

**REMEDIASI TANAH TERCEMAR MINYAK BUMI
DENGAN METODE *SOIL WASHING*
DI DESA WONOCOLO, KECAMATAN KEDEWAN,
KABUPATEN BOJONEGORO, JAWA TIMUR**

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INTISARI

Minyak bumi merupakan sumber daya alam yang memiliki banyak manfaat bagi kehidupan manusia. Salah satu pemanfaatan minyak bumi adalah sebagai sumber energi baik dalam kegiatan industri, transportasi maupun domestik. Ekstraksi minyak secara tradisional di Desa Wonocolo dilakukan dengan cara konvensional dengan peralatan sederhana yang berpotensi mencemari lingkungan sekitar. Pencemaran minyak berpotensi menyebabkan kerusakan ekologis, tanah dan air permukaan karena kandungan hidrokarbonnya. Oleh karena itu, dilakukan penelitian untuk mengetahui kualitas tanah di sekitar area ekstraksi minyak berdasarkan nilai *total petroleum hydrocarbon* (TPH), untuk menguji pengaruh *soil washing* dengan surfaktan Alky Benzene Sulfonat terhadap penurunan TPH.

Penelitian ini merupakan penelitian kuantitatif dan kualitatif. Penelitian dilakukan dengan menggunakan data berupa data primer dan data sekunder yang kemudian data-data tersebut diolah. Penelitian ini menggunakan beberapa metode yaitu metode survei lapangan, dan eksperimen. Eksperimen dilakukan untuk menguji efektivitas *soil washing* dengan percobaan variasi konsentrasi surfaktan 0,25%, 0,50%, 0,75%, dan 1%. Hal tersebut dilakukan sebagai acuan dalam memberikan arahan pengolahan permasalahan.

Eksploitasi minyak bumi secara tradisional di Desa wonocolo mencemari tanah dengan estimasi luas $\pm 3.575,26 \text{ m}^2$ dan volume tanah tercemar $\pm 33.964,99 \text{ m}^3$. Hasil uji TPH menunjukkan nilai TPH tertinggi berada pada 17,4%. Hasil percobaan *Soil Washing* menunjukkan konsentrasi surfaktan dengan efektivitas tertinggi berada pada nilai konsentrasi 0,25%. Konsentrasi 0,25% menurunkan TPH sebesar 9% dengan efektivitas 51,72%. Berdasarkan hasil penelitian, dibuktikan bahwa *soil washing* mampu menurunkan nilai TPH untuk dilanjutkan kepada pengolahan selanjutnya sesuai Peraturan yang berlaku. Dalam upaya melakukan pengolahan perlu diawali dengan pembersihan sumur produksi kemudian dilanjutkan dengan *soil washing* dan *biopile* yang dilakukan secara eksitu.

Kata Kunci : *Soil Washing*, Alky Benzene Sulfonat, *Total Petroleum Hydrocarbon*, Wonocolo

**REMEDICATION OF PETROLEUM CONTAMINATED SOIL
USING SOIL WASHING METHOD
IN THE WONOCOLO VILLAGE, KEDEWAN DISTRICT,
BOJONEGORO DISTRICT, EAST JAVA**

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ABSTRACT

Petroleum is a natural resource that has many benefits for human life. One of the uses of petroleum is as a source of energy both in industrial, transportation and domestic activities. Oil extraction in Wonocolo Village is carried out in a conventional way with simple equipments that has the potential polluting its surrounding environment. Oil pollution has the potential to cause ecological, soil and surface water damage due to its hydrocarbon content. Therefore, a study was conducted to determine the quality of the soil around the oil extraction area based on the value of total petroleum hydrocarbons (TPH), to examine the effect of soil washing with Alky Benzene Sulfonate surfactants on TPH reduction.

This research is a quantitative and qualitative research. The research was conducted using data in the form of primary data and secondary data which were then processed. This study uses several methods, namely field survey methods, and experiments. Experiments were carried out to test the effectiveness of soil washing by experimenting with variations in surfactant concentrations of 0.25%, 0.50%, 0.75% and 1%. This is done as a reference in providing direction for processing problems.

The traditional exploitation of petroleum in Wonocolo Village pollutes the soil with an estimated area of $\pm 3,575.26$ m² and a volume of polluted soil of $\pm 33,964.99$ m³. The TPH test results showed that the highest TPH value was at 17.4%. The results of the Soil Washing experiment showed that the surfactant concentration with the highest effectiveness was at a concentration of 0.25%. Concentration of 0.25% reduces TPH by 9% with 51.72% effectiveness. Based on the research results, it is proven that soil washing is able to reduce the value of TPH to proceed with further processing according to applicable regulations. In an effort to carry out processing, it is necessary to start with improving the production wells, then proceed with soil washing and biopile which are carried out ex-situ..

Keywords: *Soil Washing, Alky Benzene Sulfonat, Total Petroleum Hydrocarbon, Wonocolo*