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BIOTECHNOLOGICAL APPLICATIONS FOR ELECTRONIC WASTE WATER PROCESSING

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Abstract

Many elements as copper, selenium, tellurium and rare earth elements are strategic elements in high-tech electronics. Many of them are essential trace elements in living organisms, but also a potential toxin with very low threshold concentrations. Environmental biotechnological applications using bacterial biomineralization have the potential not only to remove these metals from contaminated waters, but also to sequester them in a reusable form. Biomineralization of many metals has been observed in phylogenetically diverse microorganisms isolated from pristine and contaminated environments, yet it is one of the poorly understood biogeochemical processes. Microbial respiration of metals and metalloids is unique as the microbial cells are presented with both soluble and insoluble (Me0) forms as terminal electron acceptor. This presentation will highlight biomineralization of metals, metalloids and rare earth elements and its potential biotechnologies in bioremediation and wastewater treatment.

Keywords

Copper, Selenium, Tellurium, Wastewater Treatment, Biomineralization