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SOURCES OF AMBIENT FINE PARTICULATE MATTERS IN OSHAKATI, SWAKOPMUND AND WALVIS BAY, NAMIBIA USING POSITIVE MATRIX FACTORIZATION: A LONG-TERM PROJECT FROM 2026

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Introduction: Fine particulate matter is a toxic air pollutant with an aerodynamic size of less than 2.5 microns that can endanger human health and climate. The WHO have set and recently revised air quality guidelines upon which countries can use as a yardstick to set their own air quality standards. Namibia does not have air quality standards, leading to unregulated levels and unknown sources of ambient fine particulate matters that people in Namibia are exposed to.
Purpose: To determine the sources of ambient fine particulate in Oshakati, Walvis Bay and Swakopmund, Namibia.
Methods: This study will (i) collect PM2.5 filter samples every sixth day for 1 year sampling period; (ii) Determine the chemical composition in every filter in PM2.5; and (iii) apply the chemical species of ambient fine particulate matters to identify sources contributions in positive Matrix factorization (PMF) model.
Expected results: Descriptive statistics for PM2.5, and its chemical composition will be presented in tables and graphs. Black carbon, organic carbon and trace elements data will be used as markers to identify the sources influencing PM2.5 concentrations.
Conclusion: The study will reveal the sources of ambient fine particulate matters. Similar studies can be replicated in other cities in Namibia.
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