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### Phytotechnologies as a green revolution in ecology

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The concept of Green Chemistry is focused on the prevention of environmental pollution as a result of human activity. However, there are a lot of contaminated sites in the world that 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. Phytotechnology is an effective sustainable, energy and costs economic method of environment clearing due to the plants ability to the accumulation of the pollutants. Furthermore, the waste material often contains valuable components, the extraction of which by traditional wet chemical technologies is inefficient both from the economic and environmental protection standpoint. Wherein, the plants may be successfully used to 'scavenge' a range of metals from polluted land sites in an approach allowing to carry out both of these processes – phytoremediation and phytomining in conjunction.

We studied bioaccumulation ability of different plants toward Hg, Cd, Ba, Au and other metals in water and terrestrial mediums. The peculiarity of ongoing research was that the plants were tested dependent on the species of the contaminant. It has been shown that water hyacinth demonstrates a high ability to accumulate different metals from water media, and what is especially important – to extract mercury with BCF value more than 1000. As for the gold its concentrations in reed and cane growing near the waste material were estimated as 500 and 900 µg·kg<sup>-1</sup> respectively. It was also found that the plants can survive under extreme conditions of the acidic environment and hence we can assume that there is a principal opportunity to use them for the extraction of the valuable substances from an area of the mining waste dumps burial.

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