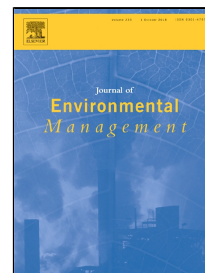


# Accepted Manuscript



Compost Humic Acid-Like Isolates from Composting Process as Bio-based Surfactant: Properties and Feasibility to Solubilize Hydrocarbon from Crude Oil Contaminated Soil

Gina Lova Sari, Yulinah Trihadiningrum, Dwiyantri Agustina Wulandari, Ellina Sitepu Pandebesie, I. D.A.A. Warmadewanthi

PII: S0301-4797(18)30879-X

DOI: 10.1016/j.jenvman.2018.08.010

Reference: YJEMA 7831

To appear in: *Journal of Environmental Management*

Received Date: 23 April 2018

Accepted Date: 02 August 2018

Please cite this article as: Gina Lova Sari, Yulinah Trihadiningrum, Dwiyantri Agustina Wulandari, Ellina Sitepu Pandebesie, I.D.A.A. Warmadewanthi, Compost Humic Acid-Like Isolates from Composting Process as Bio-based Surfactant: Properties and Feasibility to Solubilize Hydrocarbon from Crude Oil Contaminated Soil, *Journal of Environmental Management* (2018), doi: 10.1016/j.jenvman.2018.08.010

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Compost Humic Acid-Like Isolates from Composting Process as Bio-based Surfactant: Properties and Feasibility to Solubilize Hydrocarbon from Crude Oil Contaminated Soil

Gina Lova Sari<sup>a,b\*</sup>, Yulinah Trihadiningrum<sup>a</sup>, Dwiyantri Agustina Wulandari<sup>a</sup>, Ellina Sitepu Pandebesie<sup>a</sup>, I. D. A. A. Warmadewanthi<sup>a</sup>

<sup>a</sup>Department of Environmental Engineering, Faculty of Civil, Environmental, and Geo Engineering, Institut Teknologi Sepuluh Nopember, Kampus ITS Sukolilo, Surabaya, 60111, Indonesia.

<sup>b</sup>Faculty of Engineering, Universitas Singaperbangsa Karawang, Teluk Jambe Timur, Karawang 41361, Indonesia.

## Abstract

Biodecomposition of organic solid waste during composting process produces compost humic acid-like (cHAL), which is classified as biobased surfactant. The present study aimed to characterize the properties of cHAL substance which was formed during the composting process of crude oil contaminated soil, in terms of surface tension decline ( $\Delta$ ST) and emulsification activity (EA), and evaluate the ability to solubilize hydrocarbons. Crude oil contaminated soil from a public oilfield in Wonocolo Sub-district, Bojonegoro, Indonesia, was composted under aerobic condition with varied biodegradable waste (yard waste and rumen residue) in separate reactors. The cHAL compounds were isolated from composting products from yard waste (Y<sub>100</sub>), rumen residue (R<sub>100</sub>), control of contaminated soil (S<sub>100</sub>), and mixed of contaminated soil and biodegradable waste (S<sub>50</sub>YR<sub>50</sub>). The results showed that  $\Delta$ ST of cHAL isolates were ranged from 6.65 to 21.50 mN/m. The EA of cHAL isolates were in the range of 7.35–38.01%. The cHAL isolates were capable to solubilize 99 to 10,710  $\mu$ g/g of hydrocarbons. The cHAL isolates from R<sub>100</sub> and S<sub>50</sub>YR<sub>50</sub> are potential as surface tension reducer and emulsifier for hydrocarbon with values of those isolates were close to 0.50% Tween 80 characteristics, and the abilities to solubilize

Download English Version:

<https://daneshyari.com/en/article/7475716>

Download Persian Version:

<https://daneshyari.com/article/7475716>

[Daneshyari.com](https://daneshyari.com)