BIOREMEDIASI TANAH TERCEMAR MINYAK BUMI MENGGUNAKAN KOMPOS KOTORAN KAMBING DAN TANAMAN AKAR WANGI DI DESA WONOCOLO, KECAMATAN KEDEWAN, KABUPATEN BOJONEGORO, JAWA TIMUR

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INTISARI

Tumpahan minyak akibat kegiatan produksi minyak bumi di Desa Wonocolo, Kecamatan Kedewan, Kabupaten Bojonegoro, Provinsi Jawa timur yang dilakukan dengan cara tradisional dan tidak ramah lingkungan berpotensi menimbulkan pencemaran tanah dan lingkungan lainnya. Minyak bumi memiliki sifat beracun, mutagenik dan karsinogenik yang berbahaya bagi makhluk hidup. Tujuan dari penelitian ini adalah mengindentifiksi persebaran pencemaran minyak bumi pada tanah, menguji tingkat efektifitas dan membandingkan pengolahan tanah dengan parameter *Total Petroleum Hidrokarbon* (TPH) dengan metode biokomposting dan fitoremediasi, serta memberikan arahan pengolahan tanah tercemar yang sesuai.

Penelitian menggunakan metode kualitatif dan kuantitatif. Pengambilan sampel tanah tercemar pada 12 sumur aktif menggunakan metode *purposive sampling* dan pada 2 sumur mati menggunakan metode *random sampling*. *Purposive sampling* mempertimbangkan produktifitas mingguan dan kedalaman penetrasi minyak bumi ke tanah. Uji korelasi *bivariate* Pearson untuk mengindentifikasi korelasi konsentrasi TPH, produktifitas mingguan, dan kedalaman penetrasi minyak bumi ke tanah. Pengolahan tanah menggunakan rancangan acak lengkap dengan metode biokomposting menggunakan bahan organik berupa kotoran kambing dan arang sekam padi dan fitoremediasi menggunakan akar wangi. Evaluasi data menggunakan metode evaluasi deksriptif.

Hasil penelitian menunjukkan pencemaran akibat tumpahan minyak bumi pada tanah termasuk tingkat konsentrasi A dan limbah B3 kategori 1 serta konsentrasi TPH dan produktifitas perminggu memiliki korelasi bernilai positif. Metode biokomposting komposisi tanah tercemar dan bahan organik 1:1 mampu mendegradasi TPH hingga 32,077%. metode fitoremediasi dengan 2 tanaman akar wangi mampu mendegradasi TPH hingga 40.179%. Hasil kompos biokomposting komposisi tanah tercemar dan bahan organik 1:1 yang ditanami akar wangi mampu mendegradasi TPH hingga 58,917%. Arahan pengolahan tanah tercemar menggunakan teknik *landfarming* dengan luas 25 m x 2 5m yang ditambahkan bahan organik sejumlah 33,761 ton dengan waktu pengolahan 77 hari.

Kata Kunci: *Total Petroleum Hidrokarbon* (TPH), biokomposting, bahan organik, fitoremediasi, akar wangi

SOIL CONTAMINATE BIOREMEDIATION USING GOAT MANURE COMPOSED AND VETIVER IN WONOCOLO VILLAGE, KEDEWAN DISTRICT, BOJONEGORO REGENCY, EAST JAVA

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ABSTRACT

Oil spills due to petroleum production activities in Wonocolo Village, Kedewan District, Bojonegoro Regency, East Java Province which are carried out in traditional and environmentally unfriendly ways have the potential to cause soil and other environmental pollution. Petroleum has toxic, mutagenic and carcinogenic properties that are harmful to living things. The purpose of this study was to identify the distribution of petroleum pollution on the soil, verify the effectiveness and compare soil processing with TPH parameters with biocomposting and phytoremediation methods, as well as provide directions for the appropriate management of contaminated soil.

study used quantitative and qualitative methods. Sampling of polluted soil in 12 active wells using purposive sampling method and on 2 wells not operating using random sampling method. Purposive sampling considers weekly productivity and depth of oil penetration into the ground. Pearson bivariate correlation test to identify the correlation between TPH concentration, weekly productivity, and depth of penetration of petroleum into the soil. Tillage using a completely randomized design with biocomposting method using organic materials in the form of goat manure and rice husk charcoal and phytoremediation using vetiver. Evaluation of data using descriptive evaluation method.

The results showed that pollution due to oil spills on the ground was included in the A concentration level and toxic and hazardous waste category 1. TPH concentration and weekly productivity have positif correlation the biocomposting method with the composition of contaminated soil and organic materials 1:1 was able to degrade TPH up to 32.077%. the phytoremediation method with 2 vetiver plants was able to degrade TPH up to 40,179%. The results of biocomposting compost with a composition of contaminated soil and organic materials 1:1 planted with vetiver were able to degrade TPH up to 58.917%. The direction of processing contaminated soil using landfarming technique with an area of 25m x 25m which added 33,76128 tons of organic materials with a remediation period of 77 days.

Keyword*: Total Petroleum Hidrokarbon (TPH), biocomposting, organic material, phytoremediation, vetiver*