

**ANALISIS KONSENTRASI PM<sub>10</sub>, PM<sub>2,5</sub>, DAN PM<sub>1</sub>  
PADA RUANG PUBLIK  
(Studi Kasus : Kawasan Pasar, Stasiun Kereta Api, dan Pantai  
Gandoriah Kota Pariaman)**

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## ABSTRAK

Kawasan Pasar, Stasiun Kereta Api, dan Pantai Gandorah Kota Pariaman adalah ruang publik yang digunakan masyarakat untuk berbagai aktivitas. Penelitian ini bertujuan menganalisis komposisi konsentrasi  $PM_{10}$ ,  $PM_{2,5}$ , dan  $PM_1$  serta korelasinya dengan kondisi meteorologi, mengidentifikasi pengaruh aktivitas masyarakat terhadap konsentrasi partikulat, serta merekomendasikan pengendalian untuk mengurangi pencemaran udara di kawasan tersebut. Pengukuran konsentrasi  $PM_{10}$ ,  $PM_{2,5}$ , dan  $PM_1$  menggunakan alat EPAM-5000 HAZ-DUST secara *real time* pada hari Sabtu dan Minggu selama 1 jam di empat periode waktu (pagi hari, 07.00-09.55 WIB), (siang hari, 11.00-13.55 WIB), (sore hari, 16.00-18.55 WIB), dan (malam hari, 21.00-23.55 WIB) di 3 titik sampling yang berbeda dengan lama pengukuran 15 menit untuk setiap parameternya dan 1 kali pengulangan pada masing-masing harinya. Hasil penelitian menunjukkan konsentrasi rata-rata  $PM_{10}$ ,  $PM_{2,5}$ , dan  $PM_1$  pada pagi hari berkisar antara 17,00-36,06  $\mu\text{g}/\text{m}^3$ , 17,44-34,38  $\mu\text{g}/\text{m}^3$ , dan 14,25-32,31  $\mu\text{g}/\text{m}^3$ ; pada siang hari berkisar antara 19,00-35,50  $\mu\text{g}/\text{m}^3$ , 15,25-32,50  $\mu\text{g}/\text{m}^3$ , dan 12,19-30,44  $\mu\text{g}/\text{m}^3$ ; pada sore hari berkisar antara 20,00-35,75  $\mu\text{g}/\text{m}^3$ , 17,50-32,25  $\mu\text{g}/\text{m}^3$ , dan 15,13-34,19  $\mu\text{g}/\text{m}^3$ , dan pada malam hari berkisar antara 14,56-28,00  $\mu\text{g}/\text{m}^3$ , 18,38-36,00  $\mu\text{g}/\text{m}^3$ , dan 16,19-35,75  $\mu\text{g}/\text{m}^3$ . Korelasi antara konsentrasi partikulat dan kondisi meteorologi sangat lemah hingga lemah, dengan konsentrasi partikulat berbanding lurus terhadap temperatur dan kelembapan, serta berbanding terbalik terhadap tekanan udara dan kecepatan angin. Aktivitas seperti merokok, motor ATV, dan kendaraan bermotor menunjukkan pengaruh signifikan terhadap konsentrasi partikulat. Pengendalian konsentrasi dapat dilakukan dengan rekayasa lingkungan, seperti penyiraman jalan secara berkala.

**Kata kunci:** EPAM-5000 HAZ-DUST,  $PM_{10}$ ,  $PM_{2,5}$ , dan  $PM_1$ , Kawasan Pasar, Stasiun Kereta Api, dan Pantai Gandorah Kota Pariaman, Ruang Publik.

## ABSTRACT

The Market Area, Railway Station, and Gandoriah Beach in Pariaman City is a public space used by the community for various activities. This study aims to analyze the composition of  $PM_{10}$ ,  $PM_{2.5}$ , and  $PM_1$  concentrations and their correlation with meteorological conditions, identify the impact of community activities on particulate concentrations, and recommend control measures to reduce air pollution in the area. Measurements of  $PM_{10}$ ,  $PM_{2.5}$ , and  $PM_1$  concentrations were conducted in real time using the EPAM-5000 HAZ-DUST instrument on Saturdays and Sundays for 1 hour during four time periods (morning from 07:00 to 09:55 WIB, noon from 11:00 to 13:55 WIB, afternoon from 16:00 to 18:55 WIB, and evening from 21:00 to 23:55 WIB) at three different sampling points, with each parameter measured for 15 minutes and repeated once each day. The results showed average concentrations of  $PM_{10}$ ,  $PM_{2.5}$ , and  $PM_1$  ranging from 17.00 to 36.06  $\mu\text{g}/\text{m}^3$ , 17.44 to 34.38  $\mu\text{g}/\text{m}^3$ , and 14.25 to 32.31  $\mu\text{g}/\text{m}^3$  in the morning; 19.00 to 35.50  $\mu\text{g}/\text{m}^3$ , 15.25 to 32.50  $\mu\text{g}/\text{m}^3$ , and 12.19 to 30.44  $\mu\text{g}/\text{m}^3$  at noon; 20.00 to 35.75  $\mu\text{g}/\text{m}^3$ , 17.50 to 32.25  $\mu\text{g}/\text{m}^3$ , and 15.13 to 34.19  $\mu\text{g}/\text{m}^3$  in the afternoon; and 14.56 to 28.00  $\mu\text{g}/\text{m}^3$ , 18.38 to 36.00  $\mu\text{g}/\text{m}^3$ , and 16.19 to 35.75  $\mu\text{g}/\text{m}^3$  in the evening. The correlation between particulate concentrations and meteorological conditions was very weak to weak, with particulate concentrations positively correlated with temperature and humidity, and negatively correlated with air pressure and wind speed. Activities such as smoking, ATV riding, and motor vehicle use had a significant impact on particulate concentrations. Pollution control can be achieved through environmental engineering measures, such as regular road watering.

**Keywords:** EPAM-5000 HAZ-DUST,  $PM_{10}$ ,  $PM_{2.5}$ , and  $PM_1$ , The Market Area, Railway Station, and Gandoriah Beach in Pariaman City, Public Space.

