



# Environmental Mitigation Strategies for Industrial Pollution Control in Zambia

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### Abstract

Industrial activities in Zambia have led to significant environmental pollution, necessitating effective mitigation strategies. A multi-disciplinary approach involving input from engineers, environmental scientists, and local stakeholders was employed to assess current pollution levels and propose solutions. Quantitative data on pollutant emissions were collected using air quality monitoring devices and analysed through statistical models. An analysis of particulate matter (PM2.5) concentrations revealed a daily average of 15 µg/m<sup>3</sup>, exceeding the World Health Organisation's recommended limit by 30% in urban areas. This data was used to inform the design of emission control strategies. The proposed mitigation strategies include the installation of scrubbers on industrial chimneys and the development of a waste-to-energy recycling plant, which are expected to significantly reduce pollution levels within two years. Commencement of pilot projects for tested solutions followed by full-scale implementation with government support is recommended. Community engagement should be prioritised to ensure sustainable long-term benefits. Industrial Pollution Control, Environmental Engineering, Zambia, Emission Reduction Strategies The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u + \epsilon$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Zambian, sustainable, green chemistry, waste management, pollution control, eco-industrial parks*

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