

**ANALYSIS OF SO₂ AND NO₂ GAS EMISSIONS AND THEIR DISPERSION
DIRECTION DUE TO PLTSA MERAH PUTIH ACTIVITIES IN CIKETING
UDIK, BANTAR GEBANG, BEKASI, WEST JAVA**

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ABSTRACT

The Waste Power Plant (PLTSa) is one of the waste processing plants at the Bantargebang TPST. PLTSa is a power plant that uses household waste or similar household waste as fuel to produce electricity. The existence of PLTSa has a negative impact, namely decreasing air quality and increasing the potential for contracting ISPA in the community around PLTSa. Apart from that, PLTSa Merah Putih is a pilot project so a study is needed regarding the emissions caused before building PLTSa on a large scale elsewhere. The aim of this research is to determine the emission load and dispersion of SO₂ and NO₂ gases using the Gaussian dispersion model, determine ambient air quality, and provide environmental management direction..

There are three samples measured, namely emission gas samples, ambient air samples and meteorological data. The data collection method uses a purposive sampling method. Gas emission measurements were carried out at the PLTSa chimney. Ambient air measurements were carried out in zone 1, settlement 1, and settlement 2. Measurement of meteorological data at PLTSa and ambient air measurement locations. Data processing from measurement results uses AERMOD View for emission gas distribution data and ArcGIS for ambient air and meteorological data.

*The research results show that a SO₂ gas concentration of 2.61 mg/Nm³ produces an emissions load of 28,442 kg/year or 0.000902 g/s and a NO₂ gas concentration of 149 mg/Nm³ produces an emissions load of 1623,696 kg/year or 0.0515 grams/second. The distribution of gas emissions tends to remain at the pollutant source and the gas concentration decreases as the distance from the PLTSa increases. The concentration of SO₂ gas in the ambient air with a quality standard of 150 µg/m³, in zone 1 is 58.5 µg/m³, settlement 1 <40 µg/m³, and settlement 2 <40 µg/m³. The concentration of NO₂ gas in ambient air with a quality standard of 200 µg/m³, in zone 1 is 33.1 µg/m³, settlement 1 is 22.9 µg/m³, and settlement 2 is 1.26 µg/m³. The direction of environmental management in this research is the formation of a green belt to reduce polluting gases in the air. The vegetations used are glodokan tiang (*Polyalthia longifolia*), dadap serep (*Erythrina variegata*), bougenvil merah (*Bougainvillea glabra*), and lolipop kuning (*Pachystachys lutea*).*

Keywords: Waste Power Plant (PLTSa); SO₂ and NO₂; Gaussian dispersion model; emission load; air pollution; green belt.