

Wulyo Hengky Sugiharto, 2015. Pemetaan Sebaran Emisi SO₂ Industri Semen di Tuban berdasarkan Model Sebaran *Gaussian*. Skripsi ini di bawah bimbingan Dra. Thin Soedarti, CESA dan Dr. Eko Prasetyo Kuncoro, S.T., DEA Program Studi S-1 Ilmu dan Teknologi Lingkungan, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Penelitian ini bertujuan untuk memetakan sebaran emisi SO₂ Industri Semen di Tuban berdasarkan Model Sebaran *Gaussian* dan bagaimana pengaruh konsentrasi emisi SO₂ terhadap udara ambien. Penelitian ini menggunakan *software* MATLAB, Surfer dan Arcgis untuk melakukan pembuatan model dan pemetaan berbasis SIG, data yang digunakan berupa data sekunder (emisi cerobong dan data meteorologi) dan data observasi udara ambien. Hasil ini menunjukkan ada dua arah angin dominan yaitu barat ke timur dan timur ke barat. Setelah 362,37 m dari sumber emisi, konsentrasi emisi SO₂ sebesar 0,21 µg/Nm³ dan terus meningkat sampai jarak 880 m dengan konsentrasi 4,2 µg/Nm³ kemudian menurun sampai jarak 5125 m dengan konsentrasi 0,307 µg/Nm³. Berdasarkan arah angin dominan timur ke barat desa terdekat yang berpotensi terpapar konsentrasi emisi SO₂ adalah Desa Sawir, sedangkan untuk arah angin dominan barat ke timur tidak ada wilayah dengan penduduk yang terpapar konsentrasi. Tidak ada pengaruh konsentrasi emisi SO₂ hasil perhitungan model sebaran *Gaussian* terhadap udara ambien di Wilayah Industri Semen di Tuban.

Kata kunci: pemetaan, SIG, model *Gaussian*, emisi SO₂.

Wulyo Hengky Sugiharto, 2015. Mapping the dispersion of SO₂ emissions of cement industry in Tuban based on Gaussian Dispersion Model. This work was supervised by Dra. Thin Soedarti, CESA and Dr. Eko Prasetyo Kuncoro, S.T., DEA Enviromental Science and Technology, Departement of Biology, Faculty of Science and Technology, Airlangga University.

ABSTRACT

This research purposed to map the dispersion of SO₂ emissions of cement industry in Tuban based on Gaussian dispersion model and how the influence of the concentration of SO₂ emissions for the ambient. This research used MATLAB software, Surfer and ArcGIS to perform modeling and GIS-based mapping, the usage data was in the form of secondary data (emissions from stack and meteorological data) and ambient air observation data. These results indicate there are two predominant wind directions, those were west to east and east to west. After 362.37 m from emissions sources, the concentration of SO₂ emissions was 0.21 µg/Nm³ and continued to increased until 880 m distance with a concentration of 4.2 µg/Nm³ and then decreased to a distance of 5125 m with concentration from 0.307 µg/Nm³. Based on the dominant wind direction east to west the nearby village, potentially exposed to concentrations of SO₂ emission was Sawir village, while the predominant wind direction west to east, there was no area with a population that was exposed to concentrations. There was no effect of the concentration of SO₂ emissions based on Gaussian dispersion model calculation with the ambient air in Region X in PT Semen Tuban.

Key words: *mapping, GIS, Gaussian model, SO₂ emissions.*