ANALISIS KUALITAS UDARA AMBIEN DAN POLA PERSEBARAN PARTIKULAT BERDASARKAN PARAMETER PM_{10} DAN $PM_{2,5}$ DI AREA PEMUKIMAN TERDAMPAK KEGIATAN TAMBANG TANAH LIAT TLOGOWARU PT SEMEN INDONESIA (PERSERO) TBK, KABUPATEN TUBAN, PROVINSI JAWA TIMUR

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INTISARI

Penambangan tanah liat umumnya menggunakan metode *surface mining* yaitu penambangan di area permukaan atau dataran. Proses-proses dalam penambangan tersebut tentu berdampak pada penurunan kualitas lingkungan salah satunya yaitu penurunan kualitas udara. Penurunan kualitas udara tersebut merupakan dampak dari sumber pencemar yang ada seperti emisi dari alat yang beroperasi dan partikulat debu yang tersuspensi ke udara selama proses penambangan. Penelitian ini bertujuan untuk mengetahui kualitas udara berdasarkan Indeks Standar Pencemar Udara (ISPU) menggunakan parameter *Particulate Matter* 10 µm (PM_{10}) dan *Particulate Matter* 2,5 µm ($PM_{2,5}$), menganalisis pola persebaran paartikulatnya serta merekomendasikan arahan pengelolaan untuk mengontrol persebaran partikulat.

Pengambilan sampel *Particulate Matter* 10 µm (PM_{10}) dan *Particulate Matter* 2,5 µm ($PM_{2,5}$) dilakukan di empat lokasi. Lokasi tersebut yaitu tiga desa yang berada di *ring* satu dan terdampak secara langsung kegiatan penambangan tanah liat Tlogowaru yaitu Desa Temandang, Desa Tlogowaru dan Desa Tobo serta di area tambang tanah liat Tlogowaru. Tata cara pengambilan sampel dari kedua parameter tersebut diatur dalam SNI 7119.14:2016 dan SNI 7119.15:2016. Dari hasil penelitian menunjukkan nilai ISPU untuk parameter *Particulate Matter* 10 µm (PM_{10}) di Desa Temandang sebesar 41,00; Desa Tlogowaru sebesar 10,00; Desa Tobo sebesar 12,00; dan area tambang sebesar 34,00. Nilai ISPU untuk parameter PM_{10} di keempat titik pengukuran tersebut termasuk dalam kategori baik. Sedangkan nilai ISPU untuk parameter *Particulate Matter* 2,5 µm ($PM_{2,5}$) di Desa Temandang sebesar 58,14; Desa Tlogowaru sebesar 19,35 dan Desa Tobo sebesar 55,63; dan area tambang sebesar 45,16. Nilai ISPU untuk parameter $PM_{2,5}$ di Desa Temandang, Desa Tlogowaru dan area tambang termasuk dalam kategori baik. Sedangkan hasil pengukuran ISPU untuk parameter $PM_{2,5}$ di Desa Temandang termasuk dalam kategori sedang. Arahan pengelolaan yang dapat direkomendasikan dengan mempertimbangkan kondisi eksisting di daerah penelitian yaitu penanaman tanaman yang efektif dalam menjerap debu (Mahoni) di area *greenbelt* dan sepanjang *hauling road* serta melakukan penyiraman dengan metode kabut dan penambahan *dust suppressant* atau disebut dengan *fog dust suppression system*.

Kata Kunci : PM_{10}; $PM_{2,5}$; Tambang Tanah Liat, Pengendalian Persebaran Partikulat, ISPU

AMBIENT AIR QUALITY ANALYSIS AND PARTICULATE DISTRIBUTION PATTERN BASED ON PM_{10} AND $PM_{2.5}$ PARAMETERS IN RESIDENTIAL AREA IMPACTED BY TLOGOWARU CLAY MINING ACTIVITIES, PT SEMEN INDONESIA (PERSERO) TBK, TUBAN, EAST JAVA

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ABSTRACT

Clay mining generally uses the surface mining method. The processes in mining certainly have an impact on decreasing environmental quality, including the air quality. The decline in air quality is the impact of existing pollutant sources such as emissions from operating equipment and dust particulates suspended in the air during the mining process. This study aims to determine air quality based on the Air Pollutant Standard Index (ISPU) and its distribution pattern using the parameters Particulate Matter 10 µm (PM_{10}) and Particulate Matter 2.5 µm ($PM_{2.5}$) and to recommend technical directions to control the spread of particulates.

Sampling of Particulate Matter 10 µm (PM_{10}) and Particulate Matter 2.5 µm ($PM_{2.5}$) was carried out at four locations. These locations are three villages that are in ring one and are directly affected by the Tlogowaru clay mining activities, namely Temandang Village, Tlogowaru Village and Tobo Village as well as in the Tlogowaru clay mining area. The sampling procedure for these two parameters is regulated in SNI 7119.14:2016 and SNI 7119.15:2016. The results of the study showed that the ISPU value for the 10 µm Particulate Matter (PM_{10}) parameter in Temandang Village was 41.00; Tlogowaru Village 10.00; Tobo Village 12.00; and mining area of 34.00. The ISPU value for the PM_{10} parameter at the four measurement points is in the good category. While the ISPU value for the Particulate Matter parameter is 2.5 µm ($PM_{2,5}$) in the village of Temandang 58.14; Tlogowaru Village 19.35 and Tobo Village 55.63; and mining area of 45.16. The ISPU value for the $PM_{2.5}$ parameter in Temadang Village, Tlogowaru Village and the mining area is in the good category. Meanwhile, the ISPU measurement results for the $PM_{2.5}$ parameter in Temadang Village are included in the moderate category. Management directions that can be recommended by considering the existing conditions at the research site are planting plants that are effective in absorbing dust (mahogany) in the greenbelt area and along the hauling road as well as watering using the fog method and adding dust suppressant or what is called a fog dust suppression system. Tlogowaru village and mining area are included in the good category. Meanwhile, the ISPU measurement results for the $PM_{2.5}$ parameter in Temadang Village are included in the moderate category. Management directives that can be recommended by considering the existing conditions at the research site are planting plants that are effective in absorbing dust (mahogany) in the greenbelt area and along the hauling road as well as watering using the fog method and adding dust suppressant or what is called a fog dust suppression system. Tlogowaru village and mining area are included in the good category. Management directions that can be recommended by considering the existing conditions at the research site are planting plants that are effective in absorbing dust (mahogany) in the greenbelt area and along the hauling road as well as watering using the fog method and adding dust suppressant or what is called a fog dust suppression system.

Keywords *: PM_{10}; $PM_{2.5}$; Clay Mining, Particulate Distribution Control, ISPU*