The humus aspect in the cheapening of the technology of mining uranium-molybdenum-rhenium deposits in the Moscow basin

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Keywords: ore mining, humic acids, eco-adaptivity

DOI:10.36291/HIT.2021.002

Source: uranium-molybdenum-rhenium ore formations of the brown coal basin near Moscow (Briketno-Zheltukhinskoe and others), containing up to 85% humic acids. To increase the content of the productive solution intended for the extraction of final target metals, it is possible to use a cheaper geotechnological method, instead of traditional expensive methods of their extraction, taking into account the value of the components of ore formation and the region of its location.

The essence of the approach: activation of humic acids in the composition of brown coals, including fulvic acids - the most mobile and playing a key role in the dissolution of mineral substances to ionic forms; safe and economically feasible use of groundwater in comparison with traditional sulfuric acid leaching.

The method of providing is a selective, mobile and regulated water-alkaline effect on the coal mass of a working reagent that takes into account the anionogenicity of uranium, molybdenum, rhenium and provides an increase in their migration properties. The main qualitative characteristic of fulvic acids, the product of decomposition of humic acids, is biological activity due to low molecular weight; easy binding of minerals and elements in their molecule, which leads to their dissolution and mobilization; they react more to negatively charged electrons; they are well soluble in water, alkali, gas.

Advantages of the Method: eco-adaptivity; exclusion of the danger of gas explosions and rock impacts; use of the state of natural limitation of ore formations with a "lime foundation", significant humidity of the host rocks (up to 40%); the presence of porous tubular-fibrous forms of pyrite formations; the possibility of effective conversion of valuable minerals into a soluble state; providing the cheapest way to increase the content of fulvic acid salts in groundwater.