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The study of trace elements uptake by plants from contaminated waters

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The concept of green chemistry is focused on the prevention of environmental pollution as a result of human activity. However, L there are a lot of contaminated areas in the world which pose a serious threat to ecosystems in terms of their conservation. Therefore, following the principles of green chemistry it should not be forgotten about the need to clean these areas. Phytoremediation technology is an effective sustainable, energy and cost economic method of environment clearing due to the plants ability to hyperaccumulation of the pollutants. The floating macrophyte water hyacinth, Eichhornia crassipes (EC) and Pistia stratiotes (PS) are applied most often to waste waters purification. The ability of the plants to uptake the trace elements depending on the conditions of exposure using the natural modeling mesocosm methodology approach as well as in the real gold mine tailing area was studied. In both cases bioconcentration (BCF) and translocation factors (TF) of water hyacinth were evaluated to characterize their accumulation capacity. It has been shown that water hyacinth demonstrates high ability to accumulate Cd, Cu, Pb, Mo and Ba with BCF values at the level of 1400 and higher. The general trend of the plant accumulation ability in relation to the studied elements corresponds to their content in the medium. It was found that the plants can survive under extreme conditions and hence we can assume that there is a principal opportunity to use them for the valuable substances extraction from an area of the mining waste dumps burial.

Biography

Olga V Shuvaeva did her PhD in 1988, Dr. of Sci. in 2009 and is the Head of Environmental Chemistry Chair of Natural Sciences Department in Novosibirsk State University (Russia). She has published more than 100 papers in reputed journals. Her fields of interest are: the study of trace elements transformation and transport in Environment. She is an expert in analytical chemistry of natural media using atomic spectrometry and separation techniques.

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