radionuclides in the central areas of Azerbaijan have been certain.

References

1. A.A. Moiseev, B.I. Ivanov: The directory on dosimetry and radiating hygiene. Moscow poweratom-publishing house (1990).