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Assessment Of Diurnal and Seasonal Variation of Ambient Particulate Matter (PM2.5) In Juja, Kenya

Air pollution is a major environmental concern that affects human health worldwide. Despite recent studies indicating ambient air pollution is a growing global concern strongly linked to rapid global urbanization, little has been done to monitor the air quality levels in towns outside Nairobi, Kenya. Juja is one of the largest growing towns subjected to increased population, intense human activities and located along the busy Thika Superhighway. Thus, the purpose of this study was to assess the diurnal and seasonal variations of Ambient Particulate Matter (PM2.5) in Juja, Kenya. The data was collected from November 2019 to April 2021 in various residential areas and along the busy Thika Superhighway using the Purple Air Monitoring Sensor. Results showed that PM2.5 concentration was higher in the dry season compared to the wet season and exceeded the WHO guideline. The study found that PM2.5 levels were highly correlated with vehicle emissions, particularly along the busy highway. The PM2.5 levels also peaked twice a day due to morning and evening traffic. The use of low-cost sensors provides increased availability of data and can be used to inform urban planning and environmental policies. This research provides an important tool to address air pollution issues and improve the health and well-being of urban residents.

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