Investigation of the processes and development of high efficiency resource-saving ecological-safety technology of deep arsenic removal from water.

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Results

The information about both, natural and anthropogenic ways and the reasons of arsenic compounds appearance in natural waters are generalised. Prevailing forms of the presence of arsenic compounds in water medium are defined. The comparative analysis and summarization of the existing information on the novel methods and materials for deep extraction of arsenic from water are carried out.

The definition of arsenic in water solutions by photometric method and on an atomic-absorption spectrometer is conducted. The advantages and lacks of used methods, specification of conditions and application limits are analysed.

The data about presence, concentration levels and forms of arsenic at natural underground and surface waters of Ukraine are defined and generalised.

Experimental researches and definition of physicochemical and sorption characteristics of a line of an organic and inorganic materials which are selective for extraction of arsenic from water are carried out. Experimental investigations and definition of parameters of the membrane methods of arsenic extraction from water are conducted. Optimum conditions of deep arsenic extraction from water by sorption and membrane methods are determined.

On the basis of the spent researches the technological offers are developed and technical parameters of highly effective and ecological-safety process of deep water purification from arsenic are established. The complex technology of deep arsenic removal from water includes preliminary preparation of water with use of a mechanical filtration, membrane treatment of water with the following removal of arsenic from permeate (with low concentration of target component) by the special selective sorbents and extraction of arsenic from a concentrate by the cheap sorbents received on the basis of the ionites exhausted in demineralization processes.

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