National University of Science and Technology

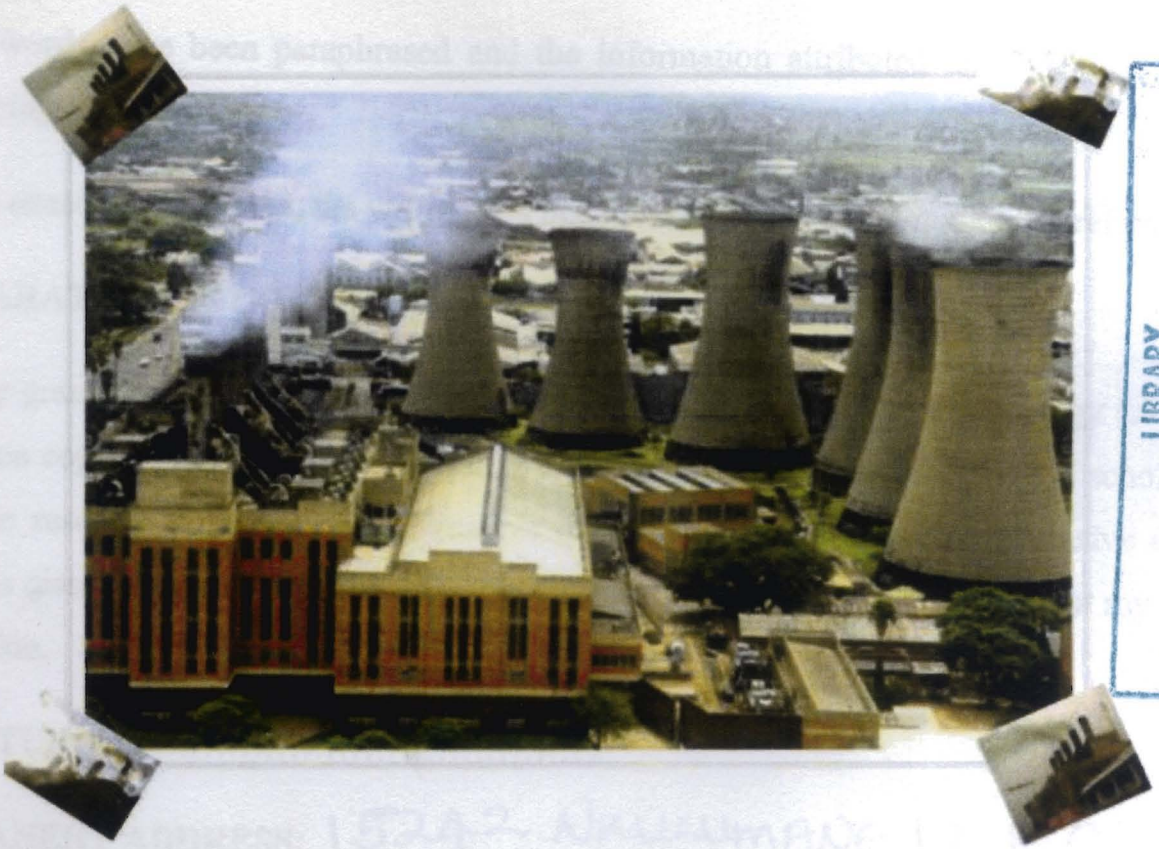
Think in Other Terms

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF APPLIED CHEMISTRY

PROJECT TITLE

MONITORING ENVIRONMENTAL AIR POLLUTION FROM COAL FIRED BOILERS IN BULAWAYO



NAME : NOKUTHABA REJOYCE VUMA
STUDENT No. : N0110211K
SUPERVISOR : MR D DUBE

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ABSTRACT

The major human contributors of air pollutants are transportation, industrial processes, energy production, waste management and agricultural activities. These have resulted in high emission rates of major air pollutants resulting in deterioration of the quality of air in Zimbabwe. This project aimed at quantifying the gaseous pollutant concentrations at the stacks of selected boilers in the industrial sites of Bulawayo. The main pollutant gases of concern are CO_2, NO_x and SO_2. The pollutant concentrations were measured over a period of five months using three different gas analysers namely Testo 340, Optma 7 and Quintox in accordance with the methods approved by the Environmental Management Agency (EMA). Some of the concentrations of the gaseous pollutants were found to be within the EMA standards and others were found to be outside, for example the concentrations of SO_2 emissions for boilers 5A and 5B were found to be within the EMA allowable limits and the SO_2 concentrations for boilers 6A and 11B were found to be falling in the red zone of EMA standards. For NO_X emissions the concentrations ranged from 10mg/m^3 to 120mg/m^3. All the pollutant emissions were found to be dependent upon the quality of the coal, efficiency of the boiler operation and boiler size.