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Bioremediation of Heavy Metals Contaminated Sites ? Case Histories in Korea

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Metal-microbe interactions includes generally four processes such as bioleaching, biosorption, biomineralization and enzyme-catalyzed transformations (e.g. bioreduction). This paper introduces each case history of the four processes which was carried out quite recently in author's lab. The first case is on the bioleaching of As in contaminated soils under the anaerobic condition by indigenous bacteria and *Schwannella* sp. The second case is concerned on the removal of toxic metals by biosorption and biofilm formation of indigenous bacteria in soil, and the third case on the in-situ precipitation (mineralization) of As and heavy metals in soils by microbiological sulfate reduction. The last case history is on the Cr(VI) reduction by *Rhodococcus erythropolis* in Cr-contaminated sediment with industrial waste. The removal efficiency of As and heavy metals in contaminated soils and sediments collected from the industrial and mining and smelting sites in Korea was investigated in lab scale and the practical applicability of the above experimental results to the contaminated fields was discussed in this study.

Keywords: bioremediation, As and heavy metals, contaminated soils and sediments, mine and smelter and industrial sites, removal efficiency of metals, metal-microbe interactions