

**Abstract:**

Heavy metals and organic compounds represent a great problem for environment. Therefore, attention is paid to the development of techniques for removing these pollutants from the sites of pollution. One of the possibilities is that heavy metals and organic compounds are removed from soil by using phytoremediation. Phytoremediation uses the ability of some plant species to uptake toxic compounds from soil and accumulate these compounds in its tissues. These plants are able to tolerate higher amounts of toxic compounds than it's usual because of the broad range of detoxification mechanisms, which are taking place in these plants. After the root uptake, heavy metals may be chelated by phytochelatins, metallothioneins or other chelators and subsequently stored in vacuoles. Transport of metal ions and metal complexes between cells compartments is mediated by many specific transport proteins. Detoxification mechanisms of organic compounds involve transformation, conjugation and store of these compounds in plant tissues.