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Solutions for Industrial Pollution Control through Environmental Engineering in Zambia: A Methodological Framework

Kabwata Chileshe[1], **Chilufya Kalala**[2]

[1] Copperbelt University, Kitwe

[2] Department of Mechanical Engineering, Copperbelt University, Kitwe

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Correspondence: kchileshe@aol.com

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Author notes

Kabwata Chileshe is affiliated with Copperbelt University, Kitwe and focuses on Engineering research in Africa.

Chilufya Kalala is affiliated with Department of Mechanical Engineering, Copperbelt University, Kitwe and focuses on Engineering research in Africa.

Abstract

Industrial pollution in Zambia poses significant environmental challenges, necessitating effective pollution control strategies to mitigate adverse health impacts and ecological degradation. The study employs quantitative and qualitative methods including statistical analysis and case studies. A key component is the development of an optimization model to determine the most cost-effective pollution control measures. A preliminary analysis suggests that by targeting emissions from industrial sources, a reduction of at least 20% in particulate matter can be achieved within three years with proper implementation of recommended controls. The methodological framework developed is robust and adaptable to various industrial settings, offering a practical path for pollution control in Zambia. Implementing the proposed solutions requires collaboration between government agencies, industries, and environmental experts to ensure comprehensive and sustainable outcomes. The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

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