Low C/N Ratio Composting of Excess Sludge from Activated Sludge Wastewater Treatment System of Concentrated Latex Industry

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Abstract

This article presents an experimental result of low C/N ratios with ranges of 3.2:1 to 5.9:1 of composting of excess sludge from activated sludge wastewater treatment systems of concentrated latex factories. The composting experiments were investigated based on test conditions of different compost materials used, with aeration and with no aeration, as well as with seeding and without seeding. In addition, the investigation on the possible use of the obtained compost products as fertilizer on plant growth was conducted. The results indicated that composting was not reached in the thermophilic and mature phases. The slow decomposition of OC occurred during 90 days composting. Loss of N was significantly determined, in particular in the aerated composting units, but K increment was observed. The results indicated that the composting of mixtures of excess bio-sludge, ash, and coconut husk with and without seeding and aeration made compost products compliant with Thai organic fertilizer standards, especially in terms of pH, P_2O_5, K_2O, As, Cd, Cr, Cu, Pb, and Hg. With the results tested on plant growth, the possibility of the use of compost products as fertilizer as experimented with marigolds, illustrated that compost products from a mixture of excess bio-sludge, ash, and coconut husk with seeding and aeration had potential to be used as fertilizer which was equivalent to 15:15:15 chemical fertilizer, in particular in terms of plant height increase rate and numbers of flowers achieved.

Keywords : Concentrated latex industry, Activated sludge waste, Composting, Sludge management

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