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Heavy metals leachability before, during and after composting of sewage sludge with natural clinoptilolite

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ABSTRACT

Environmental problems associated with sewage sludge disposal have prompted strict legislative actions over the past years. At the same time, the upgrading and expansion of wastewater treatment plants have greatly increased the volume of sludge generated. The major limitation of land application of sewage sludge compost is the potential high heavy metal content in relation to the metal content of the original sludge. Composting of sewage sludge with natural zeolite (clinoptilolite) can enhance its quality and suitability for agricultural use. The aim of the article is to examine the leachability of the heavy metals before, during and after the composting process of sewage sludge and clinoptilolite. The natural zeolite, clinoptilolite has the ability to uptake heavy metals in satisfactory levels. In order to estimate the metal leach ability of the final product of compost, the generalized acid neutralization capacity (GANC) procedure was used, and was found that by increasing the leachate pH, the heavy metal concentration decreases.

Keywords: Sewage sludge composting; Metals uptake; Natural zeolite; Clinoptilolite; Metal leachability