African Textile Engineering

Solutions for Industrial Pollution Control in Zambian Industries Using Environmental Engineering Techniques

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Abstract

Zambia's industrial sector is a significant contributor to environmental pollution, posing challenges for sustainable development. A combination of literature review, stakeholder engagement, and quantitative modelling will be used to analyse current pollution levels and propose effective mitigation strategies. Initial analysis indicates that nitrogen oxide emissions from the mining sector are predominantly above 50% of permissible limits in national standards. The study suggests a need for stringent emission control measures, particularly for nitrogen oxides, to comply with environmental regulations and improve air quality. Implementing advanced abatement technologies such as Selective Catalytic Reduction (SCR) systems is recommended to reduce NOx emissions in mining operations. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Zambian, Geographic, Pollutant, Control, Engineering, Sustainability, Policy*

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