

PO-227 (JTK):

Biodegradation of tetrabromobisphenol-A in sludge-amended soil and microbial community change

Yang, Chu-Wen¹, Chen, Wei-Zhi¹, Chang, Bea-Ven¹

¹Department of Microbiology, Soochow University, Taipei, Taiwan, ROC

Tetrabromobisphenol A (TBBPA) is a flame retardant used as an additive during the manufacturing of plastic polymers and electronic circuit boards. This study investigated the degradation of TBBPA and changes in microbial communities in sludge-amended soil (SAS). Batch experiments indicated that the TBBPA degradation was enhanced by spent mushroom compost (SMC), enzyme extract and extract-containing microcapsules in SAS, with SMC showing greater TBBPA degradation rate than the other additives. Bioreactor experiments revealed that SAS with SMC had higher performance for TBBPA degradation than SAS alone but also prolonged the effectiveness of bioreactor. Nine co-occurring groups of bacterial genera were identified. These co-occurring bacterial classes and genera may represent bacterial communities cooperatively involved in TBBPA degradation. Bacterial profiles uncovered in this study will be useful for designing bioreactors for TBBPA degradation or to select biological markers for TBBPA bioremediation in soil.

keywords:TBBPA,degradation, bacterial community,spent mushroom compost,soil