

ABSTRACT

The research was carried out in the company ESMERALDA CORP S.A.C located at Km 18.5 South Pan-American Highway, San de Juan de Miraflores district, Lima. The company carries out activities as the benefit of animals (camal); The capacity of its treatment plant is approximately 480 m³ /day generating a sludge production of 300 m³ /month, which is stored and transferred to the sanitary landfill. Such sludge shears with the aim of processing and reusing it through the composting technique, in order to obtain a final compost quality free of the chemical toxicity and hygiene parameters. The dry sludge was reused using the pilot-scale composting technique by means of a closed vertical reactor with forced aeration. Dehydrated sludge (65.6%), cow manure (32.8%) was used and sawdust (1.6%) to perform the compost battery and then place it in the vertical reactor with forced aeration. The composting process took place during the months of July to November 2019 where the ambient temperature varied between 19°C to 24.5°C and the compost stack reached a peak average internal temperature varied between 51.94°C to 52.34°C, to stabilize at 48 days with ambient temperature at 22°C obtaining a final compost of granular and dark texture. One final compost sample was taken to the soil laboratory of the Universidad Nacional Agraria La Molina to perform the chemical physical parameter analyses and another sample to the CERPER-Certifications Del Perú S.A. laboratory. for chemical toxicity and hygiene parameter analyses. The results obtained in this investigation demonstrated that the chemical toxicity and hygiene parameters of the final compost are below the concentration limits required by Peruvian Standard D.S. No. 015-2017-HOUSING, thus confirming that it belongs to Class A and can be used as organic fertilizer for plants or as a soil enhancer. Finally, the reuse of dehydrated sludge for compost is an effective, economical and sustainable alternative. In addition, its application as organic fertilizer in replacement of chemical fertilizers, thus giving a positive impact to the environment