As a result of measurement of pollution of water and bottom sediments, the areas with high concentration of radionuclides are revealed. In particular, the Akhangaran and Syr-Darya rivers were studied and it was shown that the beta- and an alpha-activity of Akhangaran river water is significant in the sampling point 19 (former uranium mine). Migration of uranium series radionuclides up to a water deposit (point 21) is observed. At the inflow to the water deposit a small aura of uranium salts was formed due to migration of soluble salts of uranium. However, at confluence of Akhangaran and Syr-Darya the increase of both total beta- and alpha-activity is observed occurring, apparently, due to drainage waters.

The beta- and alpha-activity of Syr-Darya river water gradually grows and reaches 1.02 and 0.65 Bq/L, respectively. This increase is possibly caused by the human technogenic activity. Thus, it is necessary to note that the alpha-activity level of water exceeds permissible level for drinking water in practically all investigated points. For the Akhangaran river, alpha-activity of bottom sediments is significant and subjected to seasonal fluctuations (autumn - increase, spring - decrease). Migration of radionuclides in bottom sediments can be observed at the distance up to 60 km from the point where the pollution source is located, which is especially pronounced for uranium series nuclides. This demonstrates the geochemical properties of uranium, and shows that salts of uranium are more mobile, than salts of thorium.

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URANIUM CONTAMINATION OF DRINKING WATER IN KAZAKHSTAN AND UZBEKISTAN

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Uranium is a naturally occurring radioactive metal, and is widely distributed in the Earth's crust. But it is concentrated in certain rock formations. Most of the uranium for nuclear weapon produced in the Soviet Union during the Cold War came from Central Asia.

Uranium has negative effects on the human body, both as a carcinogen and as a kidney toxin. WHO (2004) prescribed that uranium concentrations in drinking water should be less than 15 mcg/l for only chemical aspects of uranium addressed.

We determined high uranium concentrations in drinking water in the central region of Uzbekistan (Y. KAWABATA *et al.* 2004). In this area, some discharge water from farmland has higher uranium concentration.

Irrigation systems Kyzyl-orda in Republic of Kazakhstan and in Karakalpakstan in the Republic of Uzbekistan have drains deeper than 5m, in order to protect against salinization.

Water in these drains can mix with ground water. In this area, ground water is used for drinking water.

We investigated uranium concentrations in water in Kazakhstan and Uzbekistan. In the half of drinking water sampling points, uranium concentrations exceeded the WHO (2004) guideline level for drinking water. Uranium is a suspected carcinogen that can also have a toxic effect on kidney. However, WHO addresses only the chemical aspects of uranium by giving uranium concentrations in drinking water. The effect of uranium exposure from drinking water on people in these areas is significant. The uranium concentration in the Aral Sea was higher than that in sea water. Aral Sea is accumulating uranium.

References:

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PRODUCTION OF SORPTION-ACTIVE POLYPROPYLENE FIBERS BY RADIATION-INDUCED GRAFTING OF GLYCIDYL METHACRYLATE AS A PRECURSOR MONOMER

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The design and development of sorption-active natural and synthetic polymer fibers and textile materials is of great scientific and practical interest. The advantages of that type of polymeric adsorbents, as their highly developed specific surface, excellent ion-exchange and adsorption parameters and ease of their use especially under continuous conditions, allow them to find a great application in the chemical, biomedical, ecological and industrial fields.

To obtain functional polymer materials with the desired performance, the non-active polymer surface have to be modified. Among different innovative techniques used for the introduction of graft chains, the radiation-chemical method of initiation has some economical and ecological preferences over others. It allows to introduce into inert polymeric matrix chains of a monomer already containing a desirable functional group, or to graft chains of a precursor-monomer and subsequently its chemical modification to form required functional groups. At present an epoxy-group containing monomer, glycidyl methacrylate (GMA), is successfully used as a precursor-monomer for production of polymeric adsorbents of variety applications on the base of membranes, films, fibers and fabrics.